

Putnam Bridge Multimodal Trail Connections Feasibility Study

Final Report

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Executive Summary

Introduction

In early 2013 construction began on the Route 3 Putnam Bridge rehabilitation project. Once complete, the project will provide a new walkway on the northbound side of the bridge to accommodate future bicycle and pedestrian travel in the Route 3 corridor. Because the scope of the rehabilitation project does not provide access to the new walkway from either end of the bridge, additional planning, design, and funding is required to provide this access in the future.

The purpose of the *Putnam Bridge Multimodal Trail Connections Feasibility Study* is to advance the planning work for this future bicycle and pedestrian access to the bridge and to evaluate how new multimodal/shared use path connections can be accommodated from the walkway to the network of existing and planned multimodal transportation and recreational facilities in Wethersfield and Glastonbury.

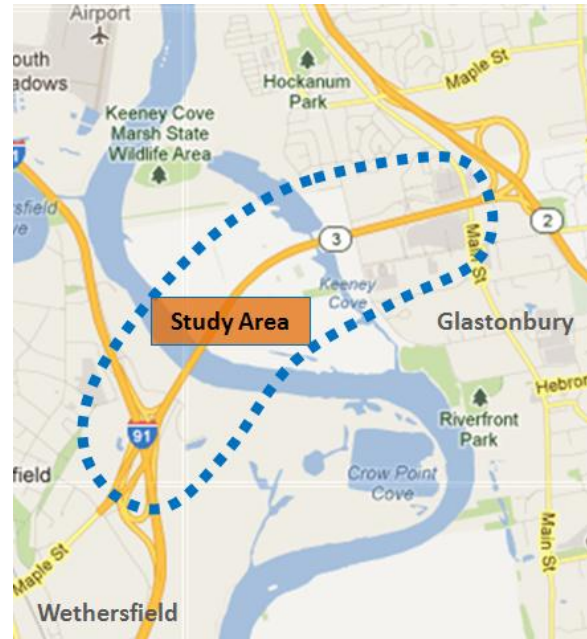


Figure ES-1. Study Area and Location Map

The findings and recommendations of this study are intended to provide a basis for subsequent design and implementation of the shared use path connections to the walkway.

Study Process

The study was completed by the Connecticut Department of Transportation (CTDOT) working in cooperation with an Advisory Committee comprised of local and regional stakeholders. Each phase of the study and the development of alternatives and recommendations was informed by stakeholder and public input through Advisory Committee meetings, agency coordination meetings, and a public information meeting conducted in June 2013. Study information was regularly updated and disseminated to the general public through CTDOT's website.

As shown in Figure ES-1, the overall study area generally includes 1.5 miles of the Route 3 corridor between I-91 Exit 25 in Wethersfield and Main Street in Glastonbury. From I-91 Exit 25, Route 3 crosses the Connecticut River via the 2,400-foot long Putnam Bridge, continues along an elevated embankment through environmentally-sensitive areas of the Meadows, crosses Keeney Cove, and intersects Route 2 at Exit 5D. As a limited-access highway, pedestrians, bicyclists, and other non-motorized travelers are prohibited from using the Route 3 corridor for commuter and recreational travel purposes. The future Putnam Bridge walkway with shared use path connections to local roadways will provide a new 1.3-mile multimodal link in the Route 3 corridor creating viable commuter and recreational travel options for non-motorists.

Path Termini

The shared use path connections will extend from the bridge walkway to termini at Great Meadow Road in Wethersfield and Naubuc Avenue in Glastonbury. More specifically, the path will terminate in the northwest corner of the Great Meadow Road and Exit 25 off ramp intersection in Wethersfield, as shown in Figure ES-2, and the west side of Naubuc Avenue in the vicinity of Route 3 in Glastonbury, as shown in Figure ES-3. These termini were selected with consideration to the level of access, connectivity, and user safety that could be accommodated at each location.

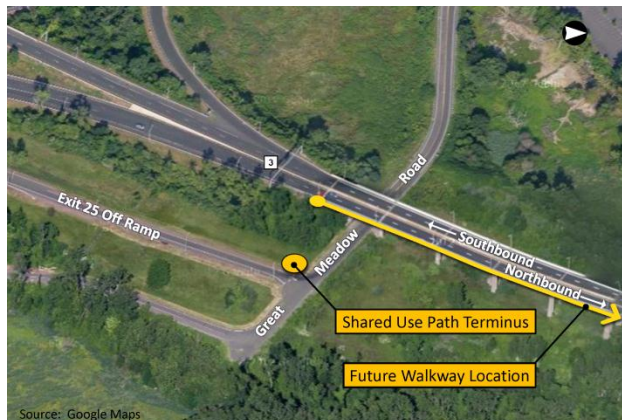


Figure ES-2. Wethersfield Path Terminus

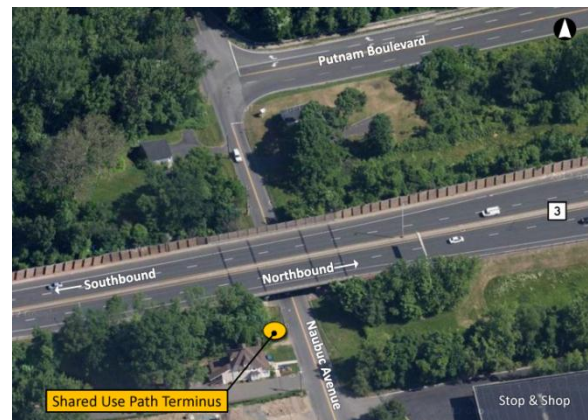


Figure ES-3. Glastonbury Path Terminus

Alternatives Assessment

The CTDOT study team assessed a variety of alternative shared use path connections to the new Putnam Bridge walkway, including four alternatives in Wethersfield and six alternatives in Glastonbury. These alternatives followed a set of established design parameters and satisfied the planning and design goals of the future path connections to varying degrees. The physical characteristics, impacts, and costs associated with each alternative were evaluated by the CTDOT study team and Advisory Committee and were comparatively assessed to select one favorable alternative each in Wethersfield and Glastonbury. The favorable alternatives were presented at a public information meeting in June 2013 for public review and comment, and subsequently formed the basis of the shared use path recommendations.

Recommendations

The recommendations include 4,750 feet of new shared use path connecting the Putnam Bridge walkway to Great Meadow Road in Wethersfield and Naubuc Avenue in Glastonbury. The recommendations also include intersecting roadway improvements, new parking accommodations, and improvements on the adjoining roadway network that will enhance safety, provide multimodal connectivity, and support non-motorized travel demands and recreational use of the Route 3 corridor.

Planning and Design Goals

The planning and design goals for the future shared use path connections to the Putnam Bridge walkway include:

- 1) maximizing utility for both transportation and recreational users;
- 2) minimizing impacts to the path surroundings; and
- 3) facilitating implementation of the path connections and associated improvement recommendations.

Common Recommendations

There are several recommendations that are common to the shared use path connections in both Wethersfield and Glastonbury. These recommendations relate to features of the path surface, railing, and lighting as described in the following paragraphs.

Path Surface. The recommended shared use path surface is bituminous concrete pavement, consistent with the current design guidelines and preferences of CTDOT and AASHTO. The benefits of a bituminous concrete pavement surface, compared to an alternative stabilized aggregate surface, include:

- Higher level of service with better traction, smoother surface, and less rolling resistance for wheeled users (including bicyclists, inline skaters, strollers, and wheelchair users).
- Better durability and less need for surface repairs due to rain washouts and flooding.
- Ease of winter maintenance and plowing for year-round travel purposes.

As shown in Figure ES-4, the recommended width of the paved path is 10 feet. The recommended overall width of the path is 14 feet, which includes the 10-foot wide paved surface, a 3-foot wide aggregate shoulder on one side, and a 1-foot wide aggregate strip between the paved surface and railing on the other side. These dimensions are consistent with minimum design standards to minimize the potential environmental impacts and construction costs of the path connections, yet provide adequate space for a variety of user groups.

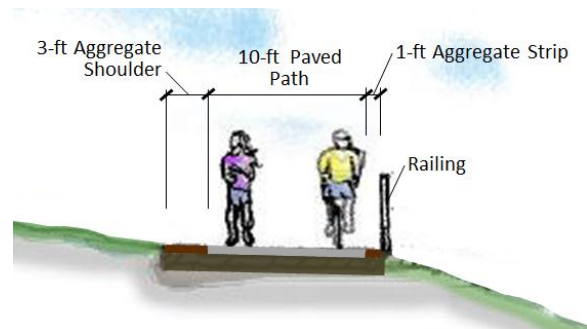
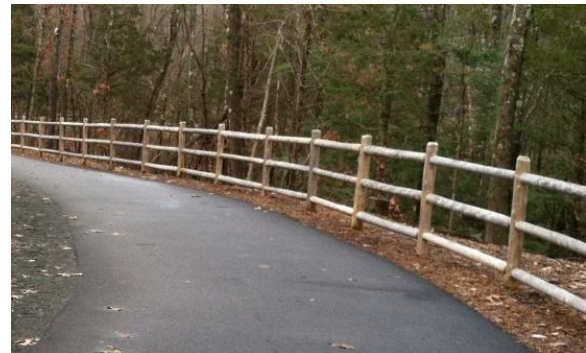


Figure ES-4. Recommended Shared Use Path Configuration

Railing. A bicycle-safe railing (at least 42 inches high) is recommended wherever a steep embankment slope, drop off, or other hazard is located adjacent to the shared use path surface. The type of railing used throughout the project corridor will be determined during subsequent project phases. For the purposes of this study, railing is assumed to be constructed of cedar or pressure-treated wood posts and rails, similar in appearance to the wooden railing along the Smith School Greenway in Glastonbury (see image at right).



Wooden railing along Smith School Greenway

Lighting. Adequate lighting along the shared use path connections is recommended to maximize the potential transportation utility of the corridor, particularly from late fall to early spring when peak commuting periods are during hours of darkness, and to enhance safety and security in key locations such as path termini, street intersections and rest areas. A detailed lighting plan will be developed during subsequent project phases to determine the extent of lighting, spacing and height of fixtures, and fixture types that will provide adequate lighting levels both along the path connections and in key locations. For the purposes of this study, lighting is considered a recommended design feature of the path connections and is accounted for in the construction cost estimate on a per-foot cost basis.

Wethersfield Recommendations

The Wethersfield recommendations, illustrated in Figure ES-5, generally include a new 650-foot long shared use path, Great Meadow Road improvements, and new parking accommodations for path users. Specific details include:

Shared Use Path

- Construct a new 650-foot long shared use path to connect Great Meadow Road to the Putnam Bridge walkway. Locate the terminus at the northwest corner of the intersection of Great Meadow Road and the I-91 Exit 25 off ramp.
- Construct the path on new embankment utilizing a maximum longitudinal grade of 5% to transition from the terminus elevation to the walkway. The maximum embankment height will be approximately 22 feet above the existing ground. Utilize 2:1 (horizontal:vertical) embankment slopes to minimize the footprint of the path.
- As illustrated in Figure ES-5, utilize a retaining wall along the southwestern section of the path to prevent direct impacts to existing wetlands. It is assumed that a segmental block wall will be used.
- Widen the path in the vicinity of the bridge to accommodate a vehicle turnaround area. Maintenance and emergency vehicles will be prohibited from driving onto the bridge walkway.
- Provide user amenities (such as benches, a bike rack, trash receptacles, and informational signs) within the turnaround area to dually serve as a user rest area.
- Provide railing along both sides of the path for most of its length. Adjacent to Route 3, provide concrete barrier with fencing mounted along the top of the barrier to protect path users from vehicular traffic. This barrier will connect to existing metal beam guide railing on the western end and will be continuous with barrier on the Putnam Bridge on the eastern end.
- Install lighting along the path to promote user safety and security during darkness.
- Provide vegetative screening near the western limit of the path to obscure path activity from motorists and minimize visual distractions.
- Install signage and pavement markings along the path to communicate path conditions, provide user information, and enhance user safety.
- Provide user amenities and aesthetic enhancements (such as benches, a bike rack, trash receptacles, gateway signage, and landscaping) at the path terminus.
- Install bollards to prevent unauthorized motor vehicle access to the path. Bollards can be equipped with locks to allow access by maintenance forces and emergency responders.

Summary of Impacts | Wethersfield

Environmental: There are no impacts to the 100-year floodplain or wetlands anticipated with the Wethersfield recommendations.

Property: The recommendations are located entirely within State right-of-way; no private property impacts are anticipated.

Utilities: No significant overhead or subsurface utility impacts are anticipated based on known utility locations in the project area.

Infrastructure: Minor modification of the existing overhead sign structure (located within the path surface in the turnaround and rest area), lighting, and drainage will be required.



Great Meadow Road Improvements

- Provide improvements at the Exit 25 off ramp intersection to enhance user safety and promote motorist awareness of pedestrian and bicycle activity at this location. Specific improvement recommendations include: reducing corner radii at the end of the ramp to reduce the crossing distance and to encourage slower vehicular turning speeds from the ramp; and providing crosswalk markings across the end of the ramp and Great Meadow Road to connect the path terminus to the existing shoulders.
- Construct sidewalk ramps on the southern side of the Exit 25 off ramp and the eastern side of Great Meadow Road at the intersection to accommodate new crossings at this location.
- Install pedestrian/bicycle warning signs and new bicycle guide signs on Great Meadow Road in the vicinity of the path. Guide signs should include a new destination sign with a direction arrow and distance to Glastonbury.



Sample recommended bicycle guide sign.

Parking Accommodations

- Construct a new off-street parking lot located on the eastern side of Great Meadow Road and just south of the Putnam Bridge. Provide approximately 10 parking spaces.
- Incorporate green infrastructure design features, where feasible, to mitigate potential impacts of storm water runoff on the adjacent river habitat. Pervious pavement, vegetated swales, and/or bioretention basins could be considered to encourage infiltration and improve water quality.
- Provide pedestrian access to the shared use path via a sidewalk at the south end of the lot connecting to the intersection and new crosswalk.
- Provide vehicular access to the lot via a driveway at the north end. This driveway location will separate vehicular activity from user activity near the path terminus. It is anticipated that this driveway could also provide access to a future boat launch on the Connecticut River in this area. As such, the parking lot should be designed to easily accommodate this access in the future.

Glastonbury Recommendations

The Glastonbury recommendations, illustrated in Figure ES-6, generally include a new 4,100-foot long shared use path, Naubuc Avenue improvements, and new parking accommodations for path users. Specific details include:

Shared Use Path

- Construct a new 4,100-foot long shared use path to connect Naubuc Avenue to the Putnam Bridge walkway. Locate the terminus on the west side of Naubuc Avenue just south of Route 3.
- Construct approximately 900 feet of the path nearest the bridge on new embankment placed on the existing embankment. Provide up to 50 feet of separation between Route 3 traffic and the path along this section. New embankment fill will not impact the 100-year floodplain in this area.
- Construct approximately 2,900 feet of the path either partially or entirely within the side of the existing embankment by installing a retaining wall and excavating material in front of the wall to create the path. Provide a minimum of 20 feet (with an average of 24 feet) separation between Route 3 traffic and the path. The retaining wall is assumed to be a sheet piling retaining wall; the typical height will be approximately 6 feet. This section of the path is located within the 100-year floodplain and will require some fill placed below the 100-year flood elevation.





ROW
(State of CT)

24-ft Separation (Average)

Retaining Wall
(Route 3 Side of Path)

3

B

100-Year
Floodplain

Drainage Modifications
along Route 3

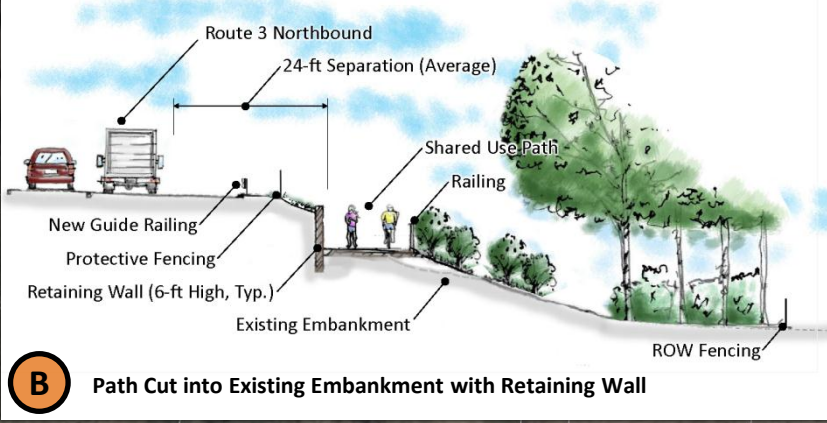
Approximate
Slope Limit

Bicycle-safe Railing

Retain Overhead
Sign Support

Wetland
Boundary

ROW
(State of CT)





Shared Use Path (continued)

- Construct approximately 300 feet of the path nearest Naubuc Avenue on new embankment placed on the existing embankment. Provide up to 48 feet of separation between Route 3 traffic and the path along this section. This section of the path is generally located outside of the 100-year floodplain, but could result in some fill placed below the 100-year flood elevation.
- Utilize a maximum longitudinal grade of 5% along the path. The steepest grade is 5% for approximately 700 feet east of the bridge walkway. Approximately 50% of the path is level.
- Maintain a minimum path elevation of 22 feet, the 10-year flood elevation. The location of the path at or above the 10-year flood elevation provides less than a 10% probability of the path being flooded in any given year.
- Utilize 2:1 (horizontal:vertical) embankment slopes along the south side of the path to minimize the footprint of the path, resulting in the minimum area of potential wetland impacts.
- Widen the path in the vicinity of the bridge to accommodate a vehicle turnaround area. Maintenance and emergency vehicles will be prohibited from driving onto the bridge walkway.
- As illustrated in Figure ES-7, provide user amenities and aesthetic enhancements (such as benches, a bike rack, trash receptacles, an overlook location, information signage or kiosk, and textured/colored pavement) within the turnaround area to dually serve as a rest area for path users.

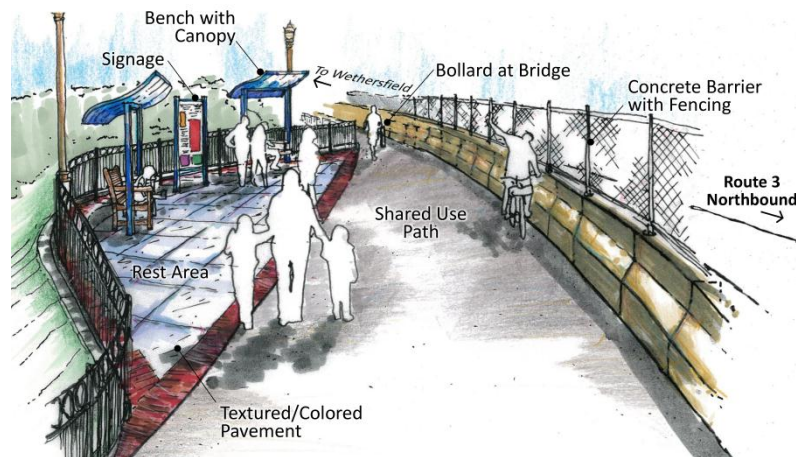


Figure ES-7. Recommended Rest Area and Maintenance Vehicle Turnaround Area (Looking West toward Putnam Bridge)

- Adjacent to the turnaround area, provide concrete barrier with fencing mounted along the top of the barrier to protect path users from vehicular traffic. This barrier will be continuous with the barrier on the Putnam Bridge on the western end and will transition to new metal beam guide railing along Route 3. Rub rail may be required. The installation of new guide railing meeting current crash standards is recommended for the entire length of the path to enhance user safety. All design requirements will be further defined during subsequent project phases.
- Provide bicycle-safe railing along south side of the path for its entire length to protect users from steep embankment slopes. Provide protective chain link fencing along the north side of the path for its entire length to protect users from unsafe entry onto Route 3. Provide low-maintenance plantings along the fence to screen the view of the roadway and to shield users from roadside debris and litter.

Shared Use Path (continued)

- Install lighting along the path to promote user safety and security during darkness.
- Install signage and pavement markings along the path to communicate path conditions, provide user information, and enhance user safety.
- Provide user amenities and aesthetic enhancements (such as benches, bike storage, trash receptacles, gateway signage, and landscaping) at the path terminus. Install bollards to prevent unauthorized motor vehicle access to the path. Equip bollards with locks to allow access by maintenance forces and emergency responders.
- Repair existing right-of-way (ROW) fencing or install new fencing to deter users from trespassing on adjacent private property and farmlands throughout the project corridor.
- Install earth retaining structures over the existing Keeney Cove culvert to accommodate the path.

Naubuc Avenue Improvements

- Install new 5-foot wide sidewalk with new concrete curb and 3-foot wide buffer strip on the east side of Naubuc Avenue between Glastonbury Boulevard and Putnam Boulevard. Provide short retaining walls or back-curb where necessary to minimize grading impacts.
- Install a new mid-block crosswalk and associated sidewalk ramps and pedestrian warning signs to connect the path to the street and new sidewalk.
- Install new 5-foot wide sidewalk with new concrete curb and 3-foot wide buffer strip (in most areas) on the west side of Naubuc Avenue to interconnect existing segments of sidewalk, the path terminus, and new and recommended pedestrian facilities at the Glastonbury Boulevard and Putnam Boulevard intersections. Retain the existing stone masonry wall just north of the Glastonbury Boulevard intersection by locating the new sidewalk behind the wall on new embankment.

Summary of Impacts | Glastonbury

100-Year Floodplain: Approximately 950 cubic yards of fill will be placed in the 100-year floodplain. With excavation for compensatory flood storage there is anticipated to be no net increase in the amount of fill material in the floodplain.

Wetlands: Existing wetland mapping shows that direct impacts to flagged wetland areas (including State, Federal, and tidal wetlands) will generally be minor.

Property: The shared use path is located entirely within State-owned right-of-way for Route 3 resulting in no anticipated property impacts for the path. The installation of new sidewalk on Naubuc Avenue could impact a narrow strip of land on up to nine properties.

Utilities: The installation of concrete barrier and drainage modifications on Route 3 could require relocation of existing electrical conduits and cables for the existing light fixtures in some limited areas.

The installation of new sidewalk on Naubuc Avenue could require the relocation of several utility poles and associated overhead utility lines and relocation of up to two fire hydrants.

Infrastructure: There are approximately 11 existing outlet pipes for catch basins along northbound Route 3 that will be impacted by construction of the path and will require significant modification or replacement. There are approximately 10 existing catch basins on Naubuc Avenue that will require minor modification.

Naubuc Avenue Improvements (continued)

- Provide minor intersection improvements at the Putnam Boulevard intersection to enhance pedestrian safety.
- Provide pedestrian signalization improvements and consider exclusive pedestrian phasing at the Glastonbury Boulevard intersection.

Parking Accommodations

- Construct a new off-street parking lot located on the eastern side of Naubuc Avenue opposite the path terminus and in State-owned right-of-way just south of Route 3. Provide approximately 10 parking spaces.
- Incorporate green infrastructure design features, where feasible, to mitigate potential impacts of storm water runoff from the lot. Pervious pavement, vegetated swales, and/or bioretention basins could be considered to encourage infiltration, reduce runoff, and improve water quality.
- Provide pedestrian access to the shared use path via a sidewalk connection to the new sidewalk and mid-block crosswalk on Naubuc Avenue.
- Provide vehicular access to the lot via a driveway located directly opposite the existing commercial driveway on the western side of Naubuc Avenue.

Complementary Improvement Recommendations

The recommended shared use path connections to the Putnam Bridge walkway will create a new 1.3-mile facility over the Connecticut River for pedestrians and bicyclists traveling between Wethersfield and Glastonbury and points beyond. In order to support the long-term transportation and recreational viability of this facility, on-going and future planning efforts that provide for complementary safety and connectivity improvements to the surrounding transportation network will be necessary. Potential improvements for future implementation include:

- Revising the Heritage Way Bikeway Path route in Wethersfield to provide full two-way directionality between Great Meadow Road and Main Street and installing requisite bike route guide signs along the revised Heritage Way Bikeway Path route.
- Formalizing a designated on-road bike route connecting to the path terminus on Naubuc Avenue in Glastonbury and installing requisite guide signs along the route.
- Installing bike warning/"share-the-road" signage on the adjacent street networks.
- Restriping narrower 11-foot lanes and wider shoulders, or eliminating the existing white edge line in favor of providing a 14-foot shared-lane configuration with new "sharrow" markings on Putnam Boulevard and Glastonbury Boulevard.
- Widening Naubuc Avenue north of Route 3 to 28-feet or wider to provide a minimum 14-foot shared travel lane configuration and installing "sharrow" markings on Naubuc Avenue between Main Street and the East Hartford town line.
- Installing bicycle-safe grates on all catch basin inlets on Naubuc Avenue, Putnam Boulevard, and Glastonbury Boulevard.
- Installing sidewalk along Naubuc Avenue between Glastonbury Boulevard and Welles Street consistent with previous town plans.
- Providing a shared use path spur from the Route 3 corridor to future Goodwin College trail network improvements along the Connecticut River.

Estimated Project Costs

Table ES-1 summarizes the estimated project development and construction costs for the Wethersfield recommendations. As shown, the project total is \$1.40 million. No additional indeterminable costs are anticipated with the recommendations based on the current assessment of potential project impacts.

Table ES-1. Cost Summary | Wethersfield

Category	Estimated Cost
Project Development	\$130,000
Construction Contract (2018 \$)	\$980,000
Construction Engineering (2018 \$)	\$290,000
Project Total	\$1,400,000

Table ES-2 summarizes the estimated project development and construction costs for the Glastonbury recommendations. As shown, the project total is \$6.24 million, exclusive of additional costs for property acquisition, utility relocations, and environmental mitigation that are indeterminable at this phase.

Table ES-2. Cost Summary | Glastonbury

Category	Estimated Cost
Project Development	\$750,000
Construction Contract (2018 \$)	\$4,390,000
Construction Engineering (2018 \$)	\$1,100,000
Indeterminable Costs ¹	To be Determined (TBD)
Project Total	\$6,240,000 + TBD

¹ Indeterminable costs include property acquisition, utility relocation, and environmental mitigation costs.

Project Phasing Opportunities

With consideration to the overall cost of the recommendations, it would be possible to defer the implementation of some secondary components to later phases while still providing adequate connectivity between Great Meadow Road and Naubuc Avenue. The following secondary components of the Wethersfield and Glastonbury recommendations could be implemented under subsequent project phases:

- Parking accommodations on Great Meadow Road.
- Parking accommodations on Naubuc Avenue.
- Sidewalk improvements on the east side of Naubuc Avenue.
- Some user amenities and aesthetic enhancements.

The potential cost reductions associated with deferring these secondary components for implementation under subsequent project phases is approximately \$270,000 for Wethersfield and \$460,000 for Glastonbury, or approximately 10% of the \$7.64 million total project costs for all recommendations (as shown in Tables ES-1 and ES-2).

Implementation & Funding

CTDOT recognizes that implementation of the shared use path recommendations as a locally-administered project using state and federal funding sources is not viable given the estimated costs of implementation. As such, CTDOT is committed to providing access to the Putnam Bridge walkway, but the nature and extent of the access provisions and the timing of their implementation are to be determined by CTDOT in cooperation with local and regional stakeholders. Overall funding considerations will be key to the decision-making process. CTDOT has indicated the fundamental next step in the process is adopting the project recommendations into the regional Transportation Improvement Program (TIP) and Statewide TIP (STIP) to define potential funding sources.

As of the publication date of this document, it is not known whether the shared use path recommendations of this study will be implemented in whole or in part by CTDOT. If the recommendations are implemented in part by CTDOT, there will likely be opportunities for some improvements (such as the complementary improvements recommendations) to be implemented as locally-administered projects.

One or more funding sources could be utilized to provide the necessary capital for project development and construction of various shared use path recommendations. These sources could include traditional state and federal transportation funding programs to finance 80% or more of eligible project costs, and a variety of alternative public and private funding mechanisms to finance the balance (including the local match of up to 20% for federal-aid projects and any non-eligible or non-participating project costs).

Path Maintenance

On-going efforts to maintain the physical condition, appearance, safety, and overall function of the shared use paths will be required indefinitely once construction is complete. It is anticipated that maintenance responsibilities will likely be shared among several parties (including CTDOT, municipal forces, and volunteer groups), requiring a comprehensive maintenance plan and multiple maintenance agreements to define these responsibilities. The maintenance plan and maintenance agreements should be developed concurrently with project development and in-place prior to opening the shared use paths and associated parking accommodations to public use.

As owner of the facility, CTDOT should lead coordination efforts with the municipalities to ensure completion of following activities:

- Developing a comprehensive maintenance plan to define individual maintenance activities, the frequency of these activities, and the parties responsible for performing and financing these activities.
- Developing maintenance agreements between CTDOT and the municipalities to define respective maintenance roles, including performance and financial responsibilities.
- Developing maintenance agreements between the municipalities and volunteer groups to assign municipal activities to each volunteer group and to define financial responsibilities for any special equipment and materials required for these activities. As many activities as possible should be delegated to volunteers in order to lessen the municipal maintenance obligations.
- Preparing an estimate of labor, equipment, and materials costs for the municipal maintenance activities and including these costs in upcoming budget discussions and fiscal planning efforts.

1 | Introduction

In early 2013 construction began on the Route 3 Putnam Bridge rehabilitation project. Once complete, the project will provide a new walkway on the northbound side of the bridge to accommodate future bicycle and pedestrian travel in the Route 3 corridor. Because the scope of the rehabilitation project does not provide access to the new walkway from either end of the bridge, additional planning, design, and funding is required to provide this access in the future.

The purpose of the *Putnam Bridge Multimodal Trail Connections Feasibility Study* is to advance the planning work for this future bicycle and pedestrian access to the bridge and to evaluate how new multimodal/shared use path connections can be accommodated from the walkway to the network of existing and planned multimodal transportation and recreational facilities in Wethersfield and Glastonbury.

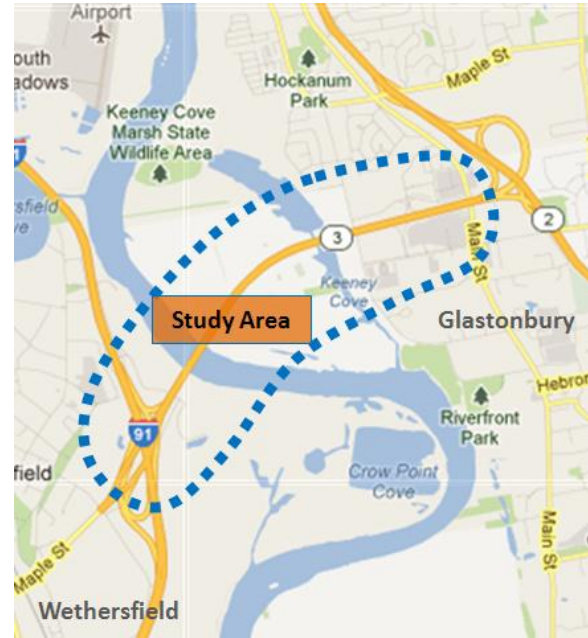


Figure 1-1. Study Area and Location Map

The findings and recommendations of this study are intended to provide a basis for subsequent design and implementation of the shared use path connections to the walkway.

As shown in Figure 1-1, the overall study area generally includes 1.5 miles of the Route 3 corridor between I-91 Exit 25 in Wethersfield and Main Street in Glastonbury.

A | Planning and Design Goals

The planning and design goals for the future path connections to the walkway are to: 1) maximize utility for both transportation and recreational users; 2) minimize impacts to the path surroundings; and 3) facilitate implementation of the path connections and associated improvement recommendations.

Maximize Transportation and Recreational Utility

The design of the path connections to the Putnam Bridge walkway should promote year-round use as a transportation and recreational facility by maximizing:

- **Accessibility.** Incorporate design standards and features that: accommodate a variety of users (bicyclists, pedestrians, joggers, skaters, etc.); provide ease of maintenance; and facilitate reliable passage throughout the year.
- **Connectivity.** Link the path to existing bicycle, pedestrian, and transit facilities; provide opportunities for future connectivity; and enhance access to other nearby community and recreational facilities.
- **Comfort and Security.** Create a comfortable user experience by mitigating the impacts of adjacent traffic (such as noise, road spray, headlight glare, etc.) and by providing design features (such as lighting, good visibility, etc.) to enhance user safety and minimize potential for crime and vandalism along the path and at its termini.

Minimize Impacts

The design of the path connections should be sensitive to the context of the surrounding area by minimizing or avoiding negative effects on:

- **Environmental Resources.** Minimize the direct and indirect impacts of the path on wetlands, floodplains, natural habitats, and other resources.
- **Private Property.** Minimize the need to acquire rights or land from private property owners and provide measures to deter trespassing.
- **Existing Infrastructure.** Avoid costly impacts to existing roadways, bridges, and utilities.

Facilitate Implementation

The planning and design processes should build community and agency support for the project, ultimately leading to its implementation, by addressing:

- **Community Needs and Priorities.** Respond to community input on the design and long-term functional aspects of the path.
- **Fiscal Constraints.** Provide cost-effective design solutions that reasonably satisfy the other project goals. Consider a variety of funding and implementation mechanisms for project components.
- **Agency Requirements.** Respond to regulatory agency input on the design and permitting requirements of the path to facilitate subsequent approval processes.

B | Study Process

The study was completed by the Connecticut Department of Transportation (CTDOT) working in cooperation with an Advisory Committee comprised of local and regional stakeholders. Each phase of the study (as illustrated in Figure 1-2) and the development of alternatives and recommendations was informed by stakeholder and public input through Advisory Committee meetings, agency coordination meetings, and a public information meeting. Study information was regularly updated and disseminated to the general public through CTDOT's website.

Summaries of the Advisory Committee meetings and public information meeting are provided in Appendix 1.

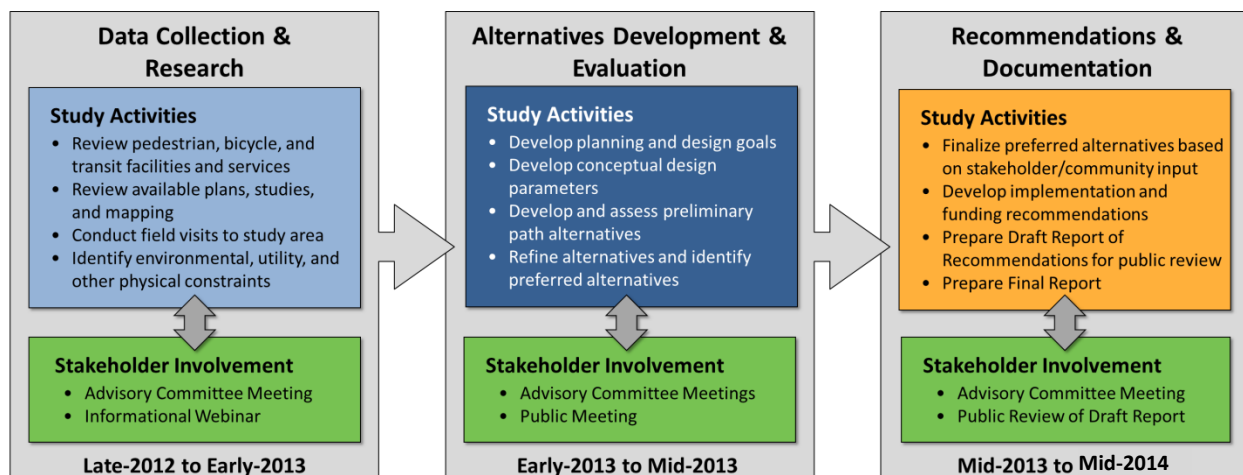


Figure 1-2. Study Process Diagram

C | Shared Use Path Overview

The path connections to the Putnam Bridge walkway are planned to be shared use paths (also known as multimodal or multiuse trails). By definition¹, a shared use path is:

- A bikeway physically separated from motorized vehicular traffic by an open space or barrier.
- Used by pedestrians, bicyclists, skaters, joggers, wheelchair users, and other non-motorized users.
- Most commonly designed for two-way travel.

The Putnam Bridge walkway itself, which is designed to be 6-feet 8-inches wide along most of its length, meets standards for a pedestrian facility but not standards for a shared use facility. As such, two-way traffic with cyclists will generally be accommodated by cyclists dismounting on the walkway approach and walking their bikes over the bridge.

Specific design standards for shared use paths are presented in Section 3.



Local examples of shared use paths along limited-access corridors similar to the Route 3 study area include: Top – Charter Oak Greenway in Manchester, CT; Bottom – Farmington Canal Trail in Hamden, CT.

¹ Guide for the Development of Bicycle Facilities 2012 – 4th Edition, American Association of State Highway Transportation Officials (AASHTO).

2 | Existing Conditions

Route 3 in the study area is a limited-access state highway that connects I-91 in Wethersfield to Route 2 in Glastonbury. From I-91 Exit 25, the highway crosses the Connecticut River via the 2,400-foot long Putnam Bridge, continues in a northeasterly direction along an elevated embankment through environmentally-sensitive areas of the Meadows, crosses Keeney Cove, and intersects Route 2 at Exit 5D. As a limited-access highway, pedestrians, bicyclists, and other non-motorized travelers are prohibited from using the Route 3 corridor for commuter and recreational travel purposes. Alternative connections over the Connecticut River for non-motorized travelers between Wethersfield and Glastonbury are indirect and include:

- Traveling north from the study area to Route 15, crossing the Charter Oak Bridge between Hartford and East Hartford, and traveling back south, approximately 8 miles total;
- Traveling south from the study area to Route 160, crossing the river via the seasonal ferry between Rocky Hill and Glastonbury, and traveling back north, approximately 11 miles total; and
- Traveling south from the study area to Route 17/Route 66, crossing the Arrigoni Bridge between Middletown and Portland, and traveling back north, approximately 26 miles total.



Great Meadow Road in Wethersfield is part of the Heritage Way Bikeway. Putnam Bridge is visible in the background.

The future Putnam Bridge walkway with shared use path connections to local roadways will provide a new 1.3-mile multimodal link in the Route 3 corridor creating viable commuter and recreational travel options for non-motorists. The degree to which the path connections will satisfy the primary goals of the project will in large part be a function of how this new multimodal link relates to the existing project area, particularly in terms of overall connectivity (to multimodal transportation facilities, recreational facilities, and other activity centers); effects on environmental resources; and impacts to properties and other infrastructure.

A | Multimodal Transportation Facilities

Access to the shared use path connections and Putnam Bridge walkway will be accommodated from local roadways in Wethersfield and Glastonbury. Ideally, the points of access and the local roadway connections to them will support safe and accessible bicycle and pedestrian travel and will facilitate enhanced intermodal connectivity between other multimodal transportation facilities in the area. This section includes details of:

- Local roadways serving the study area, including their suitability for accommodating multimodal connectivity.
- Statewide bicycle routes, transit services, and park and ride facilities that will support and complement the transportation utility of a new multimodal link in the Route 3 corridor.

Local Roadways

The study area begins west of the Connecticut River at I-91 Exit 25 in Wethersfield and ends at Main Street in Glastonbury. The local roadways serving this area are illustrated in the *Multimodal Transportation Facilities* map, Figure 2-2 (page 2-7), and are described in this section.

Great Meadow Road, Wethersfield

Great Meadow Road is a two-lane local roadway that runs approximately one-half mile south from I-91 Exit 26 and terminates at an unimproved local roadway in the Meadows (see Recreational Facilities for discussion on the *Meadows*). West of Exit 26, Great Meadow Road intersects Marsh Street, providing access to Old Wethersfield and Wethersfield town center. The I-91 Exit 25 off ramp intersects Great Meadow Road at a stop-controlled T-intersection just south of the Putnam Bridge and near the southern extent of the roadway.



Great Meadow Road, Wethersfield

Great Meadow Road is approximately 32-feet wide with 4-foot wide striped shoulders and 12-foot wide travel lanes. There are no sidewalks. The striped shoulders accommodate both on-roadway pedestrian and bicycle use. Great Meadow Road is a signed bike route and is part of the Wethersfield Heritage Way Bikeway (see Recreational Facilities for discussion on the *Heritage Way Bikeway*). The roadway is also part of the regional on-road bicycle network recommended by the Capitol Region Council of Governments (CRCOG). Observations of bicycle and pedestrian patterns on the roadway during several average weekdays in 2012 and 2013 generally revealed no activity in the study area.

Traffic volumes on Great Meadow Road are 3400 vehicles per day (vpd) within the Exit 26 interchange area and notably less further south.

Based on CTDOT's metrics for bicycle suitability, Great Meadow Road is considered *more suitable* for bicycling with a shoulder width of 4 feet and traffic of 3400 vpd or less.

Glastonbury Boulevard, Glastonbury

Glastonbury Boulevard is a four-lane collector and minor arterial roadway aligned parallel to and south of Route 3 that runs one-half mile east-west between Naubuc Avenue and Main Street. The roadway provides access between the northbound Route 3 ramps and commercial, office, and residential development in the area.



Glastonbury Boulevard, Glastonbury

Glastonbury Boulevard is approximately 72-feet wide with a 6-foot wide median, two 12-foot wide travel lanes in each direction, left turn lanes at intersections, and 1-foot wide striped shoulders. There are continuous 5-foot wide sidewalks on both sides of the roadway with crosswalks and sidewalk ramps provided at all of the intersecting roadways and commercial driveways. Pedestrian signals are provided at signalized intersections with Naubuc Avenue, Stop & Shop plaza driveway, Route 3 ramps/Somerset Square driveway, and Main Street. Bicycle travel cannot be accommodated in the narrow shoulders and is shared with the adjacent travel lanes. The roadway is part of the regional on-road bicycle network recommended by CRCOG.

Observations of bicycle and pedestrian patterns on the roadway during several average weekdays in 2012 and 2013 generally revealed no bicycle activity and low pedestrian activity that included walking for leisure, exercise, and transit access.

Traffic volumes on Glastonbury Boulevard range from 8700 vpd west of Route 3 ramps to 13,800 vpd east of Route 3 ramps.

Based on CTDOT's metrics for bicycle suitability, Glastonbury Boulevard is considered *less suitable* for bicycling with a shoulder width of 1 foot and traffic between 8700 and 13,800 vpd.

Putnam Boulevard, Glastonbury

Putnam Boulevard is a four-lane collector and minor arterial roadway aligned parallel to and north of Route 3 that runs one-half mile east-west between Naubuc Avenue and Main Street. The roadway provides access between the southbound Route 3 ramps and commercial, office, and residential development in the area.

Putnam Boulevard is approximately 52-feet wide with 12-foot wide travel lanes and 2-foot wide striped shoulders. There is a continuous 4 to 5-foot wide sidewalk on the north side of the roadway with crosswalks and sidewalk ramps provided at all of the intersecting roadways and commercial driveways. Pedestrian signals are provided at the signalized intersection with Main Street. Bicycle travel cannot be accommodated in the narrow shoulders and is shared with the adjacent travel lanes.



Putnam Boulevard, Glastonbury

Observations of bicycle and pedestrian patterns on the roadway during several average weekdays in 2012 and 2013 generally revealed low bicycle activity and no pedestrian activity.

Traffic volumes on Putnam Boulevard range from 8000 vpd west of Route 3 ramps to 9800 vpd east of Route 3 ramps.

Based on CTDOT's metrics for bicycle suitability, Putnam Boulevard is considered *less suitable* for bicycling with a shoulder width of 2 feet and traffic between 8000 and 9800 vpd.

Naubuc Avenue, Glastonbury

Naubuc Avenue is a two-lane minor arterial roadway that runs north-south between Glastonbury Boulevard and Putnam Boulevard in the study area. North of Putnam Boulevard, Naubuc Avenue continues into East Hartford, providing access to other local streets and residential neighborhoods. South of Glastonbury Boulevard, Naubuc Avenue continues south and east, providing access to residential development and numerous other local streets and community facilities before intersecting Main Street.



Naubuc Avenue, Glastonbury

Naubuc Avenue varies in width from approximately 30-foot wide or more south of Glastonbury Boulevard to 22-foot wide near Putnam Boulevard. There are no striped shoulders. There is a short section of sidewalk located along the west side just south of the Route 3 overpass that does not connect to sidewalk on Glastonbury Boulevard or Putnam Boulevard. Bicycle travel is shared with the adjacent travel lanes. The roadway is part of the regional on-road bicycle network recommended by CRCOG.

Observations of bicycle and pedestrian patterns on the roadway during several average weekdays in 2012 and 2013 generally revealed low bicycle activity and no pedestrian activity. However, a worn pedestrian path along the east side of the roadway shows evidence of regular pedestrian activity between the driveway for Stop & Shop loading docks and the CTTransit bus stop near Putnam Boulevard.

Traffic volumes on Naubuc Avenue range from 8300 vpd between Glastonbury Boulevard and Putnam Boulevard to 4600 vpd south of Glastonbury Boulevard and 3700 vpd north of Putnam Boulevard.

Based on CTDOT's metrics for bicycle suitability, Naubuc Avenue is considered *less suitable* for bicycling north of Glastonbury Boulevard to *more suitable* south of Glastonbury Boulevard given available shoulder widths (1 foot and 4 feet, respectively) and existing traffic volumes (8300 vpd and 4600 vpd, respectively).

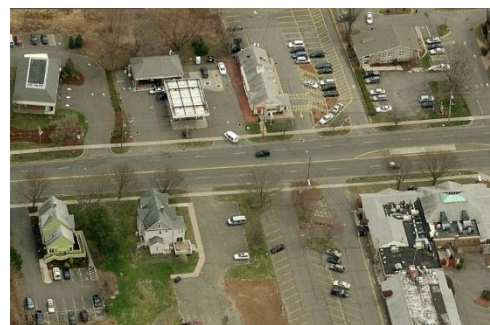
Main Street, Glastonbury

Main Street is a four-lane minor arterial roadway that runs north-south between Glastonbury Boulevard and Putnam Boulevard in the study area. North of Putnam Boulevard, Main Street continues into East Hartford, providing access to industrial (Pratt & Whitney), institutional (Goodwin College), commercial, and residential uses. South of Glastonbury Boulevard, Main Street continues past Naubuc Avenue (where the roadway becomes two lanes) to Route 17, providing access to commercial and residential uses, and Glastonbury Center.

Main Street is approximately 54-foot wide or more with 12-foot wide travel lanes and 2-foot wide striped shoulders in the study area. There is a continuous 4 to 5-foot wide sidewalk on both sides of the roadway with crosswalks and sidewalk ramps provided at all of the intersecting roadways and some commercial driveways. Pedestrian signals are provided at the signalized intersection with Glastonbury Boulevard and Putnam Boulevard. Bicycle travel cannot be accommodated in the narrow shoulders and



Top: Bicyclists on Naubuc Avenue.
Bottom: Worn pedestrian path to bus stop on Naubuc Avenue.



Aerial view of Main Street (Source: Bing)

is shared with the adjacent travel lanes. The roadway is designated a *priority maintenance road* for street sweeping and maintenance in Glastonbury's *Bicycle Master Plan* (updated March 2012).

Observations of bicycle and pedestrian patterns on the roadway during several average weekdays in 2012 and 2013 generally revealed low bicycle and pedestrian activity.

Traffic volumes on Main Street range from 12,700 vpd in East Hartford (just north of the town line) to 5800 vpd south of Hubbard Street and Glastonbury Center.

Based on CTDOT's metrics for bicycle suitability, Main Street is considered *less suitable* for bicycling in the study area and north of Naubuc Avenue to *more suitable* south of Naubuc Avenue, given available shoulder widths (2 and 4 feet, respectively) and traffic volumes (12,700 and 5800 vpd, respectively).

Statewide Bicycle Routes

As shown in Figure 2-1, there are no statewide bicycle routes that intersect the study area. However, sections of both Cross State Bicycle Route #4 and the East Coast Greenway are relatively proximate to the study area and are noteworthy with respect to potential connectivity between the Route 3 corridor and these regionally-significant bicycle routes.

- **Cross State Bicycle Route #4** extends 75 miles from Franklin to Bantam, Connecticut. A portion of the route runs through Glastonbury, south of the study area, along Main Street and Route 94 (Hebron Avenue). East-west connectivity along the route relies upon seasonal ferry service across the Connecticut River via Route 160 between Rocky Hill and Glastonbury. The closest point of access to Bicycle Route #4 from the study area is approximately 1.5 miles south via Naubuc Avenue, Welles Street, and Main Street in Glastonbury.
- **East Coast Greenway** runs along the eastern seaboard from Maine to Florida, with 198 miles of existing and proposed trail through Connecticut. The Greenway runs north of the study area through the town of East Hartford and along the Charter Oak Greenway in the I-384 corridor. The closest point of access to the Greenway from the study area is approximately 3 miles north via Naubuc Avenue in Glastonbury and Main Street in East Hartford.

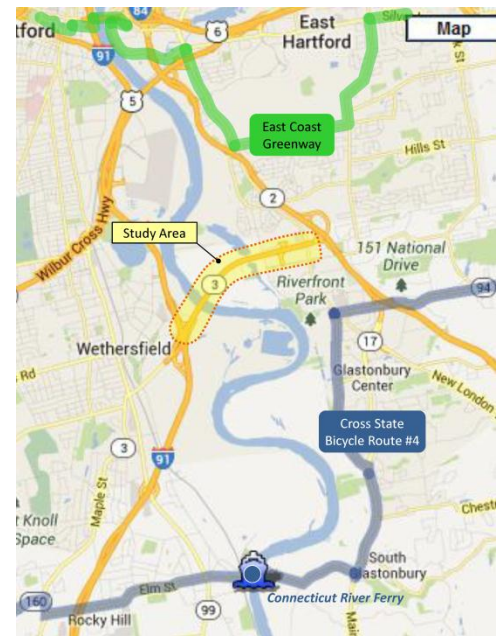


Figure 2-1. Statewide Bicycle Routes near Study Area

Transit Service

Connecticut Transit (CTTransit), a CTDOT-owned bus service, operates two routes with service to and from the study area and one additional route with service proximate to the study area. These routes, which are shown in Figure 2-2, will provide future multimodal travel opportunities for non-motorized travelers who choose to integrate bicycling or walking along the Route 3 corridor into longer multimodal trips for commuting, leisure, or other purposes.



All CTTransit buses are equipped with bike racks. (Source: Google)

- **Route 91 (Forbes Street Crosstown)** operates between Townline Road in Wethersfield and Buckland Hills in Manchester on weekdays and weekends. Route 91 uses Route 3 and sections of Putnam Boulevard, Naubuc Avenue, Glastonbury Boulevard, and Main Street in the study area and provides proximate transfer opportunities in Wethersfield to Routes 53 (Wethersfield Avenue) and 55 (Hartford/Middletown), and in Glastonbury to Route 95 (Glastonbury).
- **Route 95 (Glastonbury)** operates between Glastonbury Boulevard and Downtown Hartford on weekdays and weekends. Route 95 uses sections of Putnam Boulevard, Naubuc Avenue, Glastonbury Boulevard, and Main Street in the study area and provides proximate transfer opportunities in Glastonbury to Route 91 (Forbes Street Crosstown).
- **Route 53 (Wethersfield Avenue)** operates between Townline Road in Wethersfield and Downtown Hartford on weekdays and weekends. Route 53W provides service along Wells Street, Main Street, and State Street in Old Wethersfield, which is less than one mile from the study area.

The stops along these three CTTransit routes are shown in Figure 2-2. Several stops on Routes 91 and 95 are located along Glastonbury Boulevard, Naubuc Avenue, Putnam Boulevard, and Main Street in the study area. The stops in the study area are designated with bus stop signs. Shelters are provided in two locations including the park and ride lot on Main Street at Route 3 and just south of Glastonbury Boulevard. No other commuter amenities are provided.

Park and Ride Facilities







There are two commuter parking lots located in Glastonbury proximate to the study area. Both lots are adequately signed and are serviced by CTTransit. In conjunction with CTTransit service, these lots provide future multimodal travel opportunities for travelers who choose to integrate bicycling or walking along the Route 3 corridor into longer multimodal trips for commuting, leisure, or other purposes. The lots, which are shown in Figure 2-2, include:

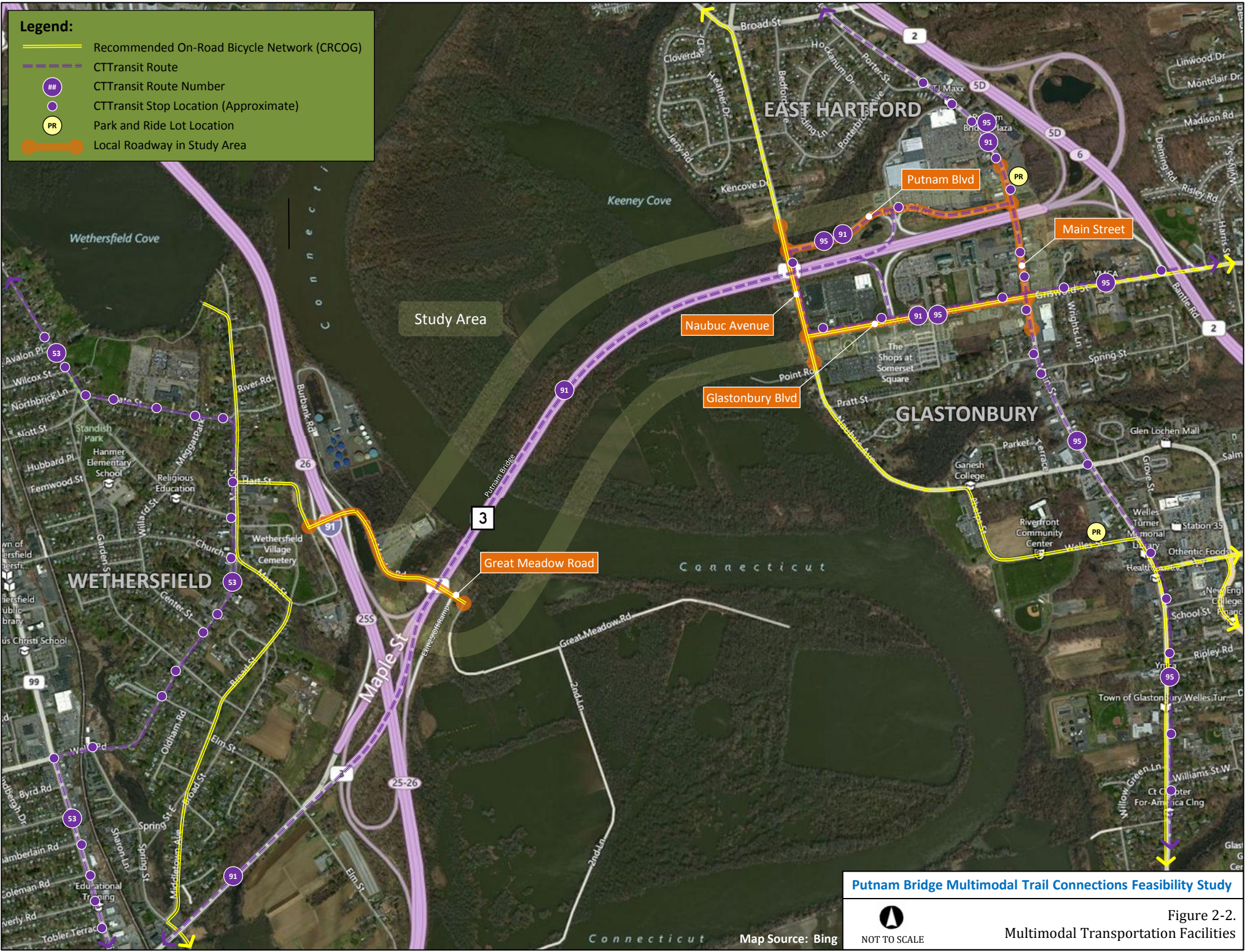
- **Main Street at Route 3 Lot**, located just north of Putnam Boulevard, provides over 300 parking spaces including 4 handicap-accessible spaces. Amenities include a bus shelter, lighting, telephone, access to CTTransit Express Bus and local bus service, and access to Easy Street® Route 1148 rideshare service to Springfield, Massachusetts. Sidewalk access is provided on Main Street. No bike racks or lockers are provided.
- **Main Street at St. Paul's Church**, located at the northwest corner of the Main Street and Welles Street intersection and accessible from both streets. This lot provides 165 parking spaces, including three handicap spaces. Amenities include a bus shelter, lighting, and access to CTTransit Express Bus and local bus service. Sidewalk access is provided from Main Street. No bike racks or lockers are provided.



Park and Ride Lot, Main Street at St. Paul's Church

Legend:

-  Recommended On-Road Bicycle Network (CRCOG)
-  CTTransit Route
-  CTTransit Route Number
-  CTTransit Stop Location (Approximate)
-  Park and Ride Lot Location
-  Local Roadway in Study Area



Putnam Bridge Multimodal Trail Connections Feasibility Study


NOT TO SCALE

Figure 2-2.
Multimodal Transportation Facilities

Map Source: Bing

B | Recreational Facilities

In addition to enhancing intermodal connectivity between multimodal transportation facilities in the area, the future Putnam Bridge walkway and shared use path connections will provide opportunities for enhanced connectivity between the Route 3 corridor and recreational facilities for non-motorized users.

Existing Facilities

Existing recreational facilities – such as trails, bikeways, nature and fishing areas, and parks – within reasonable distance of the Route 3 corridor (or approximately two miles from the study area) are illustrated in Figure 2-3 and include:

- Wethersfield Heritage Way Bikeway.** This bikeway is a 10 mile route that utilizes both on-road and off-road facilities throughout the Town of Wethersfield. The route connects many of the town’s parks, schools, and open spaces from the Connecticut River to the 1860 Reservoir. The bikeway runs below the Route 3 corridor into the Meadows in the study area.
- Standish Park.** This 10-acre park, located approximately 1.4 miles from the study area in Wethersfield, contains a baseball field, a basketball court, soccer field, football field, tennis courts and a playground. The park also contains a wheelchair-friendly community playground, featuring two accessible playscapes.
- Cove Park.** This 110-acre park, located approximately 1.2 miles from the study area in Wethersfield, contains Wethersfield Cove, boat launch, park grounds, T-ball fields, picnic areas, and soccer field.
- Glastonbury Walks Trails and Riverfront Park.** The Town of Glastonbury has over six miles of signed walking loops and multiuse paths located within 1.5 miles of the study area that traverse Riverfront Park and area sidewalk networks. Five loops ranging from 0.40 to 3.4 miles are located between Naubuc Avenue and Hubbard Street. Trail signs and parking areas are posted throughout the area. In addition to trails, Riverfront Park includes a lighted baseball field, lacrosse and soccer fields, and dog park.
- Keeney Cove.** Keeney Cove, located in Glastonbury, is generally used by locals for kayaking, fishing, and nature watching. The cove is fairly accessible by bicycle or foot (though there is no direct sidewalk access) from Naubuc Avenue via Point Road located just south of Glastonbury Boulevard in the study area. The Point Road bridge over the cove, although frequently inundated, provides access to the Richard Strong Memorial Open Space in the Great Meadows.
- The Great Meadows.** The Great Meadows, or *Meadows*, refers to approximately 4,000 acres of the Connecticut River floodplain located in Glastonbury, Wethersfield, and Rocky Hill. The Meadows are generally recognized as an ecological and agricultural resource more so than a recreational resource, though public access is available for low impact recreational activities via Great Meadow Road, Wethersfield and Point Road, Glastonbury. Typical recreational uses include bird watching, hiking, biking, and fishing. Unauthorized recreational uses on private lands are not encouraged and are a significant concern of local land owners and farmers.



- **Glastonbury Skate Park.** The skate park, located approximately 1.7 miles south of the study area behind the Glastonbury Town Hall offices on Main Street, provides skateboard and inline skater facilities and organized programs for a fee to residents and non-residents.
- **Hockanum Park.** Hockanum Park, located less than one mile north of the study area in East Hartford, covers approximately 16 acres and provides playground facilities, pool, tennis and basketball courts, and ball fields. The park is fairly accessible by bicycle from the study area via Naubuc Avenue and High Street.

Future Facilities

There are two notable recreational facilities that have been planned or otherwise considered within reasonable distance of the Route 3 corridor. These potential future facilities are illustrated in Figure 2-3 and include:

- **Goodwin College Trails.** Goodwin College in East Hartford has developed informal plans for improving a network of recreational trails from the college campus along the east side of the Connecticut River. The desire of the college is to connect this future trail network to the Putnam Bridge walkway and shared use paths in the Route 3 corridor.
- **Connecticut River Boat Launch.** Provisions for a future boat launch on the Connecticut River in Wethersfield were previously required by CTDEEP as part of any Putnam Bridge reconstruction project. Although no recent plans for a boat launch have been developed, the Town of Wethersfield has expressed a desire to coordinate access to the Putnam Bridge walkway with the potential for future access to a boat launch in the area of the bridge. It is anticipated that access to a boat launch would be provided from Great Meadow Road near the I-91 Exit 25 off ramp.

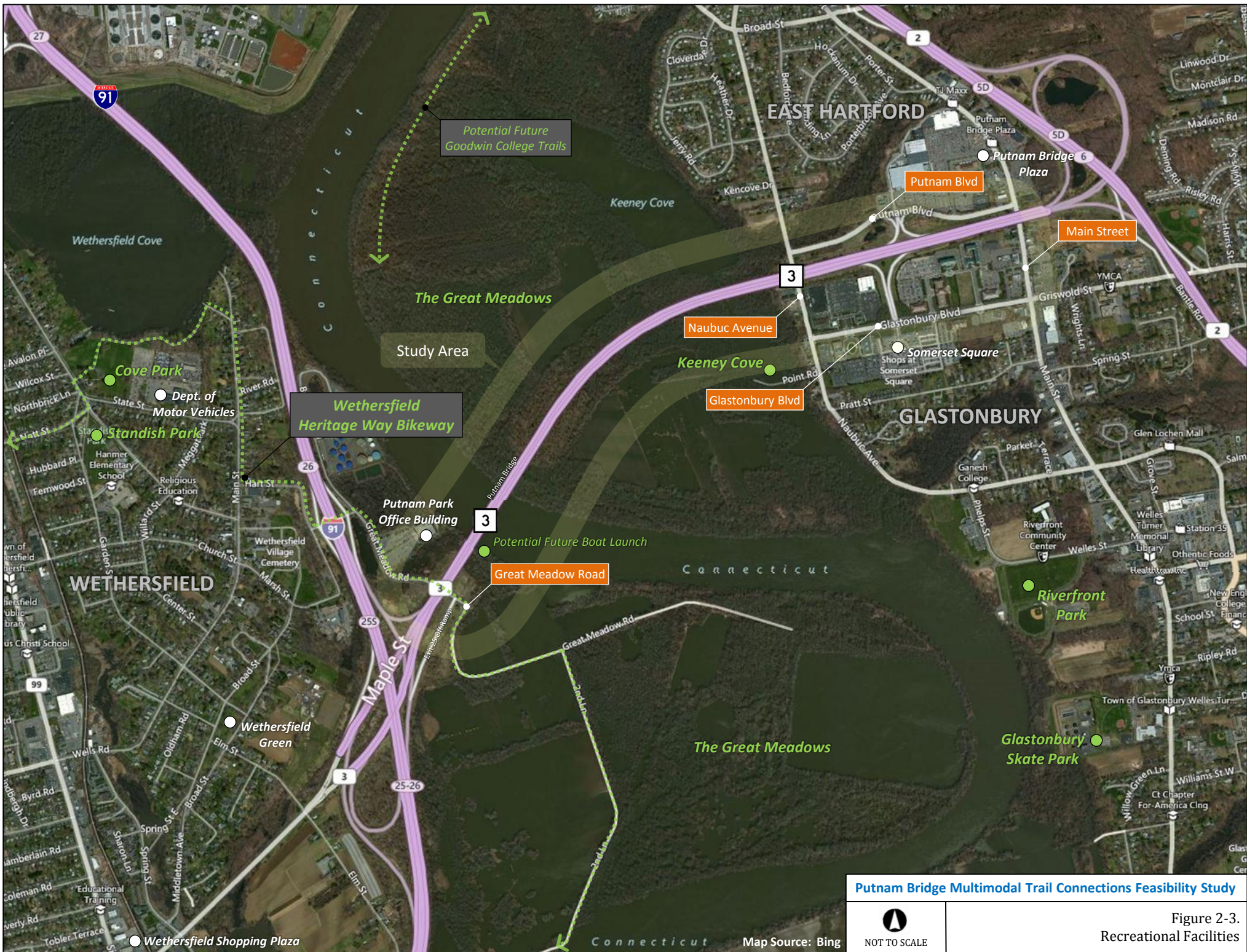
C | Other Local Activity Centers and Attractions

In addition to recreational facilities, the future Putnam Bridge walkway and shared use path connections will provide opportunities for enhanced connectivity between the Route 3 corridor and other local activity centers and attractions (such as major employment areas, office complexes, shopping centers, cultural attractions, community resources, etc.) for non-motorized residents, patrons, and employees in the area. Notable activity centers and attractions within reasonable bicycling distance of the Route 3 corridor (or approximately two miles from the study area) include:

- **In Wethersfield,** Putnam Park offices (Great Meadow Road); commercial strip on Silas Deane Highway; Historic Wethersfield; and Connecticut Department of Motor Vehicles (State Street).
- **In Glastonbury,** Shops at Somerset Square; Bank of America offices; office condominiums (Naubuc Avenue); two hotels; Putnam Bridge Plaza; the Town Center; and other retail shops, restaurants, and plazas on Main Street, Glastonbury Boulevard, and New London Turnpike.
- **In East Hartford,** Pratt & Whitney and Goodwin College (though the college is located just over 2 miles from the study area via Main Street and Riverside Drive).



Top: Connecticut DMV.
Bottom: Goodwin College
(Source: Google).



Putnam Bridge Multimodal Trail Connections Feasibility Study

Figure 2-3. Recreational Facilities

D | Environmental Resources

Environmental resources – including water resources, rare species, and historic and archaeological resources – were identified in the study area to understand where these resources could affect the location, configuration, and feasibility of shared use path connections to the Putnam Bridge walkway.

Water Resources

Water resources in the study area include watercourses, inland wetlands, and tidal wetlands. These are summarized in the following paragraphs and illustrated in Figures 2-4 and 2-5.

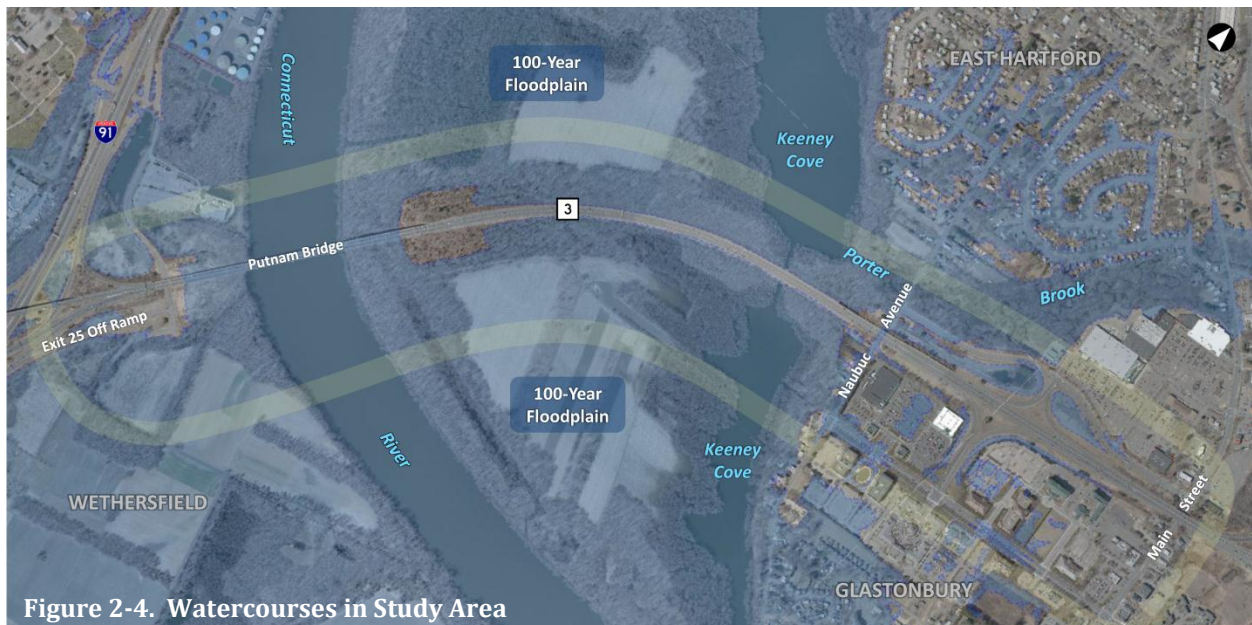


Figure 2-4. Watercourses in Study Area

Watercourses

- Connecticut River and Floodplain.** The Connecticut River and floodplain are prominent features of the study area. The river extends nearly 400 miles north into Massachusetts, Vermont, and New Hampshire and drains approximately 11,000 square miles; the size of the river and its drainage basin subject the area to seasonal flooding and occasional flooding due to significant rain events. The river is also tidally influenced in the study area.

The floodplain is over a mile wide and generally extends from the I-91 corridor on the west side of the river to Naubuc Avenue on the east side. The 100-year floodplain, shaded blue in Figure 2-4, is delineated by the Federal Emergency Management Agency (FEMA) and represents the area that has a 1% probability of flood inundation in a given year. The 100-year flood elevation in the study area is approximately 28 feet (NAVD 88). As shown in Figure 2-4, the entire area between I-91 and Naubuc Avenue is generally within the 100-year floodplain with the exception of a berm at the east end of the Putnam Bridge and the Route 3 roadway surface itself.

- Keeney Cove.** Keeney Cove extends two-thirds of a mile north and south of Route 3 on the Glastonbury side of the Connecticut River. The cove is fed by the river through an inlet located south of Route 3. Like the river in this area, cove waters are tidally influenced.
- Porter Brook.** Porter Brook outlets to Keeney Cove just north of Route 3 and west of Naubuc Avenue. Naubuc Avenue in the vicinity of Porter Brook is subject to flooding.



Figure 2-5. Wetlands in Study Area

Inland Wetlands

- Wetland Soils.** The Connecticut Inland Wetlands and Watercourse Act defines wetlands by soil type. Wetland soils include *poorly drained*, *very poorly drained*, and *alluvial and floodplain* soil classes. As shown in Figure 2-5, alluvial and floodplain soils are generally located throughout the project area between the Connecticut River and Naubuc Avenue. The wetland soils within the limits of the Route 3 embankment were previously disturbed by roadway construction; consequently, this embankment area is assumed to no longer consist of wetland soils. Connecticut inland wetlands are regulated by the respective inland wetland agency in each town.
- Federal Wetlands.** The Federal Clean Water Act defines wetlands based on soil characteristics, hydrophytic vegetation, and hydrology. For planning purposes, Federal wetlands are generically defined by the presence of hydric soils. As shown in Figure 2-5, hydric soils are generally located in the vicinity of Keeney Cove. Federal wetlands are regulated by the Army Corps of Engineers.
- Wetland Areas.** Specific wetland areas in the vicinity of the Putnam Bridge in Wethersfield and Glastonbury were identified in 2011 as part of the environmental report completed for the Putnam Bridge rehabilitation project. The wetland boundaries, which were flagged in the field by a certified soil scientist, are illustrated in Figure 2-5. In general, the wetland areas located west of Great Meadow Road are isolated infield areas of the I-91/Route 3 interchange that are supported by stormwater runoff from the roadways. The wetland area located between Great Meadow Road and the Connecticut River is a floodplain wetland consisting of natural alluvial soils and some areas disturbed by fill associated with construction of Route 3. The wetland areas located east of the river are floodplain wetlands supported by prolonged seasonal inundation during the spring. The wetland boundaries generally follow along the bottom of the Route 3 embankment.

Tidal Wetlands

- The Tidal Wetlands Act defines tidal wetlands by their current or former connection to tidal waters and their capacity to support certain wetland vegetation. As shown in Figure 2-5, tidal wetlands are located along the banks of Keeney Cove. Tidal wetlands are regulated by CTDEEP through the Office of Long Island Sound Programs (OLISP).

Rare Species

The National Diversity Data Base (NDDB) indicates that there may be State and Federal-listed species and significant natural communities in the study area. In 2011, CTDEEP identified the approximate location of a *Freshwater Tidal Marsh* plant community on the north side of Route 3 and just west of Keeney Cove. See Appendix 2 for NDDB area maps.

Historic and Archaeological Resources

CTDOT's Office of Environmental Planning completed a cursory review of potential historic and archaeological resources in the study area. CTDOT's initial findings are summarized as follows:

- No historic districts or properties are located in the study area; however, the National Register-listed historic districts of Old Wethersfield (in Wethersfield), Curtisville (in Glastonbury), and Naubuc Avenue-Broad Street (in East Hartford) are located just beyond the study area.
- The study area in Wethersfield is located within soils classified as *Udorthents-Urban Land Complex*. Soils in this area appear to have been heavily disturbed in the 1950s by interchange construction between Route 3 and I-91 and do not appear to be archaeologically sensitive. One known pre-contact archaeological site is located between Exit 25 and Exit 26, just beyond the study area boundary (see figure on page A4-4 of Appendix 4).
- A significant portion of the study area in Glastonbury is classified as *Limerick and Lim Soils* and *Saco Silt Loam*. Soils in this area do appear to be archaeologically sensitive, particularly beyond the limits of soils previously disturbed for the construction of Route 3 and other secondary roadways. Several known pre-contact archaeological sites are located near the study area boundary and immediately beyond the study area in Glastonbury (see figure on page A4-4 of Appendix 4).

A detailed review of the study area by the Connecticut State Historic Preservation Office (SHPO) will be required as study recommendations are implemented under subsequent project phases.

E | Physical Constraints

Similar to environmental resources, potential physical constraints – including existing roadway and bridge infrastructure, utilities and drainage, and public rights-of-way – were identified in the study area to understand where these constraints could affect the location, configuration, and feasibility of the shared use path connections to the Putnam Bridge walkway.

Roadway and Bridge Infrastructure

- Route 3 and Interchange Ramps.** As a limited-access highway with stringent requirements for lane widths, shoulder widths, and horizontal geometry, it was assumed that no significant modifications to Route 3 or its interchange ramps would be made to accommodate the shared use path connections. Overhead and roadside guide sign structures are located proximate to the edge of the Route 3 shoulder and could be obstructions to potential shared use path alignments. It is assumed that modification or relocation of these signs and sign supports is feasible.
- Keeney Cove Culvert.** Keeney Cove is conveyed under Route 3 via a double concrete box culvert. The construction plans for the culvert were obtained from CTDOT and it was determined that some minor modifications (not including lengthening or widening) of the structure are reasonably feasible to accommodate passage of a standard (minimum 10-foot wide) shared use path between Route 3 and the existing culvert headwall.
- Naubuc Avenue Overpass.** The Route 3 bridge over Naubuc Avenue in Glastonbury is a three-span structure with support piers located approximately 10 feet on either side of Naubuc Avenue. The existing bridge width is not sufficient to accommodate an adjacent shared use path crossing of Naubuc Avenue without significant widening. Additionally, the clear distance between the piers is approximately 50 feet, which is sufficient to accommodate minor widening of Naubuc Avenue under the bridge while maintaining sufficient space for standard sidewalk improvements (minimum 5-foot wide) on both sides of the roadway, if necessary.
- Point Road Bridge.** The Point Road bridge over Keeney Culvert in Glastonbury was determined to be unviable as part of a shared use path connection over the cove. The bridge is susceptible to inundation by cove waters during seasonal flooding and after significant rain events; this limits the accessibility of the path and creates potential safety concerns for users.



Overhead sign structure at western end of the Putnam Bridge



Keeney Cove Culvert



Route 3 bridge over Naubuc Avenue



Point Road bridge over Keeney Cove
(Source: Google)

Utilities and Drainage

The locations of overhead and underground utilities and drainage infrastructure along study area roadways were primarily determined through visual site investigations and available municipal GIS data for the planning purposes of this study. It is noted that additional survey and record plan research is required to confirm the location of these and other utilities for design purposes.

Existing utility and drainage infrastructure includes:

- **Along Route 3:** Underground electrical conduit along the outside edge of both shoulders serving existing roadway lighting; underground telecommunication conduit along the outside of the southbound shoulder; and drainage basins with outlet pipes to the existing embankment slopes on both sides of Route 3.
- **Along Great Meadow Road:** Drainage basins and pipes at the intersection of the I-91 Exit 25 off ramp and generally throughout its length; and sanitary sewer and water lines in the area of the Putnam Park office building and points north.
- **Along Naubuc Avenue:** Overhead utility lines and poles along the west side; water lines with hydrants in several locations on the east side; sanitary sewer lines with several manholes in and outside of the pavement; and drainage basins and pipes throughout.
- **Along Putnam Boulevard:** Drainage basins and pipes; and underground electrical conduit serving the traffic signal at Route 3 southbound ramps.
- **Along Glastonbury Boulevard:** Underground electrical and telecommunications conduits; roadway lighting; sanitary sewer lines; water lines with hydrants in several locations; and drainage basins and pipes throughout.

Public Rights-of-Way

Right-of-way (ROW) and property lines used for the planning purposes of this study were obtained from available municipal GIS and tax map data. It is noted that additional boundary survey and deed research is required to confirm these lines for design purposes. The ROW limits for Route 3 and local roadways in the study area are highlighted in Figure 2-6.

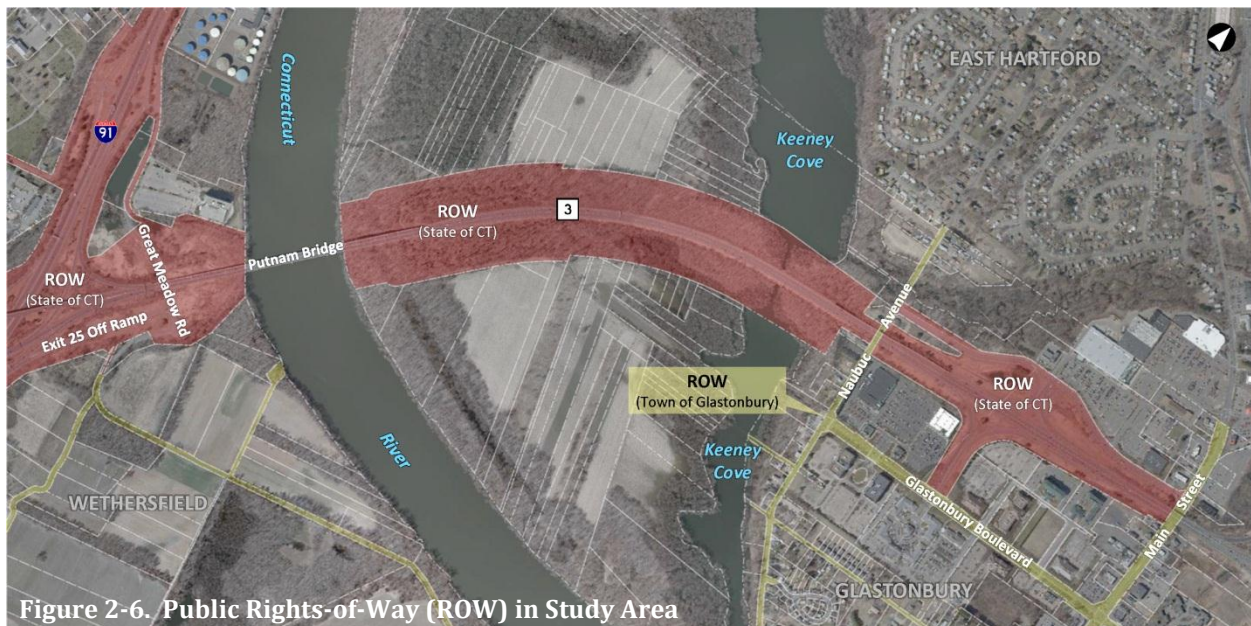


Figure 2-6. Public Rights-of-Way (ROW) in Study Area

3 | Alternatives Assessment

The CTDOT study team assessed a variety of alternative shared use path connections to the new Putnam Bridge walkway, including four alternatives in Wethersfield and six alternatives in Glastonbury. These alternatives followed a set of established design parameters and satisfied the planning and design goals of the future path connections to varying degrees. The physical characteristics, impacts, and costs associated with each alternative were evaluated by the CTDOT study team and Advisory Committee and were comparatively assessed to select one favorable alternative each in Wethersfield and Glastonbury. The favorable alternatives were presented at a public information meeting in June 2013 for public review and comment, and subsequently formed the basis of the shared use path recommendations presented in Section 4.

This section presents details of the alternatives assessment process, including definition of the design parameters, development of the preliminary alternatives, and selection of the favorable alternatives.

A | Design Parameters

The design parameters are generally the controlling physical factors within which the alternative shared use path configurations and alignments were developed for this study. The design parameters include design standards, the walkway location, and the path termini in Wethersfield and Glastonbury, as described in the following paragraphs.

Design Standards

Design standards for the shared use path connections define the physical and dimensional requirements for the connections based on design values prescribed in AASHTO's *Guide for the Development of Bicycle Facilities, 2012 – 4th Edition*. AASHTO's design guidance is the most current and is generally consistent with CTDOT's latest design guidance provided in the *2009 Connecticut Statewide Bicycle & Pedestrian Plan Update*. The design values for width, grade, and railing height, among other features are illustrated in Figure 3-1 and summarized in Table 3-1.

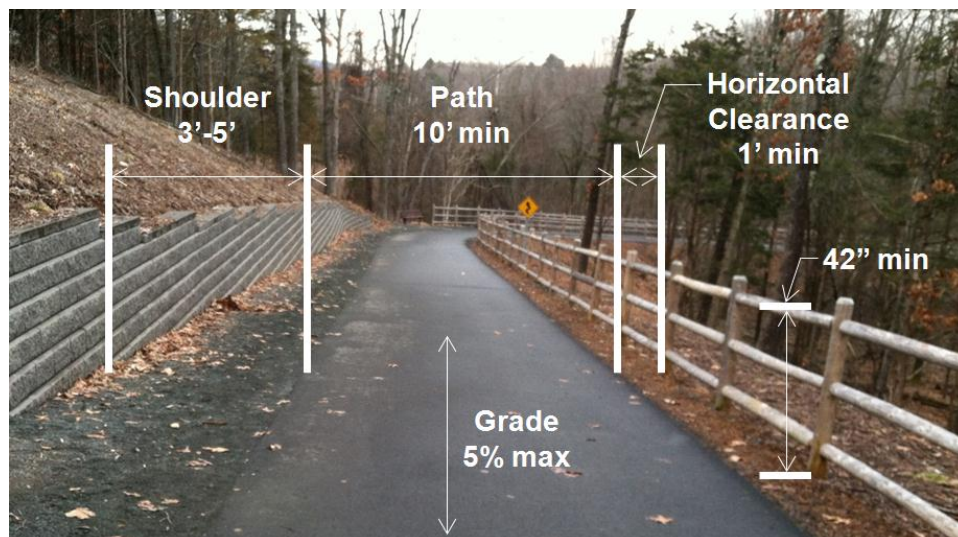


Figure 3-1. Representative Design Values (Smith School Greenway, Glastonbury)

Table 3-1. Design Standards

Design Element	Design Value ¹
Design Speed	18 mph for level terrain
Path Width ²	10 ft minimum
Shoulder Width	3 - 5 ft 5 ft desirable adjacent to 1:3 slope or steeper
Horizontal Clearance	2 ft minimum from lateral obstructions 1 ft minimum from railings (or "smooth" features)
Separation between Path and Roadway ³	5 ft minimum
Path Cross Slope ⁴	1.0% recommended, 2.0% maximum
Shoulder Cross Slope	1:6 maximum
Grade ⁵	5% maximum, or grade of adjacent roadway
Vertical Clearance	8 ft minimum, 10 ft desirable
Horizontal Curvature ⁶	60 ft minimum @ 18 mph design speed
Stopping Sight Distance ⁷	135 ft minimum @ 18 mph design speed
Pedestrian Accommodations	See Americans with Disabilities Act Accessibility Guidelines (ADAAG) and Proposed Accessibility Guidelines for Ped. Facilities in the Public Right-of-Way (PROWAG)
Railing Height ⁸	42 in minimum

¹ Source: American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities 2012 - 4th Edition.

² A reduced width of 8 ft may be used in rare circumstances such as: bicycle traffic is expected to be low, even on peak days or during peak hours; pedestrian use of the facility is not expected to be more than occasional; horizontal and vertical alignments provide frequent, well-designed passing and resting opportunities; the path will not be regularly subjected to maintenance vehicle loading conditions that would cause pavement edge damage; or the width is constrained by a physical feature over a short distance. An 11 ft path width is needed for passing in the same direction.

³ A physical barrier or railing should be provided between the path and roadway where the separation is less than 5 ft. Where shared use paths are adjacent to a high-speed highway, a separation greater than 5 ft is desirable. If greater separation cannot be provided, use of a crashworthy barrier should be considered.

⁴ Transition Rate: 1% in 5 ft

⁵ Exceptions:

Steeper than 1:20 (5%) But not Steeper than 1:12 - Maximum Length of Segment: 200 ft

Steeper than 1:12 But not Steeper than 1:10 - Maximum Length of Segment: 30 ft

Steeper than 1:10 But not Steeper than 1:8 - Maximum Length of Segment: 10 ft

* No more than 30% of the total length of a path shall have a running slope steeper than 1:12 (Access Board Trail Guidelines).

⁶ Radii at approaches to road crossings may be reduced to discourage high speed crossings.

⁷ Refer to AASHTO Guide for the Development of Bicycle Facilities 2012 - 4th Edition, for additional stopping sight distances based on grade and design speed.

⁸ A 48 in railing should be considered at locations such as bridge approaches where high-speed, steep angle impacts may occur between bicyclists and the railing, and on bridges.

Walkway Location

The shared use path connections in Wethersfield and Glastonbury will begin at the new Putnam Bridge walkway and will end at the local street network in each town. The begin point for the path connections is thereby defined by the future location of the walkway on the south side of the bridge, or alternatively described as the northbound side of Route 3 (see Figure 3-2). The south side walkway location was generally preferred over a north side location by CTDOT, the rehabilitation project designers, and other project stakeholders. Preference for the south side location is also supported by the findings of this study, with consideration given to snow removal and viewshed, as discussed here:

- Snow Removal.** The south side location provides better sun exposure, facilitating more effective natural snow melt. More specifically, the southwest-northeast orientation of the Putnam Bridge and the open rail design of the pedestrian railing on the walkway will receive longer duration and more direct sunlight during winter months when measurable snowfall in the area is most likely (November through March). Because the walkway design precludes the use of large snow removal equipment, natural snow melt will be the primary mechanism for snow removal on the walkway. The benefit of better sun exposure was therefore a controlling factor in selection of the walkway location on the south side of the bridge.
- Viewshed.** The potential viewsheds along the north side and south side of the bridge each have their own benefits; however these benefits subjectively offer no distinct advantage to one side over the other. Looking north from the north side of the bridge, scenic views include the Connecticut River, north end of the Meadows, and Hartford skyline; though, foreground views of the Putnam Park office building and petroleum storage tanks detract from these scenic views. Looking south from the south side of the bridge, scenic views would be dominated by the Connecticut River and the Meadows. It is noted that scenic views from both sides would generally be obscured or blocked by existing tree lines along the eastern third of the bridge.
- Conclusion.** Because there is no distinct advantage associated with the viewshed from either side of the bridge, the clear benefit of more effective natural snow melt provided on the south side supports the selection of the south side walkway location.



Figure 3-2. Future Walkway Location

Path Termini

The shared use path connections will extend from the bridge walkway to path termini at Great Meadow Road in Wethersfield and Naubuc Avenue in Glastonbury. These locations were selected with Advisory Committee input and with consideration given to the level of access, connectivity, and user safety that could be accommodated at each location.

Details of the path termini include:

- **Great Meadow Road, Wethersfield.** As shown in Figure 3-3, the path will terminate in the northwest corner of the Great Meadow Road and Exit 25 off ramp intersection. Benefits of this location include:

- Proximity to the south side of the bridge with opportunity to provide a relatively short path connection that potentially has limited impacts on the interchange area.
- Feasibility of pedestrian and bicyclist safety improvements at the intersection.
- Relatively low traffic volumes that will minimize potential conflicts with path users.
- Direct connectivity to the Wethersfield Heritage Way Bikeway.
- Ample space for nearby parking either on-street, or off-street in a new lot (see Figure 4-2 for location of potential off-street parking accommodations).
- Proximity to a potential future Connecticut River boat launch and access point from Great Meadow Road (see Figure 4-2 for location of potential river access point).



Figure 3-3. Wethersfield Path Terminus

- **Naubuc Avenue, Glastonbury.** As shown in Figure 3-4, the path will terminate on the west side of Naubuc Avenue in the vicinity of Route 3. Benefits of this location include:

- Proximity to the Route 3 corridor and associated State right-of-way (ROW) to minimize or avoid property impacts in the area.
- Opportunity for the shortest route between the walkway and the local street network.
- Direct access to the regional on-road bike network with convenient north-south connectivity.
- Unobstructed sight lines to and from the path terminus and mid-block crossing locations.
- Feasibility of sidewalk and roadway improvements that can enhance pedestrian and bicyclist access and safety.
- Sufficient space to accommodate convenient off-street parking within State ROW.
- Proximity to transit service via a bus stop just south of the intersection of Naubuc Avenue and Putnam Boulevard.
- Relative proximity to commercial and employment centers and recreational facilities (Keeney Cove, Riverfront Park).



Figure 3-4. Glastonbury Path Terminus

Two other potential path termini in Glastonbury were deliberated by the Advisory Committee and subsequently dismissed from further consideration as viable alternatives. These locations included:

- **Point Road at Naubuc Avenue, Glastonbury.** The apparent benefit of a terminus at this location would be utilization of the existing Point Road bridge to cross Keeney Cove. However, the primary reasons for eliminating Point Road included: 1) susceptibility of the bridge to inundation, significantly limiting the utility of the path, and 2) the need to acquire private property west of Keeney Cove to obtain access to the Point Road bridge from the Route 3 corridor.
- **Glastonbury Boulevard, Glastonbury.** This location would require the path to continue east of Naubuc Avenue along the Route 3 corridor (via a future bikeway over Naubuc Avenue or an at-grade crossing) and follow the northbound off ramp to a terminus at the signalized intersection of Glastonbury Boulevard. The potential benefits of a terminus at this location would be connectivity to existing sidewalks and transit service on Glastonbury Boulevard, signalized crossing opportunities, proximity to commercial and employment centers, and existing gateway features. However, the Advisory Committee generally concluded that: 1) these benefits would not outweigh the additional cost of continuing the path beyond Naubuc Avenue, and 2) a terminus at Naubuc Avenue would better accommodate potential commuters by providing more convenient access to points north and south via direct connectivity to Naubuc Avenue. It was also concluded that provisions for a path connection east of Naubuc Avenue, if desired in the future, could be provided under a separate project initiative.

B | Preliminary Alternatives Summary

The planning and design goals (described in Section 1.B) and design parameters (described in Section 3.A) were used as the basis for developing preliminary alternatives for the shared use path connections to the future Putnam Bridge walkway. These alternatives, which are summarized in the following subsections, provide varying degrees of transportation and recreational utility and a range of potential impacts and costs. The general limits of the preliminary alternatives are illustrated in Figure 3-5.

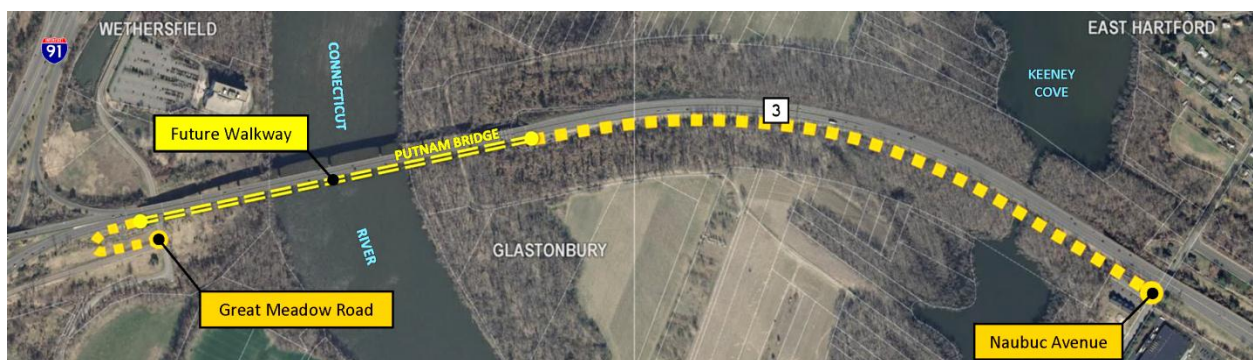


Figure 3-5. Limits of Preliminary Alternatives

Wethersfield Alternatives

Four path alternatives were developed to connect the Putnam Bridge walkway to the Great Meadow Road and I-91 Exit 25 off ramp intersection in Wethersfield. Alternatives 1, 2 and 3 were presented to the Advisory Committee in April 2013 for initial input. Based on this input, these alternatives were updated and presented with a fourth alternative – Alternative 3 (Modified) – to the Advisory Committee in May 2013. The details of each alternative, as they were defined in May 2013, are described in this section.

Alternative 1

Shown in Figure 3-6, Alternative 1 provides the most gradual transition in elevation from Great Meadow Road up to the walkway. Grades are 5% or less and the path curvature meets the design standards established for the project. The path is longer than the other alternatives to accommodate lesser grades and standard curvature, but this layout has wetland and floodplain impacts associated with it.

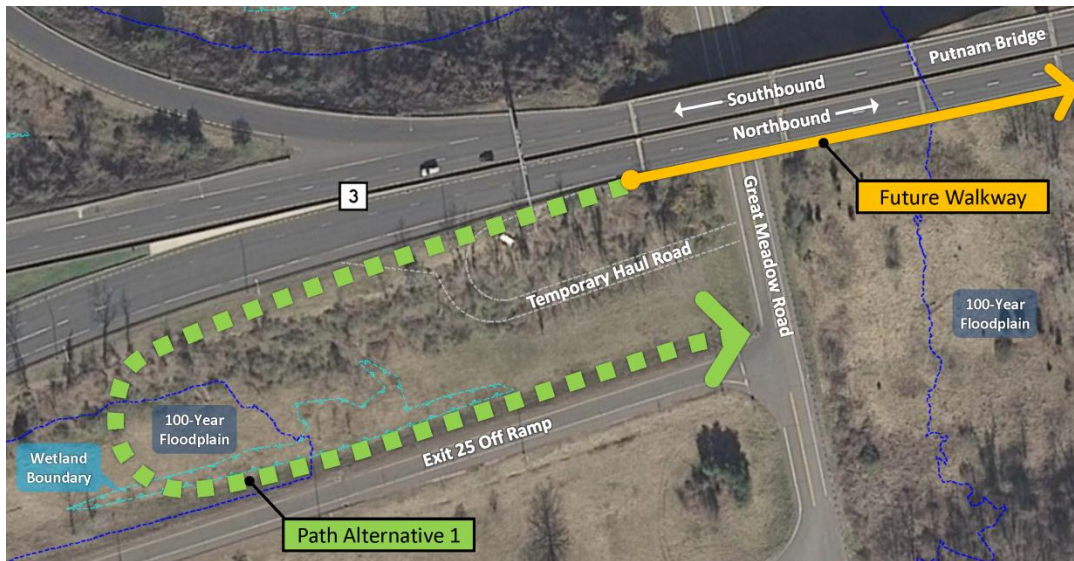


Figure 3-6. Wethersfield Alternative 1

Alternative 2

Shown in Figure 3-7, Alternative 2 provides the shortest connection between Great Meadow and the walkway, and is generally located within the limits of the temporary haul road that was constructed for the Putnam Bridge rehabilitation project. This location minimizes new clearing impacts in the project area, but requires sharper curvature (less than standard for an 18 mph design speed) and grades of 8% (for a distance of 200 feet). There are no wetland or floodplain impacts anticipated with this alternative.

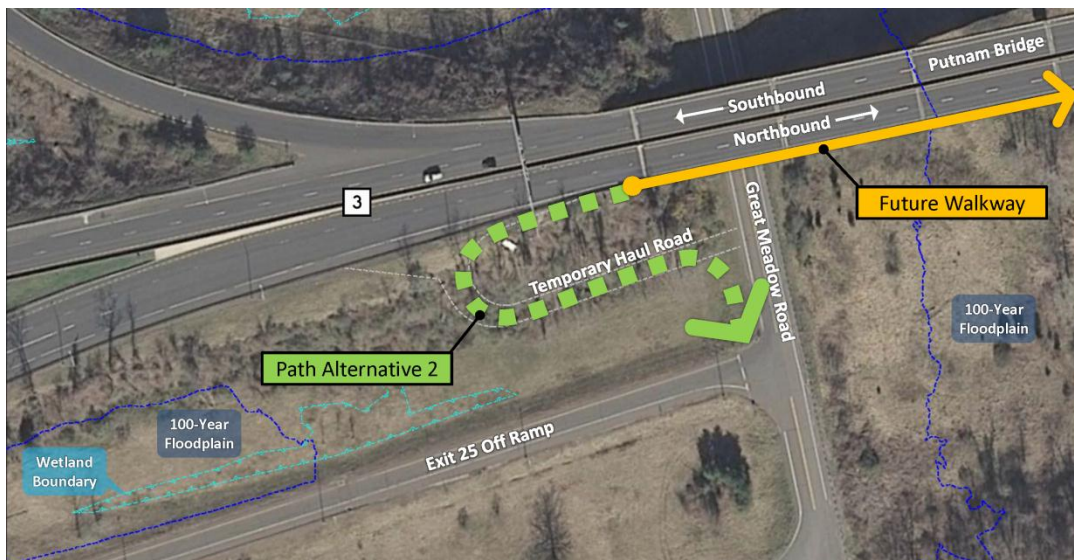


Figure 3-7. Wethersfield Alternative 2

Alternative 3

Shown in Figure 3-8, Alternative 3 provides an intermediate path location that maintains grades of 5% or less from Great Meadow Road up to the walkway. The path alignment incorporates the sharper curvature of Alternative 2 and is slightly longer, but avoids the floodplain impacts of Alternative 1 and minimizes potential wetland impacts.



Figure 3-8. Wethersfield Alternative 3

Alternative 3 (Modified)

Shown in Figure 3-9, Alternative 3 (Modified) is similar in alignment and grade to Alternative 3. However, this alternative incorporates a retaining wall along the southwestern edge of the path to reduce the limits of embankment and eliminate potential wetland impacts.

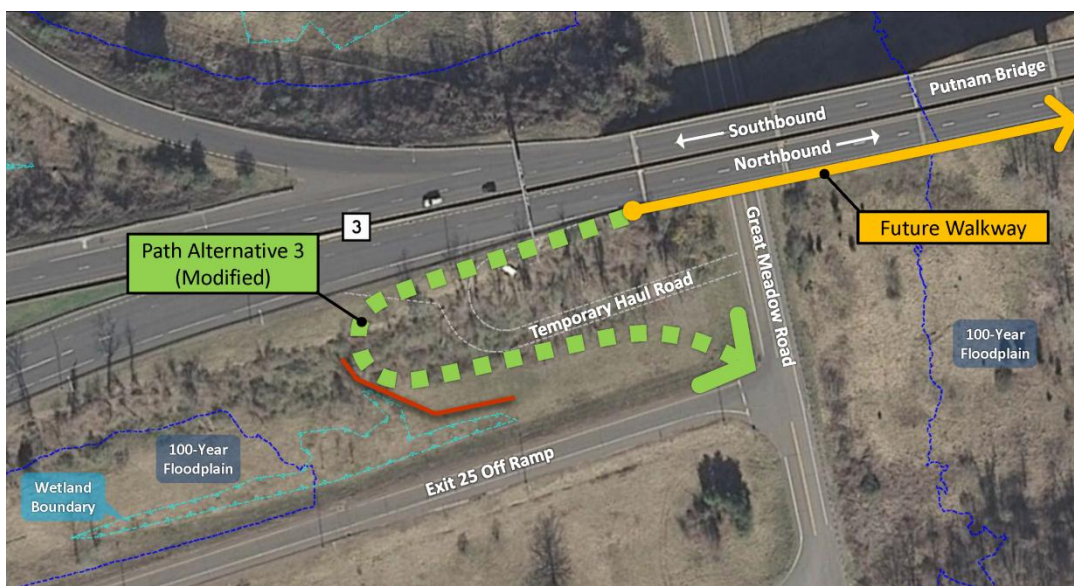


Figure 3-9. Wethersfield Alternative 3 (Modified)

Common Features

There are several design features that are common to each of the four preliminary Wethersfield alternatives. These include:

- **Intersection improvements at Great Meadow Road and Exit 25 Off Ramp.** These improvements consist of smaller corner radii to minimize vehicular turning speeds; and crosswalk markings across Great Meadow Road and the end of the ramp to connect the path terminus to the existing shoulders and to promote motorist awareness of pedestrian and bicycle activity at this location.
- **Parking Accommodations.** A variety of parking accommodations were initially discussed with the Advisory Committee including on-street and off-street locations in the vicinity of the path terminus. Based on input from CTDEEP and Town of Wethersfield committee representatives, the preferred parking accommodation is a new off-street lot located east of Great Meadow Road and just south of the Putnam Bridge (see Figure 4-2 for the location of the off-street parking accommodations). The new lot provides for convenient access for path users and could share access in the future with a boat launch on the Connecticut River in this area.
- **Rest Area and Turnaround at Walkway Entrance.** In order to accommodate motor vehicles on the path for maintenance and emergency purposes, a turnaround area must be provided near the bridge walkway (since the walkway design precludes vehicles from driving across the bridge). The turnaround area provides additional space that can dually serve a rest area with amenities for users (such as benches, an overlook location, trash receptacles, and an information kiosk).

Table 3-2 provides a summary of the preliminary Wethersfield alternatives. The table includes additional information about the general characteristics, potential impacts, order-of-magnitude construction costs, and other design considerations that were used by the Advisory Committee and CTDOT study team to comparatively assess the alternatives.

Table 3-2. Preliminary Wethersfield Alternatives Summary

	Preliminary Alternative			
	Alternative 1	Alternative 2	Alternative 3	Alternative 3 (Modified)
General Characteristics				
Total Length	1125 feet	510 feet	660 feet	650 feet
Maximum Grade	5%	8%	5%	5%
Geometric Constraints	None	Curve Radius < 60 ft	Curve Radius <60 ft	Curve Radius <60 ft
Environmental Considerations				
Wetland Impacts	4600 square feet	0	350 square feet	0
Within 100-year Floodplain Boundary?	Yes	No	No	No
Approx. Fill below 100-year Flood Elevation	450 cubic yards	0	0	0
Property Impacts				
Total Properties Impacted	0	0	0	0
Total ROW Needs (acres)	0	0	0	0
Other Considerations and Impacts				
Utilities	May require lighting relocation in vicinity of the bridge.	May require lighting relocation in vicinity of the bridge.	May require lighting relocation in vicinity of the bridge.	May require lighting relocation in vicinity of the bridge.
Structures	May require overhead sign structure modifications.	May require overhead sign structure modifications.	May require overhead sign structure modifications.	May require overhead sign structure modifications.
Miscellaneous	-	Path, which would be elevated near Great Meadow Road, could restrict sight distance for vehicles turning from off ramp.	-	-
Comparative Construction Costs¹				
Preliminary Cost Range	\$\$\$	\$	\$\$	\$\$\$\$

Note:

¹ Comparative construction cost estimates are based on estimates of major contract work items as determined for each of the preliminary alternatives as of May 2013. The costs are exclusive of wetland mitigation, utility relocation, and inflation costs.

Key:

\$: Cost of \$400,000 or less

\$\$: Cost between \$400,000 and \$500,000

\$\$\$: Cost between \$500,000 and \$600,000

\$\$\$\$: Cost of \$600,000 or greater

Glastonbury Alternatives

Six path alternatives were developed to connect the Putnam Bridge walkway to Naubuc Avenue in Glastonbury. Alternatives 1 through 5 were presented to the Advisory Committee in April 2013 for initial input. Based on this input, the alternatives were updated and presented with a new Alternative 6 to the Advisory Committee in May 2013. The details of each alternative, as they were defined in May 2013, are described in this section. The general alignment of each preliminary Glastonbury alternative is shown in Figure 3-10.

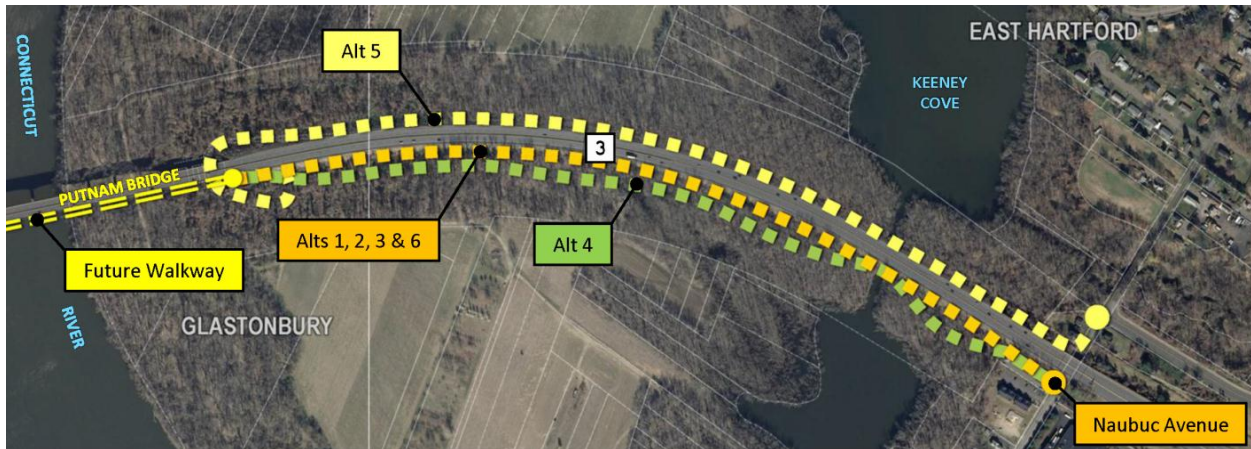


Figure 3-10. Glastonbury Alternatives – General Alignment Plan

Alternative 1

Shown in Figure 3-11, Alternative 1 follows the northbound side of Route 3 along the top of the roadway embankment for most of its length to maximize the path elevation (relative to the 100-year flood elevation) and to minimize the potential for flooding. Path users are protected from vehicular traffic by a concrete barrier and fence and are buffered by approximately 13 feet of separation between the path and northbound travel lanes. A retaining wall is provided along the south side of the path to minimize the volume of new embankment (or fill) placed within the floodplain and to minimize potential wetland impacts.

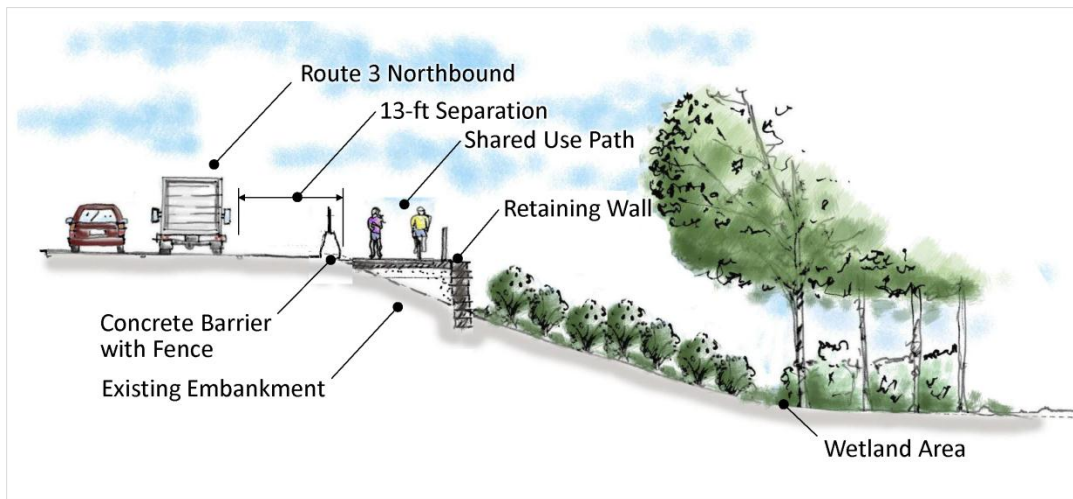


Figure 3-11. Glastonbury Alternative 1

Alternative 2

Shown in Figure 3-12, Alternative 2 follows the northbound side of Route 3 along the roadway embankment at an elevation at or above the 10-year flood elevation of 22 feet. This path location provides separation of approximately 25 to 30 feet between the path and vehicular traffic and helps lessen the impact of traffic noise by placing users partially below roadway level. To help reduce costs, no retaining wall is used. However, a considerable volume of new embankment is placed in the floodplain and there is potential for wetland impacts along the bottom of the new path embankment.

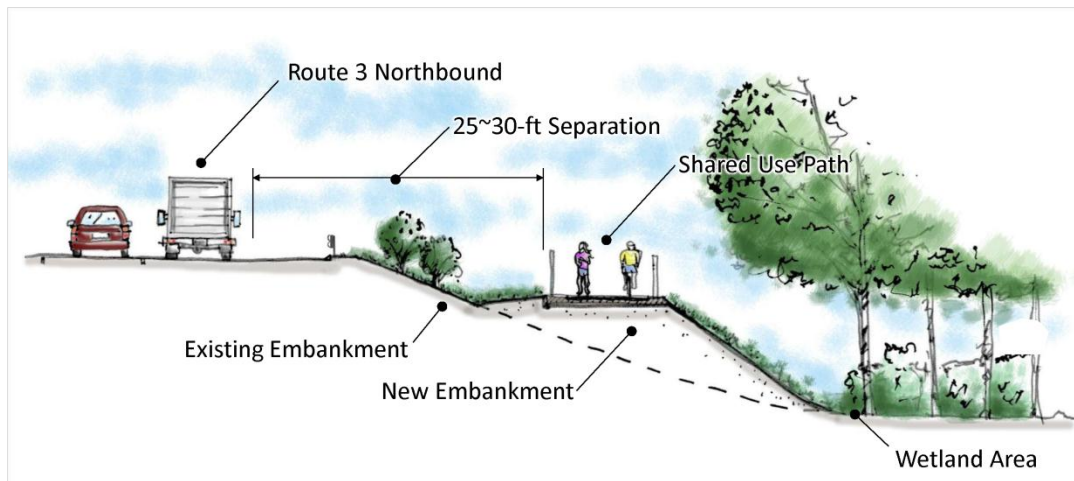


Figure 3-12. Glastonbury Alternative 2

Alternative 3

Shown in Figure 3-13, Alternative 3 follows the northbound side of Route 3 and is cut into the side of the existing roadway embankment at an elevation at or above the 10-year flood elevation of 22 feet. This location provides separation of approximately 18 to 20 feet between the path and vehicular traffic and helps lessen the impact of traffic noise, similar to Alternative 2. A retaining wall is provided along the roadway side of the path to accommodate excavation into the side of the existing embankment. There is a net reduction in the amount of fill in the floodplain as existing embankment is removed, and there is some potential for minor wetland impacts during construction operations.

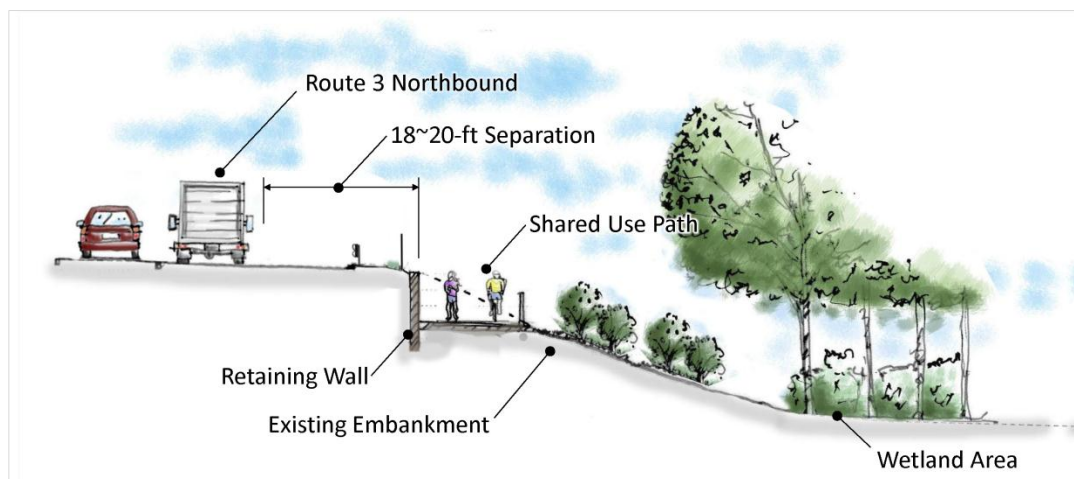


Figure 3-13. Glastonbury Alternative 3

Alternative 4

Shown in Figure 3-14, Alternative 4 diverges from Route 3 and follows the northbound side of the road beyond the limits of the existing roadway embankment for most of its length. This location provides typical separation of up to 100 feet or more between the path and vehicular traffic; minimizes the effect of traffic on the user experience; and provides the most natural and recreational environment. This location, which is typically at an elevation at or just above flood stage, is also the most susceptible to flooding; requires a considerable amount of new embankment placed within the floodplain; and has significant wetland impacts.

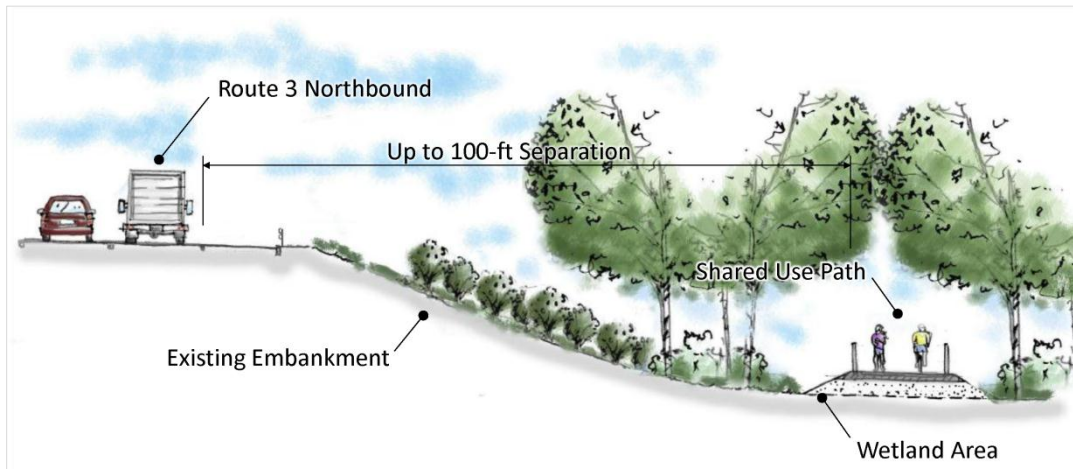


Figure 3-14. Glastonbury Alternative 4

Alternative 5

Shown in Figure 3-15, Alternative 5 loops from the walkway to the southbound side of Route 3 and follows along the top of the roadway embankment for most of its length. Similar to Alternative 1, this location maximizes the path elevation (relative to the 100-year flood elevation) and minimizes the potential for flooding. Path users are protected from vehicular traffic on Route 3 by a concrete barrier and fence and buffered by approximately 13 feet of separation between the path and southbound travel lanes. A retaining wall is provided along the north side of the path to minimize the volume of new embankment (or fill) placed within the floodplain and to minimize potential wetland impacts.

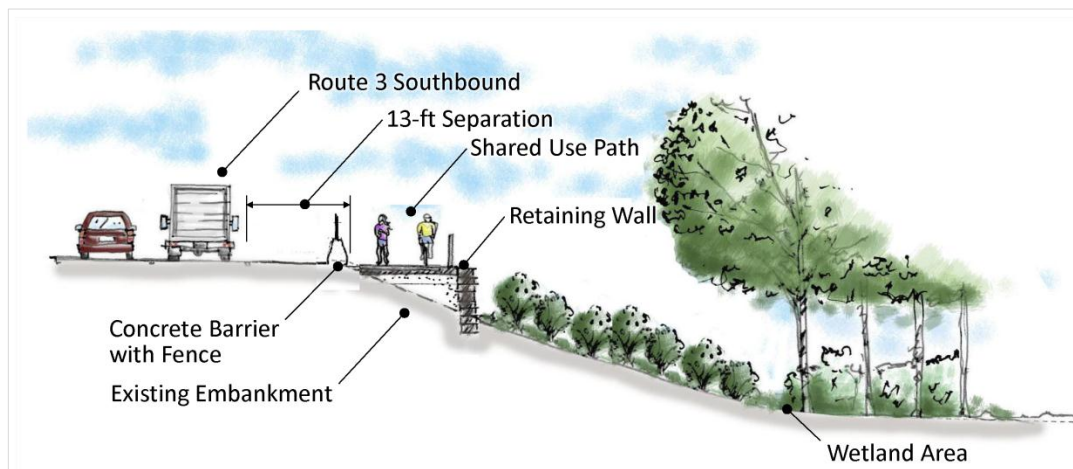


Figure 3-15. Glastonbury Alternative 5

Alternative 6

Shown in Figures 3-16A and 3-16B, Alternative 6 follows the northbound side of Route 3 and is generally a composite of modifications to Alternative 2 (path on new embankment, Figure 3-16A) and Alternative 3 (path cut into existing embankment, Figure 3-16B). Alternative 6 provides more separation between the path and vehicular traffic while minimizing environmental impacts in the most sensitive areas and not significantly increasing construction costs. In the area of the bridge, the path diverges from Route 3 and is constructed on new embankment, providing the greatest separation from the roadway (approximately 38 to 40 feet on average), while not increasing floodplain and wetland impacts. As the path continues easterly to Naubuc Avenue, the alignment gradually shifts closer to Route 3, providing an average separation of 24 feet while cutting into the existing embankment to minimize floodplain and wetland impacts. Similar to Alternative 3, a retaining wall is provided along the roadway side of the path to accommodate excavation into the side of the existing embankment. Overall, Alternative 6 provides an average separation of 29 feet along its length.

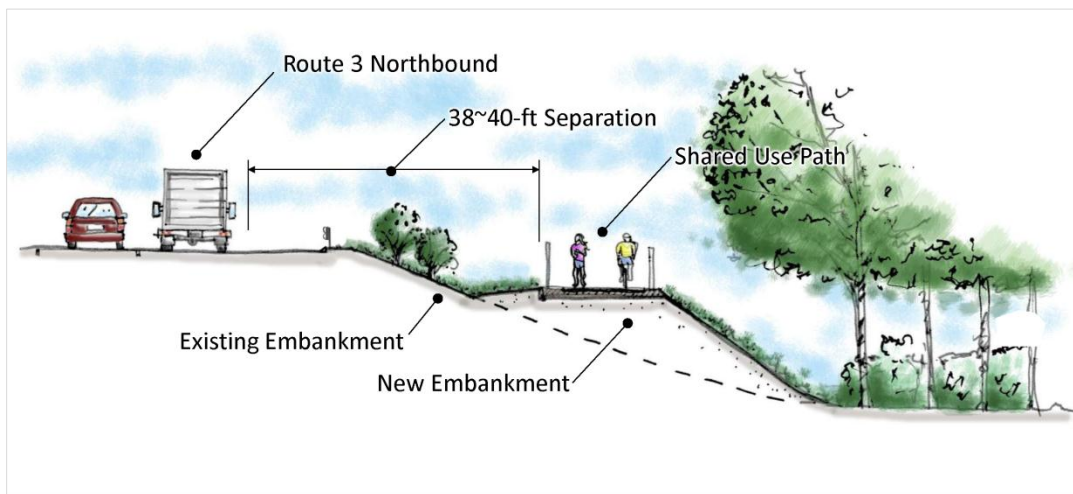


Figure 3-16A. Glastonbury Alternative 6 – Path on New Embankment

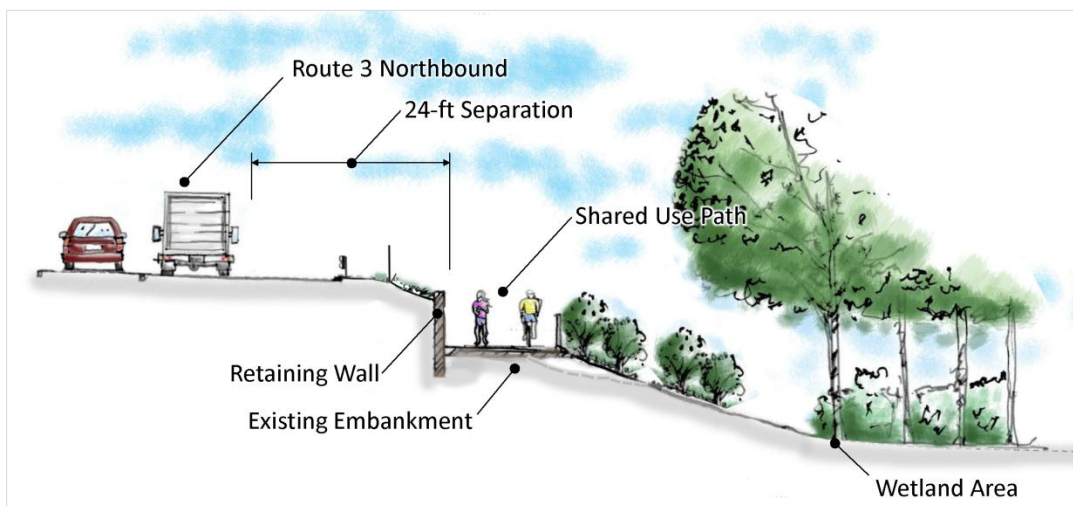


Figure 3-16B. Glastonbury Alternative 6 – Path Cut into Embankment

Common Features

There are several design features that are common to each of the six preliminary Glastonbury alternatives, including:

- **Keeney Cove Crossing.** The existing dual concrete box culvert that carries Route 3 over Keeney Cove is also used to carry the path over the cove. Modification of the embankment and installation of new earth retaining structures on both approaches and over the existing culvert are required to accommodate the path.
- **Naubuc Avenue Improvements.** Improvements on Naubuc Avenue provide pedestrian and bicycle connectivity from the path terminus to Putnam Boulevard and Glastonbury Boulevard. More specifically, these improvements include a new mid-block crosswalk (for all alternatives except Alternative 5) connecting the path to the street and to new sidewalk on the east side of Naubuc Avenue between the adjacent intersections of Putnam Boulevard and Glastonbury Boulevard; new crosswalks and minor intersection modifications at the intersection of Putnam Boulevard; and new sidewalk on the west side of Naubuc Avenue connecting the path to existing segments of sidewalk and to the adjacent intersections (see Figure 4-4, sheet 3 of 3 for an illustration of the Naubuc Avenue improvements).
- **Parking Accommodations.** A new parking lot accommodating approximately 10 spaces is provided in State ROW on the east side of Naubuc Avenue opposite the path terminus and just south of Route 3 (see Figure 4-4, sheet 3 of 3 for the location of the parking accommodations). The lot is connected to the new sidewalk on Naubuc Avenue and the access drive is located opposite an existing commercial driveway. Sight lines to and from the driveway provide adequate sight distance to approaching traffic.
- **Rest Area and Turnaround at Walkway Entrance.** In order to accommodate motor vehicles on the path for maintenance and emergency purposes, a turnaround area must be provided in the vicinity of the bridge (since the walkway design precludes vehicles from driving on the bridge). The turnaround area provides additional space that can dually serve as a rest area with amenities for users (such as benches, an overlook location, trash receptacles, and an information kiosk).

Table 3-3 provides a summary of the preliminary Glastonbury alternatives. The table includes additional information about the general characteristics, potential impacts, construction costs estimates, and other considerations that were used by the Advisory Committee and study team to comparatively assess the alternatives.

Table 3-3. Preliminary Glastonbury Alternatives Summary

	Preliminary Alternative					
	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5	Alternative 6
General Characteristics						
Total Length	4100 feet	4100 feet	4100 feet	4100 feet	5000 feet	4100 feet
Maximum Grade	4%	5%	5%	5%	5%	5%
Typical Separation - Path to Travel Lanes	13 feet	25-30 feet	18-20 feet	Varies up to 100 feet	13 feet	Varies 20-50 feet (Avg. 29 feet)
Environmental Considerations						
Wetland Impacts	Potentially Minor	Approximately 0.5 acre	Potentially Minor	Approximately 2 acres	Potentially Minor	Potentially Minor
Within 100-year Floodplain Boundary?	Yes	Yes	Yes	Yes	Yes	Yes
Approx. Fill below 100-year Flood Elevation	2300 cubic yards	21,000 cubic yards	-3500 cubic yards	9900 cubic yards	100 cubic yards	950 cubic yards
Property Impacts¹						
Total Properties Impacted	0	0	0	0	0	0
Total ROW Needs (acres)	0	0	0	0	0	0
Other Considerations and Impacts						
Path At or Above 10-year Flood Elevation?	Yes	Yes	Yes	No (~2600 feet of trail below)	Yes	Yes
Utilities ¹	May require lighting relocation along most of the path.	May require lighting relocation in vicinity of the bridge.	May require lighting relocation in vicinity of the bridge.	May require lighting relocation in vicinity of the bridge.	May require lighting relocation along most of the path	May require lighting relocation in vicinity of the bridge
Structures	Keeney Cove culvert modifications are required to accommodate path. May require guide sign relocation and overhead sign structure modification.	Keeney Cove culvert modifications are required to accommodate path. No impacts anticipated.	Keeney Cove culvert modifications are required to accommodate path. May require guide sign relocation.	Keeney Cove culvert modifications are required to accommodate path. No impacts anticipated.	Keeney Cove culvert modifications are required to accommodate path. May require overhead sign structure modifications.	Keeney Cove culvert modifications are required to accommodate path. No impacts anticipated.
Miscellaneous	Snow may be pushed from Route 3 onto path due to proximity of path to shoulder. Vehicle noise levels may be higher due to proximity of users to roadway. Users may experience headlight glare.	Path elevation is generally 5 feet or more below the elevation of Route 3, thus reducing vehicle noise levels for users.	Snow may be pushed from Route 3 onto path due to proximity of path to shoulder. Path elevation is generally 5 feet or more below the elevation of Route 3, thus reducing vehicle noise levels for users.	Path elevation is generally 15 feet or more below the elevation of Route 3, thus reducing vehicle noise levels for users.	Snow may be pushed from Route 3 onto path due to proximity of path to shoulder. Vehicle noise levels may be higher due to proximity of users to roadway. Users may experience headlight glare.	Snow may be pushed from Route 3 onto some sections of path due to proximity. Path elevation is generally 6 feet or more below the elevation of Route 3, thus reducing vehicle noise levels for users.
Comparative Construction Costs²						
Preliminary Cost Range	\$\$\$\$	\$\$	\$\$\$	\$	\$\$\$\$	\$\$\$

Notes:

¹ Property and utility impacts are exclusive of potential impacts along Naubuc Avenue associated with new sidewalk construction. Since the Naubuc Avenue improvements are the same for each alternative, any impacts are negligible for the purpose of comparing alternatives.

² Comparative construction cost estimates are based on estimates of major contract work items as determined for each of the preliminary alternatives as of May 2013. The costs for all alternatives include sidewalk improvements on the east side of Naubuc Avenue and new parking area on Naubuc Avenue. The costs are exclusive of wetland mitigation, utility relocation, property acquisition, and inflation costs.

Key:

- \$: Cost of \$2 million or less
- \$\$: Cost between \$2 million and \$2.5 million
- \$\$\$: Cost between \$2.5 million and \$3.5 million
- \$\$\$\$: Cost greater than \$3.5 million

C | Favorable Alternatives Selection

The Advisory Committee and study team selected a favorable path alternative in each town based generally on a qualitative and comparative assessment of the preliminary alternatives relative to feasibility (in terms of environmental impacts and costs) and utility (in terms of user-friendly characteristics such as grades and separation from traffic). The favorable alternatives were presented for community input and comment at a public information meeting in June 2013. The following sections summarize the assessment and selection of the favorable alternatives in Wethersfield and Glastonbury, and present the conclusions of the community input period.

Wethersfield – Alternative 3 (Modified)

Alternative 3 (Modified) was selected as the favorable alternative in Wethersfield with general consensus from the Advisory Committee. The key factors in this selection included:

- Elimination of Alternative 1 based on anticipated wetland impacts and comparatively long length of the path.
- Elimination of Alternative 2 based on comparatively steep grades and potential sight line restrictions at the Great Meadow Road intersection.
- Preference for reasonable grades (not exceeding 5%) and reasonable length of the path.
- Preference for no anticipated environmental impacts associated with Alternative 3 (Modified).
- Justifiable cost increase from Alternative 3 to Alternative 3 (Modified) associated with wetland avoidance (approximately \$150,000).

Glastonbury – Alternative 6

Alternative 6 was selected as the favorable alternative in Glastonbury with general consensus from the Advisory Committee. The key factors in this selection included:

- Elimination of Alternatives 1 and 5 based on comparatively high construction cost estimates and smallest separation distance between the path and Route 3 travel lanes.
- Elimination of Alternative 2 based on comparatively high environmental impacts, including significant fill (21,000 cubic yards) within the 100-year floodplain for which mitigation might not be reasonably feasible.
- Elimination of Alternative 4 based on comparatively high environmental impacts, including 2 acres of wetland impacts and significant fill (9900 cubic yards) within the 100-year floodplain, and comparatively high susceptibility to flooding.
- Preference for greater separation distance provided by Alternative 6 (average of 29 feet) than provided by Alternative 3 (18 to 20 feet).
- Reasonable volume of fill (950 cubic yards) within the 100-year floodplain that can be compensated within the project area.
- Comparatively equal construction cost estimates between Alternatives 3 and 6.

Community Input

The preliminary and favorable alternatives were presented for community input and comment at a public information meeting conducted on June 18, 2013 at the Riverfront Community Center in Glastonbury. Approximately 40 people attended the meeting. Based on input provided by attendees and written comments received during the open public comment period (ending July 12, 2013), there were no objections to the selection of Alternative 3 (Modified) in Wethersfield and Alternative 6 in Glastonbury as the favorable alternatives. As such, the details of these two alternatives were further defined by the CTDOT study team and were used as the basis of the shared use path recommendations presented in Section 4.

A summary of the public comments and questions from the June 2013 public information meeting is provided in Appendix 1.

4 | Recommendations

The recommendations include 4,750 feet of new shared use path connecting the Putnam Bridge walkway to Great Meadow Road in Wethersfield and Naubuc Avenue in Glastonbury. The recommendations also include intersecting roadway improvements, new parking accommodations, and improvements on the adjoining roadway network that will enhance safety, provide multimodal connectivity, and support non-motorized travel demands and recreational use of the Route 3 corridor.

This section presents the details of the Wethersfield and Glastonbury recommendations, including estimated project costs and potential impacts, and provides guidance on their implementation.

A | Common Recommendations

There are several recommendations that are common to the shared use path connections in both Wethersfield and Glastonbury. These recommendations relate to features of the path surface, railing, and lighting as described in the following paragraphs.

Path Surface

The recommended shared use path surface is bituminous concrete pavement, consistent with the current design guidelines and preferences of CTDOT and AASHTO. The benefits of a bituminous concrete pavement surface, compared to an alternative stabilized aggregate surface, include:

- Higher level of service with better traction, smoother surface, and less rolling resistance for wheeled users (including bicyclists, inline skaters, strollers, and wheelchair users).
- Better durability and less need for surface repairs due to rain washouts and flooding.
- Ease of winter maintenance and plowing for year-round travel purposes.

The pavement design prescribed by CTDOT is 2¾ inches of bituminous concrete pavement placed on 6 inches of processed aggregate base for facilities where pedestrians or bicycles represent the majority of traffic. It is anticipated that this surface will provide a design life of approximately 15 years (with as-needed maintenance to fill cracks and repair minor surface deterioration) before significant rehabilitation or replacement of the surface would typically be required.

As shown in Figure 4-1, the recommended width of the paved path is 10 feet. The recommended overall width of the path is 14 feet, which includes the 10-foot wide paved surface, a 3-foot wide aggregate shoulder on one side, and a 1-foot wide aggregate strip between the paved surface and railing on the other side. These dimensions are consistent with the minimum design standards presented in Section 1. The minimum dimensions are recommended to minimize the potential environmental impacts and construction costs of the path connections, yet provide adequate space for a variety of user groups.

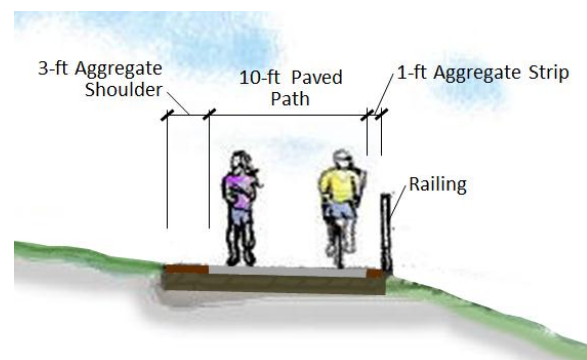


Figure 4-1. Recommended Shared Use Path Configuration

Railing

A bicycle-safe railing (at least 42 inches high) is recommended wherever a steep embankment slope, drop off, or other hazard is located adjacent to the shared use path surface. The type of railing used throughout the project corridor will be determined during subsequent project phases. For the purposes of this study, railing is assumed to be constructed of cedar or pressure-treated wood posts and rails, similar in appearance to the wooden railing along the Smith School Greenway in Glastonbury (see image at right).



Wooden railing along Smith School Greenway, Glastonbury

Lighting

Adequate lighting along the shared use path connections is recommended to maximize the potential transportation utility of the corridor, particularly from late fall to early spring when peak commuting periods are during hours of darkness. Adequate lighting is also recommended to enhance safety and security in key locations such as path termini, street intersections and rest areas. A detailed lighting plan will be developed during subsequent project phases to determine the extent of lighting, spacing and height of fixtures, and fixture types that will provide adequate lighting levels both along the path connections and in key locations. This lighting plan will account for the potential advantage of existing lighting on Route 3 dually serving the lighting requirements of the path connections. For the purposes of this study, lighting is considered a recommended design feature of the path connections and is accounted for in the construction cost estimate on a per-foot cost basis.

B | Wethersfield Recommendations

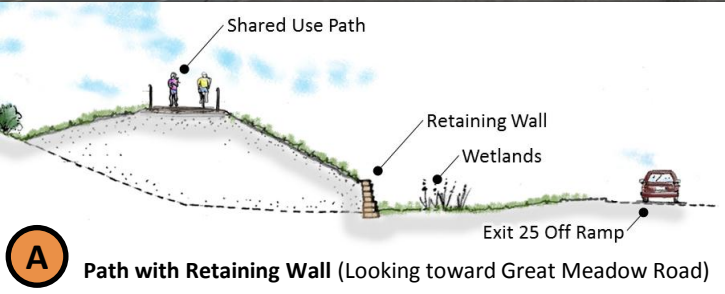
The Wethersfield recommendations are based on Alternative 3 (Modified), which was selected as the favorable shared use path alternative in Wethersfield (see Sections 3.B and 3.C for details). The recommendations reflect conceptual design refinements to this alternative that were completed subsequent to the public information meeting in June 2013. The details of the recommendations, potential impacts, and other engineering considerations are summarized in this section.

Recommendations

The Wethersfield recommendations, illustrated in Figure 4-2, generally include a new 650-foot long shared use path, Great Meadow Road improvements, and new parking accommodations for path users. Specific details include:

Shared Use Path

- Construct a new 650-foot long shared use path to connect Great Meadow Road to the Putnam Bridge walkway. Locate the terminus at the northwest corner of the intersection of Great Meadow Road and the I-91 Exit 25 off ramp.
- Construct the path on new embankment utilizing a maximum longitudinal grade of 5% to transition from an elevation of approximately 39 feet at the terminus to approximately 66 feet at the walkway. The maximum embankment height will be approximately 22 feet above the existing ground. Utilize 2:1 (horizontal:vertical) embankment slopes to minimize the footprint of the path.



Shared Use Path (continued)

- As illustrated in Figure 4-3, utilize a retaining wall along the southwestern section of the path to prevent direct impacts to existing wetlands. It is assumed that a segmental block wall will be used.
- Widen the path in the vicinity of the bridge to accommodate a vehicle turnaround area.

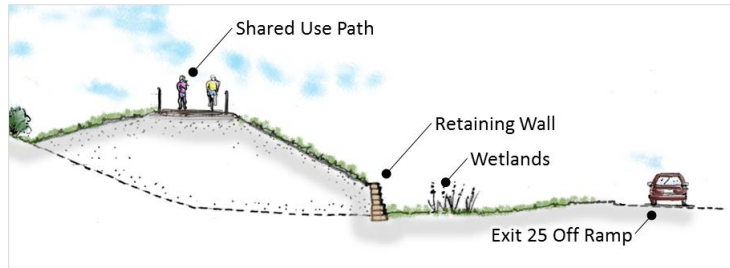


Figure 4-3. Recommended Retaining Wall
(Looking East toward Great Meadow Road)

- Maintenance and emergency vehicles will be prohibited from driving onto the bridge walkway.
- Provide user amenities (such as benches, a bike rack, trash receptacles, and informational signs) within the turnaround area to dually serve as a user rest area.
- Provide railing along both sides of the path for most of its length. Adjacent to Route 3, provide concrete barrier with fencing mounted along the top of the barrier to protect path users from vehicular traffic. This barrier will connect to existing metal beam guide railing on the western end and will be continuous with barrier on the Putnam Bridge on the eastern end.
- Install lighting along the path to promote user safety and security during darkness.
- Provide vegetative screening near the western limit of the path to obscure path activity from motorists and minimize visual distractions.
- Install signage and pavement markings along the path to communicate path conditions, provide user information, and enhance user safety.
- Provide user amenities and aesthetic enhancements (such as benches, a bike rack, trash receptacles, gateway signage, and landscaping) at the path terminus.
- Install bollards to prevent unauthorized motor vehicle access to the path. Bollards can be equipped with locks to allow access by maintenance forces and emergency responders.

Great Meadow Road Improvements

- Provide improvements at the Exit 25 off ramp intersection to enhance user safety and promote motorist awareness of pedestrian and bicycle activity at this location. Specific improvement recommendations include: reducing corner radii at the end of the ramp to reduce the crossing distance and to encourage slower vehicular turning speeds from the ramp; and providing crosswalk markings across the end of the ramp and Great Meadow Road to connect the path terminus to the existing shoulders.
- Construct sidewalk ramps on the southern side of the Exit 25 off ramp and the eastern side of Great Meadow Road at the intersection to accommodate new crossings at this location.
- Install pedestrian/bicycle warning signs and new bicycle guide signs on Great Meadow Road in the vicinity of the path. Guide signs should include a new destination sign with a direction arrow and distance to Glastonbury.



Sample recommended bicycle guide sign.

Parking Accommodations

- Construct a new off-street parking lot located on the eastern side of Great Meadow Road and just south of the Putnam Bridge. Provide approximately 10 parking spaces.
- Incorporate green infrastructure design features, where feasible, to mitigate potential impacts of storm water runoff on the adjacent river habitat. Pervious pavement, vegetated swales, and/or bioretention basins could be considered to encourage infiltration and improve water quality.
- Provide pedestrian access to the shared use path via a sidewalk at the south end of the lot connecting to the intersection and new crosswalk.
- Provide vehicular access to the lot via a driveway at the north end. This driveway location will separate vehicular activity from user activity near the path terminus. It is anticipated that this driveway could also provide access to a future boat launch on the Connecticut River in this area. As such, the parking lot should be designed to easily accommodate this access in the future.

Summary of Impacts

- **Environmental.** The shared use path was designed to minimize or avoid direct impacts to identified environmental resources. As such, there are no impacts to the 100-year floodplain or wetlands anticipated with the Wethersfield recommendations. There are also no anticipated impacts to historic or archaeological resources in this area.
- **Property.** The recommendations are located entirely within State right-of-way for Route 3 and Great Meadow Road. No private property impacts are anticipated.
- **Utilities.** No significant overhead or subsurface utility impacts are anticipated based on known utility locations in the project area.
- **Infrastructure.** The following impacts are anticipated:
 - *Overhead Signage.* An existing overhead sign structure support is located within the path surface in the turnaround and rest area. It is anticipated the elevation of the sign support and base can be modified such that sign relocation will not be necessary. The location of the support will provide adequate clearance (approximately 6 feet) to allow passage on both sides of the support.
 - *Lighting.* An existing light pole and fixture is located within the limits of the recommended concrete barrier near the bridge. It is anticipated that the light can be replaced with a new barrier-mounted pole and fixture near the same location.
 - *Drainage.* An existing catch basin is located within the path in the northwestern corner of the Great Meadow Road and Exit 25 ramp intersection. It is anticipated that the basin can be replaced with a new basin located on Great Meadow Road just north of the path and connected to the existing outlet with a new pipe and manhole.

Engineering Considerations

- The temporary haul road constructed in 2013 for the Putnam Bridge rehabilitation project involved the placement of significant fill material in the area of the recommended shared use path. This material, if left in place after completion of that project, could be reshaped and supplemented with new material to construct the shared use path embankments. It is anticipated that there would be some cost savings associated with using this on-site material and reducing the volume of off-site fill that would otherwise be required for construction of the shared use path embankment.

C | Glastonbury Recommendations

The Glastonbury recommendations are based on Alternative 6, which was selected as the favorable shared use path alternative in Glastonbury (see Sections 3.B and 3.C for details). The recommendations reflect conceptual design refinements of Alternative 6 that were completed subsequent to the public information meeting in June 2013. The details of the recommendations, potential impacts, and other engineering considerations are summarized in this section.

Recommendations

The Glastonbury recommendations, illustrated in Figure 4-4, generally include a new 4,100-foot long shared use path, Naubuc Avenue improvements, and new parking accommodations for path users. Specific details include:

Shared Use Path

- Construct a new 4,100-foot long shared use path to connect Naubuc Avenue to the Putnam Bridge walkway. Locate the terminus on the west side of Naubuc Avenue just south of Route 3.
- Construct approximately 900 feet of the path nearest the bridge walkway on new embankment placed on the existing embankment. Provide up to 50 feet of separation between Route 3 traffic and the path along this section. New embankment fill will not impact the 100-year floodplain in this area.
- Construct approximately 2,900 feet of the path either partially or entirely within the side of the existing embankment by installing a retaining wall and excavating material in front of the wall to create the path. Provide a minimum of 20 feet (with an average of 24 feet) separation between Route 3 traffic and the path along this section. The retaining wall is assumed to be a sheet piling retaining wall; the typical height will be approximately 6 feet. This section of the path is located within the 100-year floodplain and will require some fill placed below the 100-year flood elevation.
- Construct approximately 300 feet of the path nearest Naubuc Avenue on new embankment placed on the existing embankment. Provide up to 48 feet of separation between Route 3 traffic and the path along this section. This section of the path is generally located outside of the 100-year floodplain, but could result in some fill placed below the 100-year flood elevation.
- Utilize a maximum longitudinal grade of 5% along the path. The steepest grade is 5% for approximately 700 feet east of the bridge walkway. Approximately 50% of the path is level (0% grade).
- Maintain a minimum path elevation of 22 feet, the 10-year flood elevation. The location of the path at or above the 10-year flood elevation provides less than a 10% probability of the path being flooded in any given year.
- Utilize 2:1 (horizontal:vertical) embankment slopes along the south side of the path to minimize the footprint of the path, resulting in the minimum area of potential wetland impacts.



Example of a shared use path cut into the side of a roadway embankment along I-890 in Schenectady, NY.







Figure 4-4.
Glastonbury Recommendations
Sheet 3 of 3

Shared Use Path (continued)

- Widen the path in the vicinity of the bridge to accommodate a vehicle turnaround area. Maintenance and emergency vehicles will be prohibited from driving onto the bridge walkway.
- As illustrated in Figure 4-5, provide user amenities and aesthetic enhancements (such as benches, a bike rack, trash receptacles, an overlook location, information signage or kiosk, and textured/colored pavement) within the turnaround area to dually serve as a rest area for path users.

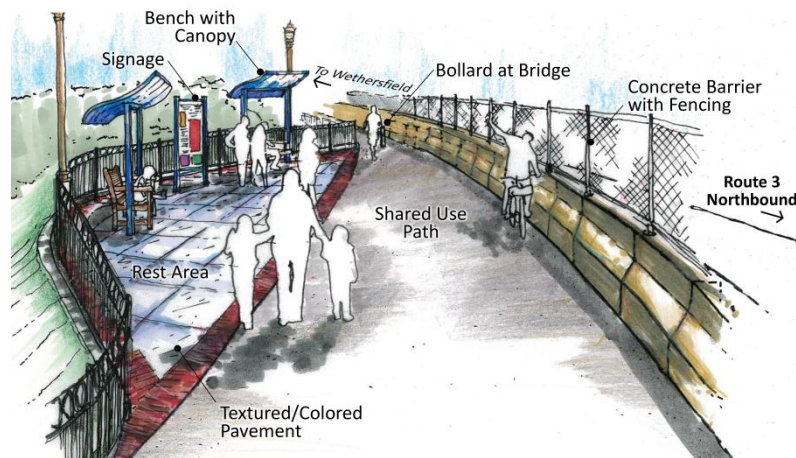


Figure 4-5. Recommended Rest Area and Maintenance Vehicle Turnaround Area (Looking West toward Putnam Bridge)

- Adjacent to the turnaround area, provide concrete barrier with fencing mounted along the top of the barrier to protect path users from vehicular traffic. This barrier will be continuous with the barrier on the Putnam Bridge on the western end and will transition to new metal beam guide railing along Route 3. Rub rail may be required. The installation of new guide railing meeting current crash standards is recommended for the entire length of the path to enhance user safety. All design requirements will be further defined during subsequent project phases.
- Provide bicycle-safe railing along south side of the path for its entire length to protect users from steep embankment slopes. Provide protective chain link fencing along the north side of the path for its entire length to protect users from unsafe entry onto Route 3. Provide low-maintenance plantings along the fence to screen the view of the roadway and to shield users from roadside debris and litter.
- Install lighting along the path to promote user safety and security during darkness.
- Install signage and pavement markings along the path to communicate path conditions, provide user information, and enhance user safety.
- Provide user amenities and aesthetic enhancements (such as benches, bike storage, trash receptacles, gateway signage, and landscaping) at the path terminus. Install bollards to prevent unauthorized motor vehicle access to the path. Equip bollards with locks to allow access by maintenance forces and emergency responders.
- Repair existing right-of-way (ROW) fencing or install new fencing to deter users from trespassing on adjacent private property and farmlands throughout the project corridor.
- Install earth retaining structures over the existing Keeney Cove culvert to accommodate the path.

Naubuc Avenue Improvements

- Install new 5-foot wide sidewalk with new concrete curb and 3-foot wide buffer strip on the east side of Naubuc Avenue between Glastonbury Boulevard and Putnam Boulevard. Provide short retaining walls or back-curb where necessary to minimize grading impacts.
- Install a new mid-block crosswalk and associated sidewalk ramps and pedestrian warning signs to connect the path to the street and new sidewalk.
- Install new 5-foot wide sidewalk with new concrete curb and 3-foot wide buffer strip (in most areas) on the west side of Naubuc Avenue to interconnect existing segments of sidewalk, the path terminus, and new and recommended pedestrian facilities at the Glastonbury Boulevard and Putnam Boulevard intersections. Retain the existing stone masonry wall just north of the Glastonbury Boulevard intersection by locating the new sidewalk behind the wall on new embankment.
- Provide minor intersection improvements at the Putnam Boulevard intersection to enhance pedestrian safety. Specific improvement recommendations include: reducing corner radius in the southeast corner of the intersection to reduce the crossing distance and to encourage slower right turning speeds to Putnam Boulevard; relocating the existing sidewalk ramp in the northeast corner; and providing crosswalk markings on Naubuc Avenue and Putnam Boulevard.
- Provide pedestrian signalization improvements and consider exclusive pedestrian phasing at the Glastonbury Boulevard intersection.



Representative mid-block crosswalk with pedestrian warning signs (Glastonbury)

Parking Accommodations

- Construct a new off-street parking lot located on the eastern side of Naubuc Avenue opposite the path terminus and in State-owned right-of-way just south of Route 3. Provide approximately 10 parking spaces.
- Incorporate green infrastructure design features, where feasible, to mitigate potential impacts of storm water runoff from the lot. Pervious pavement, vegetated swales, and/or bioretention basins could be considered to encourage infiltration, reduce runoff, and improve water quality.
- Provide pedestrian access to the shared use path via a sidewalk connection to the new sidewalk and mid-block crosswalk on Naubuc Avenue.
- Provide vehicular access to the lot via a driveway located directly opposite the existing commercial driveway on the western side of Naubuc Avenue.

Summary of Impacts

- **100-Year Floodplain.** The shared use path was designed to maximize the separation between Route 3 and the path while providing for no net increase in the amount of embankment material below the 100-year flood elevation. It is anticipated that without excavation for compensatory flood storage in the project area, approximately 950 cubic yards of fill will be placed in the 100-year floodplain. It is also anticipated that the existing earthen berm located at the eastern end of the Putnam Bridge could be excavated below the 100-year flood elevation to compensate for this fill. Additionally, the nature of the berm excavation will require the removal of existing earth material above the 100-year flood elevation; it is assumed that this material is suitable and can be utilized on-site for the construction of new path embankments. With the excavation for compensatory flood storage there is anticipated to be no net increase in the amount of fill material in the floodplain.

Summary of Impacts (continued)

- **Wetlands.** Existing wetland mapping shows that direct impacts to flagged wetland areas (including State, Federal, and tidal wetlands) will generally be minor (anticipated to be less than 0.25 acre), though the actual area and location of impacts cannot be determined until additional field data collection, survey, and preliminary design are completed under subsequent project phases.
- **Natural Habitats.** The National Diversity Database (NDDDB) shows the location of a sensitive plant community located north of Route 3 in the project area. No impacts to this plant community are anticipated.
- **Historic and Archaeological Resources.** There are no anticipated impacts to existing historic resources in the Glastonbury study area. CTDOT's cursory review of potential archaeological resources indicated that several components of the Glastonbury recommendations are located in areas of archaeological sensitivity and will require further review and investigation as study recommendations are implemented under subsequent project phases (see page A4-2 of Appendix 4 for additional details).
- **Property.** The shared use path is located entirely within State-owned right-of-way for Route 3. The path terminus at Naubuc Avenue is located proximate to the property at 449 Naubuc Avenue, though no impacts requiring property acquisition for path construction are anticipated.

The installation of new sidewalk on Naubuc Avenue could impact up to nine properties, requiring the acquisition of narrow strips of property along the existing property frontages in order to accommodate the new sidewalk. The taking area of each property and the total taking area is indeterminable pending additional topographic and boundary surveys and preliminary design that will be completed under subsequent project phases.

- **Utilities.** The installation of new sidewalk on the west side of Naubuc Avenue could require the relocation of up to three utility poles and associated overhead utility lines for electric, cable, and telecommunications. The installation of new sidewalk on the east side of Naubuc Avenue could require the relocation of up to two fire hydrants.

The installation of concrete barrier and drainage modifications on Route 3 could require temporary or permanent relocation of existing electrical conduits and cables for the existing light fixtures in some limited areas.

No other significant subsurface utility impacts are anticipated based on known utility locations in the project area.

- **Infrastructure.** The following impacts to existing lighting and drainage are anticipated:
 - *Lighting.* An existing light pole and fixture is located within the limits of the recommended concrete barrier near the bridge. It is anticipated that the light can be replaced with a new barrier-mounted pole and fixture near the same location.
 - *Drainage on Route 3.* There are approximately 11 existing outlet pipes for catch basins along northbound Route 3 that will be impacted by construction of the path and that will require modification or replacement. Of particular note are the slope drains that will be bisected by installation of the recommended sheet piling retaining wall along the north side of the shared use path. The replacement outlets will have to be directed down behind the wall via a drain basin or manhole, and conveyed under the shared use path via a new outlet pipe that penetrates the embedded section of the wall before discharging to the new slope.

- *Drainage on Naubuc Avenue.* There are approximately 10 existing catch basins on Naubuc Avenue in the area of recommended sidewalk improvements. It is anticipated that existing basin locations will be retained and new tops and bicycle-safe grates will be installed.

Engineering Considerations

- A sheet pile retaining wall (either steel or composite material) is assumed to be a viable earth retaining system for use in the Route 3 corridor. This assumption will be verified during subsequent project phases pending completion of a subsurface exploration program and geotechnical/structural design of the wall. The sheet pile retaining wall was selected among other retaining wall alternatives (such as segmental block wall, mechanically stabilized earth wall, or cast-in-place cantilever wall structures) for these benefits:
 - Comparatively simple and low-impact to install. Piles can be driven with large equipment mobilized on Route 3 and no excavation behind the wall is necessary (assuming the design does not require anchors).
 - Comparatively low cost, assuming reasonable soil characteristics and embedment depths.
 - Comparatively less risk for deep-seated failure of the slope under the wall.
- It is possible that unanticipated subsurface soil conditions could affect the viability of the sheet pile retaining wall or could correspondingly increase the estimated cost of the wall. These variables are accounted for by the contingency cost estimate.



Example sheet pile retaining wall that is similar in appearance to the retaining wall recommended for use along the shared use path in Glastonbury. If desired, alternative façade treatments can be incorporated into the wall design and construction for additional cost.

D | Complementary Improvement Recommendations

The recommended shared use path connections to the Putnam Bridge walkway will create a new 1.3-mile facility over the Connecticut River for pedestrians and bicyclists traveling between Wethersfield and Glastonbury and points beyond. In order to support the long-term transportation and recreational viability of this facility, on-going and future planning efforts that provide for complementary safety and connectivity improvements to the surrounding transportation network will be necessary. Potential improvements that should be considered for future implementation include:

Wethersfield

- Revising the Heritage Way Bikeway Path route to provide full two-way directionality between Great Meadow Road and Main Street. This would involve removing Hart Street, which is one-way eastbound, and adding Marsh Street to the route to accommodate both eastbound and westbound on-street bicycle trips between Great Meadow Road and Main Street.
- Installing requisite bike route guide signs along the revised Heritage Way Bikeway Path route.
- Installing bike warning/"share-the-road" signage on the adjacent street network including Marsh Street.

Glastonbury

- Formalizing a designated on-road bike route connecting to the path terminus on Naubuc Avenue in Glastonbury and installing requisite guide signs along the route.
- Installing bike warning/"share-the-road" signage on the adjacent street network including Putnam Boulevard, Glastonbury Boulevard, and Naubuc Avenue north of Putnam Boulevard and South of Glastonbury Boulevard. These roadways are part of the recommended regional on-road bike network and/or provide connectivity to other facilities, such as the Main Street Park and Ride lot, and Riverfront Community Center and Riverfront Park via Welles Street.
- Restriping narrower 11-foot lanes and wider shoulders, or eliminating the existing white edge line in favor of providing a 14-foot shared-lane configuration with new "sharrow" markings on Putnam Boulevard and Glastonbury Boulevard.
- Installing "sharrow" markings on Naubuc Avenue between Main Street and the East Hartford town line.
- Installing bicycle-safe grates on all catch basin inlets on Naubuc Avenue, Putnam Boulevard, and Glastonbury Boulevard.
- Widening Naubuc Avenue north of Route 3 to 28-feet or wider to provide a minimum 14-foot shared travel lane configuration.
- Installing sidewalk along Naubuc Avenue between Glastonbury Boulevard and Welles Street consistent with previous town plans.
- Providing a shared use path spur from the Route 3 corridor to future Goodwin College trail network improvements along the Connecticut River.



Example "sharrow" marking located along the curb of a shared travel lane.

E | Cost Estimating Procedures

This section describes the procedure, data sources, and assumptions that were used to develop planning-level project cost estimates for the Wethersfield and Glastonbury recommendations. These project cost estimates include two quantifiable components: project development costs and construction costs. Additionally, the project cost estimate could include several indeterminable costs that can be anticipated, but not quantified until subsequent project phases are undertaken.

The project cost estimates for the Wethersfield and Glastonbury recommendations are presented in Section F, page 4-18.

Project Development Cost Estimates

Project development, as a phase of the project implementation process, is discussed in detail in Section 4.H. Generally project development involves the design and administrative efforts required to prepare a project for construction, including: completing survey and geotechnical and environmental site investigations; developing preliminary and final designs; obtaining necessary regulatory approvals and permits; and preparing contract documents. During the planning phase, the cost of the design and administrative efforts associated with project development are estimated as a percentage of the estimated construction contract cost (see *Construction Cost Estimate*, page 4-16, for details of the estimated construction contract cost).

CRCOG's *Cost Estimating Guidelines (2013)*, which have been used to estimate projects funded under the Federal STP-Urban program, suggest that "design" costs (or, more broadly, project development costs) typically range from 16% to 20% of the construction cost, with 10% to 12% allocated to design-related efforts, and 6% to 8% allocated to agency oversight of the project development process.

The project development costs for the shared use path recommendations are based on:

- 16% of the construction contract estimate for the Wethersfield recommendations. The low end of the typical range was applied to reflect:
 - Limited design uncertainties in the project area.
 - Less effort for geotechnical and environmental site investigations.
 - Less effort for obtaining regulatory approvals and permits.
 - No right-of-way acquisition needs.
 - Less effort for utility coordination due to limited anticipated impacts.
- 20% of the construction contract estimate for the Glastonbury recommendations. The high end of the typical range was applied to reflect:
 - Geotechnical design uncertainties associated with currently unknown subsurface conditions in the project area.
 - More effort for obtaining regulatory approvals and permits.
 - Right-of-way acquisition needs along Naubuc Avenue that will require more coordination effort and property appraisals.
 - More effort for utility coordination and design due to anticipated overhead utility relocations along Naubuc Avenue.

Construction Cost Estimate

The construction estimates for the Wethersfield and Glastonbury recommendations generally consist of two components: 1) the construction contract cost, and 2) the construction engineering cost (or “incidentals”). The specific procedures and assumptions used to estimate these two components are presented in this section.

Construction Contract Cost Estimate

The procedure for estimating the construction contract cost is defined by CTDOT’s *2013 Cost Estimating Guidelines*. The procedure generally consists of developing and summing identified and minor item costs (the “base estimate”), contingency costs, and inflation costs for a project, described as follows:

- **Base Estimate.** The base estimate consists of reasonably known costs for identified items (including estimated contract work items and lump sum items) and minor items as determined at the time of the estimate. The costs for each of these items were estimated for the shared use path connections based on the following:
 - *Contract Work Items.* These are generally major work items (such as earthwork, pavement items, sidewalk, curbing, concrete barrier, retaining walls, fencing, drainage structures, among others) for which approximate quantities and estimated prices were determined for each item. Because this study is a planning initiative and not a final design project, the quantities were approximated based on planning-level “design” and best-available existing data. Consequently, the quantities are variable and will change as new and better information is developed or obtained during subsequent project phases. Estimated prices were derived from various sources including CTDOT’s bid price history databases and published references (such as CTDOT’s *2013 Cost Estimating Guidelines*, CRCOG’s *Cost Estimating Guidelines* for the Federal STP-Urban program application (2013), and RSMMeans’ *Heavy Construction Cost Data*, as applicable).
 - *Lump Sum Items.* Lump sum items are clearing and grubbing; maintenance and protection of traffic; mobilization; and construction staking. The cost for each of these items was based on a percent value of the total base estimate, as shown in Table 4-1. The values shown in the table are average values for lump sum items as prescribed by CTDOT’s guidelines.

Table 4-1. Lump Sum Item Values

Lump Sum Item	Value
Clearing and Grubbing	3%
Maintenance and Protection of Traffic	4%
Mobilization	7%
Construction Staking	1%
Total Lump Sum Items	15%

- *Minor Items.* Minor items typically include work items that are known to be required for construction, but are relatively insignificant and too small to quantify individually during the planning and programming phases of project development. The percentage value for minor items is prescribed by CTDOT’s guidelines and can range from 15% to 30% depending on the level of design detail and the completeness of the estimate of contract work items. For this study, the cost for minor items was based on 20% of the cost of the contract work

items. A value from the lower end of the range was selected to reflect a relatively complete quantification of contract work items that was developed for the shared use path recommendations.

- **Contingency.** The construction contingency accounts for the level of risk and uncertainty that is built into an estimate based on the potential amount of unknown work that could be required for a project. The amount of unknown work generally decreases as the level of design increases during project development. The contingency cost was based on 25% of the base estimate; the percentage value for contingency is prescribed by CTDOT's guidelines and can range from 20% to 30% for programming phase estimates. A mid-range value was selected to reflect some general uncertainty associated within unknown subsurface conditions in the project area that could affect the cost of constructing retaining walls and steep embankments for the path connections.
- **Inflation.** Inflation accounts for the general increase of construction costs from the time an estimate is prepared to the time funds are expended for construction. The inflation cost was based on a 4% annual inflation rate applied to the base estimate and contingency costs (using the simple method) for an assumed expenditure date of early-2018. The expenditure date corresponds to the possible beginning of construction in approximately 4.5 years from August 2013, the date of the estimate. This time frame accounts for 18 months for the programming phase and up to three years for the project development phase. The annual inflation rate is prescribed by CTDOT's guidelines.

Construction Engineering Cost Estimate

Construction engineering costs, or incidental costs, account for a variety of activities required to administer a construction contract, including inspection, materials testing, and construction phase design support, among other activities. The percent value of incidental costs varies by size of the project and is prescribed by CTDOT's guidelines: 30% for projects valued at less than \$1 million, and 25% for projects valued from \$1 million to \$5 million. The incidental costs for the Wethersfield and Glastonbury recommendations were based on 30% and 25%, respectively, of the construction contract costs (which is the sum of the base estimate, contingency, and inflation costs).

Indeterminable Costs

In addition to the project development and construction cost components of the overall project, there are several other potential project costs that cannot be reliably estimated until additional data collection and design are completed under subsequent project phases. It is important during the planning phase to understand and plan for the likelihood of these costs being incurred in the future despite the fact that their value cannot be estimated at this time. The indeterminable costs associated with implementation of the shared use path connections could include:

- Acquisition costs for additional right-of-way, particularly in Glastonbury where new sidewalk recommendations could impact existing property frontage on Naubuc Avenue.
- Utility relocation costs, which could involve cost-sharing with the utility owners.
- Wetland creation costs to mitigate any wetland impacts. Although the area of potential wetland impacts can be estimated at this time, the mitigation needs will depend on regulatory agency permitting requirements.

F | Project Cost Summary

The cost estimating procedure presented in Section E was applied to the Wethersfield and Glastonbury recommendations outlined in Sections 4.B and 4.C, respectively, to derive planning-level project cost estimates that include project development costs and construction costs. These project cost estimates are intended to serve two purposes: 1) to provide a basis for determining the level of funding likely needed to advance project recommendations from the planning phase to design and through construction; and 2) to understand how project costs could affect the overall feasibility of implementing the shared use path recommendations.

Wethersfield Project Costs

Table 4-2 summarizes the estimated project development and construction costs for the Wethersfield recommendations. As shown, the project total is \$1.40 million. No additional indeterminable costs are anticipated with the recommendations based on the current assessment of potential project impacts.

Table 4-2. Cost Summary | Wethersfield

Category	Estimated Cost
Project Development	\$130,000
Construction Contract (2018 \$)	\$980,000
Construction Engineering (2018 \$)	\$290,000
Project Total	\$1,400,000

It is noted that the project total includes approximately \$190,000 in contract work items (including Great Meadow Road improvements, parking accommodations, railing, lighting, and amenities) that were added to the base estimate subsequent to the selection of the preferred Wethersfield alternative and during development of the recommendations. Additionally, the total reflects a 15% increase in contingency costs and 18% inflation costs. A comprehensive cost summary is provided in Appendix 4.

Glastonbury Project Costs

Table 4-3 summarizes the estimated project development and construction costs for the Glastonbury recommendations. As shown, the project total is \$6.24 million, exclusive of additional costs for property acquisition, utility relocations, and environmental mitigation that are indeterminable at this phase.

Table 4-3. Cost Summary | Glastonbury

Category	Estimated Cost
Project Development	\$750,000
Construction Contract	\$4,390,000
Construction Engineering	\$1,100,000
Indeterminable Costs ¹	To be Determined (TBD)
Project Total	\$6,240,000 + TBD

¹ Indeterminable costs include property acquisition, utility relocation, and environmental mitigation costs.

It is noted that the project total includes approximately \$750,000 in contract work items (including drainage modifications, fencing, railing, lighting, and amenities) that were added to the base estimate subsequent to the selection of the preferred Glastonbury alternative and during development of the recommendations. Additionally, the total reflects a 15% increase in contingency costs and 18% inflation costs. A comprehensive cost summary is provided in Appendix 4.

G | Project Phasing Opportunities

With consideration to streamlining project development and capitalizing on potential cost savings associated with economies of scale, it is advantageous to implement the entire scope of the Wethersfield and Glastonbury recommendations as a single project. Additionally, with consideration to the transportation utility of the shared use path connections, the primary components of the path connections to the Putnam Bridge walkway will have to be implemented in both towns, either as a single project or as separate projects, in order to provide a complete and continuous transportation facility. However, with consideration to the overall cost of the recommendations, it would be possible to defer the implementation of some secondary components to later phases while still providing adequate connectivity between Great Meadow Road and Naubuc Avenue. The benefit of deferring some secondary components would be a near-term reduction of the project costs; the drawback would be a potential reduction of recreational utility and user conveniences during the initial phases, and an increase in the cost of implementing these components under subsequent phases.

The following secondary components of the Wethersfield and Glastonbury recommendations could be implemented under subsequent project phases:

- Parking accommodations on Great Meadow Road.
- Parking accommodations on Naubuc Avenue.
- Sidewalk improvements on the east side of Naubuc Avenue.
- Some user amenities and aesthetic enhancements.

The potential cost reductions associated with deferring these secondary components for implementation under subsequent project phases is summarized in Table 4-4. As shown in the table, the combined cost reduction represents approximately 10% of the \$7.64 million total project costs estimated for the Wethersfield and Glastonbury recommendations (as shown in Tables 4-2 and 4-3).

Table 4-4. Potential Cost Reductions Associated with Deferring Secondary Components

Category	Potential Cost Reduction		
	Wethersfield	Glastonbury	Combined
Project Development	\$30,000	\$60,000	\$90,000
Construction Contract	\$220,000	\$320,000	\$540,000
Construction Engineering	\$20,000	\$80,000	\$100,000
Total	\$270,000	\$460,000	\$730,000

H | Implementation

CTDOT recognizes that implementation of the shared use path recommendations as a locally-administered project using state and federal funding sources is not viable given the estimated costs of implementation. As such, CTDOT is committed to providing access to the Putnam Bridge walkway, but the nature and extent of the access provisions and the timing of their implementation are to be determined by CTDOT in cooperation with local and regional stakeholders. Overall funding considerations will be key to the decision-making process. CTDOT has indicated the fundamental next step in the process is adopting the project recommendations into the regional Transportation Improvement Program (TIP) and Statewide TIP (STIP) to define potential funding sources.

As of the publication date of this document, it is not known whether the shared use path recommendations of this study will be implemented in whole or in part by CTDOT. If the recommendations are implemented in part by CTDOT, there will likely be opportunities for some improvements (such as the complementary improvements recommendations outlined in Section 4.D) to be implemented as one or more locally-administered projects. The information in this section is provided as guidance for the implementation of locally-administered projects assuming that the towns of Wethersfield and Glastonbury will be the local agencies undertaking the implementation process and that one or more state or federal-aid funding sources will be used to help finance the projects.

Implementation Process

The project implementation process includes four basic phases as shown in Figure 4-6. The process is generally linear, though overlapping efforts are possible between the planning-programming phases and programming-project development phases (particularly as they relate to programming construction funds during project development). The primary activities associated with each of these four phases are described in the following paragraphs.



Figure 4-6. Project Implementation Process

Planning & Programming

The planning phase typically involves defining project purpose and need; developing a project concept; performing initial public outreach; and identifying potential funding sources. This study, including the study process itself and its recommendations, has accomplished these planning tasks and generally provides the necessary planning basis to advance potential projects to the programming phase.

The programming phase involves the local agencies coordinating with CRCOG and CTDOT to identify and secure state and/or federal-aid funds for potential projects and obtaining authorization to proceed with project design. Once design authorization is obtained and, as required, a CTDOT-local agency agreement is executed, the project development phase can proceed.

The duration of the programming phase, once initiated, is highly variable and will ultimately be affected by the availability of funds; the priority level of individual projects among other high-priority state and regional projects; and the degree to which projects are championed through the process by the local agencies and project advocates.

Project Development

The project development phase involves advancing the project concept (developed during the planning phase) through design to construction. The general steps are illustrated in Figure 4-7 and described below.

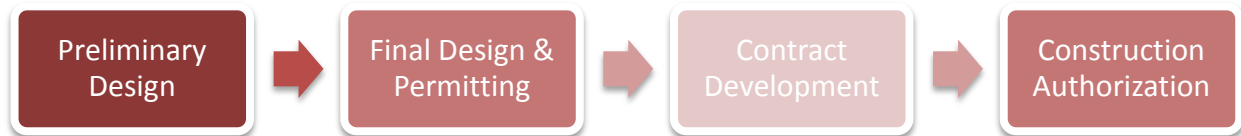


Figure 4-7. General Project Development Steps

- Preliminary Design.** Includes: procuring a consultant or assigning in-house personnel to design the project; developing Preliminary Design Plans; completing documentation, as needed, to satisfy National Environmental Policy Act (NEPA) and Connecticut Environmental Policy Act (CEPA) requirements; and obtaining design approval and authorization for Final Design for federal-aid projects.
- Final Design & Permitting.** Includes: developing Semi-Final Design Plans; obtaining necessary approvals and permits from regulatory agencies; coordinating utility relocations; completing acquisition of rights-of-way; and preparing Final Design Plans.
- Contract Development.** Includes: refining Final Design Plans; preparing Plans, Specifications, and Estimates (PS&E); and preparing construction bid documents.
- Construction Authorization.** Includes obtaining authorization to advertise the project for construction. Once authorization is obtained and, as required, a CTDOT-local agency agreement is executed, the construction phase can proceed.

The timeline for project development of the full-scale shared use path recommendations is anticipated to be 18 to 36 months.

Construction

Construction is the last phase of project implementation and involves two primary activities on the part of the local agency:

- Advertising the project for construction and procuring a contractor.
- Procuring a consultant or assigning in-house personnel to provide inspection services and record-keeping throughout construction.

The timeline for construction of the full-scale shared use path recommendations is anticipated to be approximately 18 months.

Potential Funding Sources

One or more funding sources could be utilized to provide the necessary capital for project development and construction of various shared use path recommendations. These sources could include traditional state and federal transportation funding programs to finance 80% or more of eligible project costs, and a variety of alternative public and private funding mechanisms to finance the balance (including the local match of up to 20% for federal-aid projects and any non-eligible or non-participating project costs).

Federal Funding Programs

Federal aid for transportation projects is provided by the current Federal transportation bill – *Moving Ahead for Progress in the 21st Century Act* (MAP-21) – through FHWA. Current federal funding programs for which the shared use path recommendations could be eligible are generally limited and the future of these programs is uncertain. These federal funding programs include the following:

- **Recreational Trails Program (RTP).** RTP is funded through a set-aside of the State's Transportation Alternatives Program (TAP) apportionment under Map-21. RTP provides funding for eligible project activities such as construction of new trails and purchase of maintenance equipment for trails, among others. RTP grants are administered by the Connecticut Department of Energy and Environmental Protection (CTDEEP) through an application and competitive selection process. Grants can be awarded to eligible project sponsors (including private organizations, municipalities, state and regional agencies, and other government entities) and can be utilized as matching funds for other Federal funding programs. It is noted that CTDEEP's latest solicitation for RTP project applications was received in March 2013. The total allocation of RTP funds was \$900,000 for the 2013 solicitation. The next anticipated solicitation will be in 2015.
- **Transportation Alternatives Program (TAP).** The balance of the TAP apportionment (after deduction of the RTP set-aside) provides funding for a variety of non-motorized transportation system projects, including the planning, design, and construction of on and off-road trail facilities and sidewalks. The apportionment is suballocated with 50% providing funding for TAP-eligible projects in urbanized areas and 50% providing funding for TAP-eligible projects anywhere in Connecticut. For the urbanized area allocation, metropolitan planning organizations (MPOs, including CROCOG for projects in Wethersfield and Glastonbury) are responsible for identifying and prioritizing projects through a competitive process; the selection of projects for funding is conducted by CTDOT based on project recommendations from the MPOs. It is noted that CROCOG's latest solicitation for projects to be funded with sub-allocated TAP funds was received in 2011 and included projects for federal fiscal year (FFY) 2013 through FFY2016. It is anticipated that sub-allocated TAP funds will not be available before FFY2017.

TAP provides reimbursement for up to 80% of eligible project costs. A minimum 20% match to federal funds is required. For projects funded under the urbanized area allocation, the local agency is responsible for securing the 20% match.

The **Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program** is another potential federal funding source for transportation projects. TIGER grants are awarded by the US Department of Transportation (DOT) through a rigorous and competitive application process to a variety of public entities (including State DOTs, municipalities, and MPOs) to fund a share (up to 80%, but typically a lesser portion) of regionally-significant multimodal transportation projects. The last solicitation for TIGER grant applications closed in April 2014. Similar to MAP-21 programs, future funding of the TIGER grant program is also uncertain.

State Funding Programs

State funding for locally-administered projects is currently available through three programs, including:

- **Local Transportation Capital Improvement Program (LOTICIP).** LOTICIP provides state monies to municipalities in urbanized areas in lieu of federal funds previously available through the federal STP-Urban Program. LOTICIP funds can only be utilized for construction; funding for 100% of project design is the responsibility of the municipality. LOTICIP is administered by the regional planning organizations (RPOs), such as CROCOG, and eligible projects are solicited and selected by RPOs based on regional transportation priorities, deficiencies identified in long range plans, and the specific merits of the individual projects. Projects must meet the eligibility requirements of the Federal STP-Urban Program and be valued at \$300,000 or more. Projects can include

standalone sidewalk and bicycle/pedestrian projects, though funding levels for these projects are limited by the program guidelines. The total LOTCIP funds allocated to CROCOG for regional projects, including eligible projects in Wethersfield and Glastonbury, was \$9.8 million for fiscal year 2014. LOTCIP is provided under Section 74 of Public Act 13-239 and is funded with special tax obligation bonds issued by the State Bond Commission.

- **Small Town Economic Assistance Program (STEAP).** STEAP provides up to \$500,000 per year for funding of economic development, community conservation, and quality-of-life capital improvement projects in eligible communities, including Wethersfield and Glastonbury. STEAP grants are administered annually by the Connecticut Office of Policy and Management (OPM). The program is funded with general obligation bonds issued by the State Bond Commission.
- **Local Capital Improvement Program (LoCIP).** LoCIP provides entitlement grants to municipalities for reimbursement of costs for eligible and approved local capital improvement projects. Grants are distributed by OPM through a project approval process. To be eligible, a project must be consistent with the municipally-adopted capital improvement plan. Grants can be used toward the balance on projects receiving other funding, but cannot be used to satisfy a local match for any other State funding program. As of March 2013, the current entitlement amounts for Wethersfield and Glastonbury were approximately \$200,000 each. The program is funded with general obligation bonds issued by the State Bond Commission.

Alternative Funding Mechanisms

A variety of alternative funding mechanisms outside of the traditional state and federal programs can be pursued by the local agencies and other project advocates to help finance the design and construction of various shared use path recommendations. Potential alternative funding mechanisms include:

- **Fundraising Events.** Special events or activities can be organized by project advocates to raise funds for implementation. Examples include concerts, raffles, festivals, online auctions, or local road races.
- **Donations.** Private organizations, businesses, or individuals can contribute funds, materials, professional services, or volunteer time towards the implementation of relatively small-scale project components. Various donations can include community service projects by local high school groups or scout troops; volunteer and non-profit group undertakings; and free professional services provided by local contractors, engineers, and tradesmen, among others.
- **Sponsorship Programs.** Formal sponsorship programs can be established by the local agencies or project advocates providing a mechanism by which small-scale amenities and project enhancements – such as benches, bike racks, information kiosks and signs, among other elements – are paid for and donated to the project in the name of private organizations, businesses, or individuals.
- **Private Foundation and Company Grant Programs.** There are numerous foundations and companies, such as the Bikes Belong Coalition, that provide grants for projects like the shared use path recommendations. Project advocates can research candidate programs through local and national databases and prepare application packages on behalf of the local agencies.
- **Local Tax Revenues.** A portion of the municipal budgets for capital improvement projects can be allocated to provide the balance of funds required for implementation. Ideally, local tax revenues would be applied after all other funding sources are exhausted.

Additional information and resources for these and other alternative funding mechanisms are provided in Appendix 4.

I | Path Maintenance

On-going efforts to maintain the physical condition, appearance, safety, and overall function of the shared use paths will be required indefinitely once construction is complete. Similar to other successful shared use path and multimodal trail projects throughout the United States, maintenance responsibilities will likely be shared among several parties (including CTDOT, municipal forces, and volunteer groups), requiring a comprehensive maintenance plan and multiple maintenance agreements to define these responsibilities. The maintenance plan and maintenance agreements should be developed concurrently with project development and in-place prior to opening the shared use paths and associated parking accommodations to public use. As owner of the facility, CTDOT should lead coordination efforts with the municipalities to ensure completion of following activities:

- Developing a comprehensive maintenance plan to define individual maintenance activities, the frequency of these activities, and the parties responsible for performing and financing these activities. A preliminary maintenance plan for the shared use paths and associated parking accommodations is shown in Figure 4-8.
- Developing maintenance agreements between CTDOT and the municipalities to define respective maintenance roles, including performance and financial responsibilities.
- Developing maintenance agreements between the municipalities and volunteer groups to assign municipal activities to each volunteer group and to define financial responsibilities for any special equipment and materials required for these activities. As many activities as possible should be delegated to volunteers in order to lessen the municipal maintenance obligations.
- Preparing an estimate of labor, equipment, and materials costs for the municipal maintenance activities and including these costs in upcoming budget discussions and fiscal planning efforts.

Figure 4-8. Preliminary Maintenance Plan

Activity	Annual Frequency	Resources Needed		Responsible Party		
		Special Equip.	Materials	Municipal	State	Volunteer
Regular and Seasonal Maintenance						
Pavement Sweeping	3	✓		✓		
Leaf Clearing	4					✓
Snow/Ice Removal	As Needed	✓	✓	✓		
Mowing/Trimming	30	✓		✓		
Weed/Invasive Species Control	1	✓	✓	✓		
Landscaping	10		✓			✓
Pruning	2					✓
Tree/Limb Clearing	As Needed	✓			✓	
Trash Removal	52		✓			✓
Litter Collection	12		✓			✓
Kiosk Upkeep	12		✓			✓
Amenity Upkeep	12		✓			✓

Figure 4-8. Preliminary Maintenance Plan (continued)

Activity	Annual Frequency	Resources Needed		Responsible Party		
		Special Equip.	Materials	Municipal	State	Volunteer
As-needed Infrastructure Maintenance						
Sign Repair	As Needed		✓		✓	
Lighting Repair	As Needed	✓	✓		✓	
Railing Repair	As Needed	✓	✓		✓	
Fencing Repair	As Needed	✓	✓		✓	
Shoulder Repair	As Needed	✓	✓		✓	
Drainage Repair	As Needed	✓	✓		✓	
Kiosk Repair	As Needed		✓	✓		
Amenity Repair	As Needed		✓	✓		

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Appendix 1

Advisory Committee Meeting Summaries

Public Information Meeting Summary

Meeting Summary | Advisory Committee Kick-off Meeting

Date/Time: Thursday, January 31, 2013, 9:00 a.m.

Location: Riverfront Community Center Conference Room, 300 Welles Street, Glastonbury

Purpose: Introduce the study to the Advisory Committee and obtain initial input on goals, design considerations, and other opportunities/constraints for the project area.

Attendees: Attendee sign-in sheet attached.

Summary of Meeting Discussion:

1. Dave Head, CTDOT's project manager, opened the meeting at approximately 9:05 a.m. Advisory Committee (AC) members, CTDOT staff, and CHA (CTDOT's consultant) provided introductions.
2. Jeff Parker, CHA's project manager, presented an overview of the study including the study purpose, study area, scope of work, and anticipated schedule. Several key points included:
 - The role of the AC was defined to include helping guide both the study process and the development of recommendations.
 - Milestones at which AC meetings will be conducted were identified. It is anticipated that up to five meetings will be conducted depending on the need.
 - One public meeting will be conducted and it is anticipated for May 2013. CHA noted the importance of holding the meeting prior to the beginning of the summer season in order to maximize potential attendance.
3. A *Resource List* was distributed outlining the documents and other data that have been collected for reference in development of the study. CHA requested the AC review the list and provide input on whether there are other relevant resources available. No input was immediately provided.
4. CHA reviewed the *Preliminary Planning and Design Goals* for the project, which include: maximize transportation and recreational utility; minimize impacts; and facilitate implementation. CHA noted that these goals were developed based on CHA's understanding of the project and requested AC input on the specifics of the preliminary goals.
5. CHA presented the general design considerations for the project, including the AASHTO definition of a shared use path/trail, design standards, and relevant examples of shared use paths/trails (such as Farmington Canal Trail, Smith School Greenway, Quinnipiac River Linear Trail, Charter Oak Greenway, and I-890 Shared Use Path in Schenectady, NY). CHA requested the AC provide input on features of other paths/trails they have used and that they like or dislike. No input was immediately provided.

6. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the preliminary goals and other design considerations:
- *Are the trail connections intended to be truly multimodal?*
 - The connections will be planned according to AASHTO standards for shared use paths and the intent is to accommodate a variety of users including bicyclists, pedestrians, joggers, skaters, etc.
 - *Will the path/trail need to be maintained year round?*
 - The intent is to promote year-round use. This could be accomplished by planning/designing for ease of maintenance with consideration to equipment access and direct sun for natural snow melt.
 - *Who will be responsible for maintaining the trail connections? A conversation about this early in the process will be helpful. Will CTDOT maintain within the State right-of-way?*
 - CTDOT indicated that maintenance responsibilities will have to be defined, but it is anticipated that the municipalities will generally be responsible for seasonal maintenance; maintenance of some physical infrastructure, like retaining walls, could be eligible for CTDOT assistance.
 - *What is the plan for collecting public input? Will there be a charrette process?*
 - The primary outreach mechanisms of the study are AC meetings and a public meeting. It is anticipated that the AC will provide insight for the town/group/entity that they represent. The public meeting format has been preliminarily defined and could include a formal presentation of one or more alternatives, preceded by an open house session, and followed by a question/comment and answer period. CHA noted that this format can be changed if the AC believes that a different format would be more effective in their communities.
 - D. Head suggested that CTDOT could host a lunchtime web meeting to broaden the community outreach effort. The meeting would provide an overview of the study and solicit input on the goals, design considerations, and other opportunities/constraints in the study area.
 - *Will potential phasing and funding of trail improvements be considered? Funding opportunities need to be taken advantage of as they come up.*
 - The study report will include guidance on potential funding sources and recommendations for project phasing.
 - *Will the trail connections be paved the entire length?*
 - A paved surface has been assumed at this time; this assumption is consistent with the goal of maximizing utility by accommodating a variety of users. It was noted that other surface materials such as crushed aggregate or concrete could be evaluated on the basis of durability, cost, and accessibility.

- *Will the trail connections be paved the entire length? (continued)*
 - Potential phasing could include initial construction of a crushed aggregate surface with a paved surface provided in the future.
 - CTDOT noted that eligibility for Federal funding could be contingent upon the trail being paved and ADA-accessible.
 - *What will be the width of the Putnam Bridge walkway?*
 - The full width will be 6'-8", but reduced to 6' adjacent to light poles.
 - *Preferences for potential path/trail termini in Glastonbury could be different for commuters and recreational users.*
 - Specifically, bicycle commuters may be more comfortable with connecting to the street network as near to the bridge as possible so that they can make their own choices about which pathway to take along the streets.
 - Recreational users, particularly pedestrians, might prefer a terminus that is more proximate to an origination/destination (such as a parking area, employment center, etc.).
 - *What are the regional bike commuter travel patterns that the project is intended to accommodate?*
 - It was noted that the termini in Glastonbury should consider how users will be connecting to/from the north (East Hartford) and south, as well as to/from the east.
 - It was noted that bike traffic counts could be useful in understanding potential user demand and travel patterns.
 - CRCOG maintains a bike/pedestrian counting program for the region and can check into the availability of counts for the study area.
 - *Potential conflicts between user groups need to be considered, particularly near termini, where direction of travel to adjacent sidewalks or on-street bike facilities could cause user paths to cross creating safety concerns.*
7. CHA summarized some of the key design considerations as they are currently envisioned by CHA, including: location of the future Putnam Bridge walkway on the northbound/south side of the bridge; connectivity, safety, trail amenities, and parking accommodations at termini; and path/trail alignment relative to Keeney Cove crossing opportunities, floodplain/wetland/property constraints, constructability, and user experience considerations.
8. The AC was prompted to consider the following for discussion after a brief break at 10 a.m.: other opportunities and constraints in the project area; other local conditions or considerations that CHA/CTDOT should be aware of; and individual or community priorities for the project.

9. After the break, CHA presented maps illustrating the key environmental resources in the study area including 100-year floodplains and wetlands. The following key points were noted:
- 100-year floodplain limits approximately follow the edge of the Route 3 roadway in Glastonbury.
 - Wetland soils are extensive throughout the study area and delineated wetland limits (obtained as part of the Putnam Bridge rehabilitation project) generally follow the bottom of the Route 3 embankment in Glastonbury. There are also delineated wetland areas within the I-91 interchange in Wethersfield.
 - CHA noted that it does not appear likely that floodplain and wetland impacts in Glastonbury could be completely avoided by a trail connection to the bridge.
10. CHA presented an aerial map of the project area that illustrated some of the key design considerations for the path/trail alignment and termini. The following comments, questions, and other considerations (in italics, followed by responses or additional discussion, where applicable) were discussed:
- *CHA noted that the path alignment from the bridge in Wethersfield will generally loop around to the southwest, parallel the Exit 25 off-ramp, and terminate at Great Meadow Road near the ramp intersection. Design considerations will include the grade of the path, resulting length, and potential wetland impacts.*
 - It was noted that the intersection is relatively low volume and that Great Meadow Road is an existing bike route.
 - There could be opportunity for some parking accommodations in this area.
 - The Town noted that the recommendations should be coordinated with, and not preclude, the potential for a future boat launch on the Connecticut River in this area. (Note: Provisions for a future boat launch were previously required by CTDEEP a part of any bridge *reconstruction* project. The boat launch is not required as part of the 2013 bridge *rehabilitation* project.)
 - *What are the considerations for possible termini in Glastonbury? CHA preliminarily identified Point Road, Naubuc Avenue adjacent to Route 3, Naubuc Avenue at Putnam Boulevard, and Glastonbury Boulevard at Route 3 northbound ramps as potential locations.*
 - CHA noted that terminating the trail on the west side of Naubuc Avenue adjacent to Route 3 would create a mid-block crossing for bicyclists and pedestrians.
 - It was noted that a mid-block crossing is not a preferred condition. CHA noted that visibility for a mid-block crossing in this area is good and that there is precedent in Glastonbury for mid-block crossings.
 - The mid-block crossing could be eliminated by extending the trail along Naubuc Avenue to the Putnam Boulevard intersection, if space allows. A crossing at Putnam Boulevard would be unsignalized.

- *What are the considerations for possible termini in Glastonbury? (continued)*
 - CHA noted that instead of terminating at Naubuc Avenue, the trail could continue along Route 3 and follow the northbound off-ramp to Glastonbury Boulevard. Sidewalk, signalized crossing opportunities, proximity to employment centers, access to transit service, adjacent parking opportunities, and the existing “gateway” were cited as positive features of this location. Naubuc Avenue could be crossed at-grade or via a future walkway adjacent to the Route 3 bridge over Naubuc Avenue.
 - AC members generally questioned the benefits of continuing the trail beyond Naubuc Avenue and generally agreed that the trail should connect to the street network as close as possible to the Putnam Bridge.
 - It was suggested that access to the trail via Naubuc Avenue would best accommodate bike commuters, providing a more direct route to points north in East Hartford and south to Main Street and Route 17 in Glastonbury.
- *Should a path connection from the bridge to Point Road be ruled out as a viable alternative?*
 - It was noted that Keeney Cove waters flood over the Point Road bridge approximately one-third of the year, particularly during the spring, which would excessively limit accessibility.
 - Access through private property would have to be obtained for the connection.
 - The general consensus was that a Point Road connection should be eliminated from further consideration. CHA will document this decision as part of the study.
- *How critical are parking accommodations at or near the trail termini?*
 - It was noted that driving to the trail should not be encouraged for health and environmental reasons, but access for some users should necessarily be discouraged by the absence of available parking.
 - If parking dedicated to trail use cannot be accommodated at a trailhead, it would be beneficial to have parking in adjacent commercial areas or in nearby park-and-ride lots be relatively accessible and convenient to/from the trail.
- *Is there enough room on Naubuc Avenue to extend the path/trail to both Putnam Boulevard and Glastonbury Boulevard?*
 - This opportunity will have to be evaluated within the constraints of the Route 3 bridge over Naubuc Avenue and existing rights-of-way.
 - It was noted that provisions for sidewalk between the boulevards along the east side of Naubuc Avenue might be the most viable connection.
- *CHA noted that recreational trail spurs to/from the main trail alignment could be provided to accommodate Connecticut River access or to connect to future Goodwin College trail network.*

- *CHA noted that a trail alignment along the north side of Route 3 in Glastonbury could be a potential alternative. The trail would loop down from the south side of the Putnam Bridge and wrap around under the bridge to get to the north side.*
 - It was questioned whether environmental considerations would make the north side more desirable than the south side for the trail alignment. CHA noted that a trail on either the north side or south side would have similar constraints.
 - It was noted that there are existing farming roads under the bridge that would need to be considered and maintained. These were identified on the aerial map.
 - It was noted that the south side of the existing Route 3 embankment likely receives more direct sunlight than the north side, which could be shadowed by Route 3.
- *Other discussion items included:*
 - More outreach is needed to better understand bicycle and pedestrian user needs and preferences.
 - Steve Braun noted that the Smith School Greenway project in Glastonbury used a 10-year flood elevation as a minimum trail elevation for design purposes.
 - Glastonbury will provide record plans for the Point Road bridge, if available.
 - Deb Dauphinais suggested that Main Street in Glastonbury north of Hebron Avenue is not part of the “priority roadways” classification identified in the Glastonbury Bicycle Master Plan. D. Dauphinais will provide clarification on which sections of Main Street are intended to be “priority roadways.”
 - CHA noted that an adjacent land owner in Glastonbury has expressed concerns over the potential for the trail to encourage trespassing in the area. Specific fencing needs will be considered as part of the study.

11. CHA highlighted the next steps for the study including:

- The next AC meeting is anticipated for March 2013 and that a request for meeting availability would be sent to the AC in the coming weeks. The purpose of the meeting will be to review and discuss preliminary alternatives.
- CTDOT and CHA will organize a web meeting for February. CHA will be requesting AC assistance in identifying potential web meeting participants.

12. The meeting concluded at approximately 11:15 a.m.

Sign-In | Advisory Committee Kick-off Meeting

Date: Thursday, January 31, 2013

Name / Representing	Contact Information	In Attendance
Aloise, Rob CRCOG	Principal Transportation Engineer 241 Main Street Hartford, CT 06106 raloise@crco.org 860.522.2217 Ext. 214	<input checked="" type="checkbox"/>
Andrews, Todd Goodwin College	Vice President for College Relations & Advancement One Riverside Drive East Hartford, CT 06118 TAndrews@goodwin.edu 860.727.6937	<input checked="" type="checkbox"/>
Bagley, Kathy Wethersfield	Director of Parks and Recreation 505 Silas Deane Highway Wethersfield, CT 06109 kathy.bagley@wethersfieldct.com 860.721.2890	<input checked="" type="checkbox"/>
Bockus, Tim East Hartford	Director of Public Works Public Works Administration 61 Ecology Drive East Hartford, CT 06108 tbockus@easthartfordct.gov 860-291-7361	<input checked="" type="checkbox"/>
Bowman, Sarah CHA	Project Engineer 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 sbowman@chacompanies.com 518.453.8726	<input checked="" type="checkbox"/>
Braun, Steve Glastonbury	Assistant Town Engineer 2155 Main Street Glastonbury, CT 06033 stephen.braun@glastonbury-ct.gov 860.652.7736	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Kick-off Meeting

Date: Thursday, January 31, 2013

Name / Representing	Contact Information	In Attendance
Dauphinais, Deb CT Bicycle and Pedestrian Advisory Board	Bicycles East 331 New London Turnpike Glastonbury, CT 06033 ddauphinais@BicyclesEast.com 860.659.0114	<input checked="" type="checkbox"/>
Giannotti, Laurie CTDEEP	Title: 79 Elm Street Hartford, CT 06106-5127 Laurie.Giannotti@ct.gov 860.424.3578	<input checked="" type="checkbox"/>
Head, Dave CTDOT	Transportation Supervising Planner 2800 Berlin Turnpike Newington, CT 06131 David.Head@ct.gov 860.594.2149	<input checked="" type="checkbox"/>
Horan, Denise East Hartford	Town Engineer Town Hall - Lower Level 740 Main Street East Hartford, CT 06108 dhoran@easthartfordct.gov 860.291.7380	<input checked="" type="checkbox"/>
Johnson, Richard Glastonbury	Town Manager 2155 Main Street Glastonbury, CT 06033 richard.johnson@glastonbury-ct.gov 860.652.7500	<input type="checkbox"/>
Kennedy, Kelly Bike Walk CT	Executive Director PO Box 270149 West Hartford, CT 06127-0149 kelly.kennedy@bikewalkct.org 860.904.2420	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Kick-off Meeting

Date: Thursday, January 31, 2013

Name / Representing	Contact Information	In Attendance
Parker, Jeff CHA	Project Manager 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 jparker@chacompanies.com 860.257.4557	<input checked="" type="checkbox"/>
Rattan, Kate CTDOT	Non-motorized Transportation Coordinator 2800 Berlin Turnpike Newington, CT 06131 Katherine.Rattan@ct.gov 860.594.2146	<input checked="" type="checkbox"/>
Shooshan-Stoller, Ken FHWA	Bike/Ped Coordinator FHWA Connecticut Division Office 628-2 Hebron Avenue, Suite 303 Glastonbury, CT 06033 kenneth.shooshan-sto@dot.gov Phone:	<input checked="" type="checkbox"/>
Stein, Jeff Bike Walk Glastonbury, Inc.	Secretary, Bike Walk Glastonbury 142 Olde Stage Rd Glastonbury, CT 06033-3250 Jestein49@aol.com Phone: 860-659-1228	<input checked="" type="checkbox"/>
Turner, Michael Wethersfield	Director of Public Work/Town Engineer 505 Silas Deane Highway Wethersfield, CT 06109 mike.turner@wethersfieldct.com (860) 721-2850	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Kick-off Meeting

Date: Thursday, January 31, 2013

Name / Representing	Contact Information	In Attendance
Name: Gary Mirard Representing: Goodwin College	Title: Director, College Relations Address: One Riverside Drive East Hartford, CT 06118 Email: gmirard@goodwin.edu Phone: 860-727-6733	<input checked="" type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>

Meeting Summary | Advisory Committee Meeting No. 2

Date/Time: Thursday, April 4, 2013, 9:00 a.m.

Location: Riverfront Community Center, Community Room B, 300 Welles Street, Glastonbury

Purpose: Review preliminary alternative shared use path connections for the Wethersfield and Glastonbury approaches to the future Putnam Bridge walkway.

Attendees: Attendee sign-in sheet attached.

Summary of Meeting Discussion:

1. Jeff Parker opened the meeting at approximately 9:00 a.m. Advisory Committee (AC) members, CTDOT staff, and CHA staff provided introductions.
2. CHA presented an overview of what was discussed at the AC kick-off meeting, including project design goals and objectives, and design considerations.
3. CHA presented three preliminary alternatives for the Wethersfield path connection, all three of which connect the walkway to the proposed terminus at the intersection of Great Meadow Road and the I-91 Exit 25 off ramp. The following summary provides a brief description of the Wethersfield alternatives:
 - **Alternative 1** – The most gradual transition from the walkway down to the terminus. Grades are 5% or less and the path curvature meets the design standards established for the project. The path is longer than the other alternatives to accommodate the lesser grades and standard curvature, but this layout will have wetland and floodplain impacts.
 - **Alternative 2** – The shortest connection from the walkway to the terminus, generally located within the limits of the temporary haul road that will be constructed for the Putnam Bridge Rehabilitation Project. This location will minimize new clearing impacts in the project area, but it requires sharper curvature and the use of steeper grades that are up to 8% (for 200 feet). No wetland or floodplain impacts are anticipated with this alternative.
 - **Alternative 3** – An intermediate path location that maintains grades of 5% or less from the walkway to the terminus. The path uses the sharper curvature of Alternative 2 and is slightly longer, but avoids the floodplain impacts of Alternative 1 and minimizes potential wetland impacts.

A detailed matrix comparing the alternatives was provided at the meeting (*Note: the matrix with a Preliminary Alternatives Summary is available on [CTDOT's Putnam Bridge Multimodal Trail Connections Feasibility Study webpage](#)*).

4. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the Wethersfield alternatives:

- *Will Army Corps of Engineers' approval be needed?*
 - It is anticipated that there will be permitting through the Corps when the study moves into project design.
- *What type of separation will there be between Route 3 and the shared use path?*
 - A concrete barrier with fencing along the top will be provided between the roadway and the path.
- *Can a truck plow that is used to clear the shared use path also be used to clear the walkway on the bridge?*
 - The walkway is not designed to accommodate the width and weight of a truck; an alternative snow removal method will be required for the walkway.
- *Regarding Alternative 2, can the path alignment and side slope be modified to eliminate potential sight line obstructions (as looking from the ramp to Great Meadow Road)?*
 - It is possible to modify the alternative to address sight line concerns, however, the required path alignment could be located outside of the haul road footprint and could result in steeper grades for a portion of the path.
- *Are there any sight line issues with Alternative 3?*
 - There are no anticipated sight line issues with this alternative.
- *It was noted that during a March 28, 2013 meeting with Kathy Bagley (Wethersfield AC representative), potential river access from Great Meadow Road was discussed. It is possible that a connection could be provided from the path terminus to the river utilizing some of the area to be used for access to the bridge piers for the bridge rehabilitation project, though additional permitting could be required. A river connection could also be linked to potential parking accommodations for the path.*
- *What is included in the cost estimates provided in the comparison of alternatives matrix?*
 - The estimates reflect hard construction costs and do not include costs for design, project administration, utility relocations, property acquisition (if required), or environmental impact mitigation.
 - The estimates are developed in accordance with CTDOT's Preliminary Cost Estimating Guidelines and are intended to provide a reasonable order-of-magnitude comparison among the alternatives.
 - It was noted that significant environmental impact mitigation, particularly to address wetland impacts, could significantly increase overall costs.

[Note: This cost estimate discussion also applies to the Glastonbury alternatives.]

- *It was noted that a SHPO Phase 1 study may not be needed if the path (particularly in Glastonbury) is located on the existing embankment. An archaeological study along the entire alignment could very costly and may be required if the path is located off of the embankment.*

- *Are there concerns that the path will not be usable year-round due to flooding? What percentage of the time will the path be flooded?*
 - It is not anticipated that the Wethersfield path will experience seasonal flooding as two of the three alternatives are located above the 100-year flood elevation, and all are above the 10 year-flood elevation. However, flooding could be an issue for the Glastonbury path, where all alternatives have some portion of the path that is within the 100-year floodplain, and in some cases below the 10-year flood elevation.
 - It would be difficult to estimate the duration of flooding events and the amount of time for which each path alternative could be flooded on an annual basis due to seasonal, 10-year, or 100-year storm events. It was noted that generally there is a 10% annual chance of a 10-year storm occurring, and a 1% annual chance of a 100-year storm. For example, if the path is located below the 10-year flood elevation, there is a 10% chance of the path being flooded each year.
- *The potential issues associated with the sharper curves used in Alternatives 2 and 3 were discussed. CHA noted that the curve radius is 30 ft, which is less than the 60-ft minimum radius defined by the design standards and associated with a bicycle speed of 18 mph.*
 - It was noted that bicycle speeds approaching the curve from the bridge walkway should be relatively slow given that the narrowness of the walkway will require some users to dismount and walk with their bikes off the bridge.
 - It was noted that a small rest area located at the the curve could benefit some users.
 - Railing will be provided along the path to prevent bicyclists from riding off the path and down the embankment.
- *There was a general consensus among attendees that Alternative 3 is the most favorable alternative given that the maximum grade is 5%; it could be modified to eliminate potential wetland impacts; there are no floodplain impacts; and it is considerably shorter and a more direct connection than Alternative 1.*
- *CHA discussed potential parking accommodations in Wethersfield, including parking on-street in the vicinity of the path terminus, parking in a new lot located south of the Exit 25 ramp and west of Great Meadow Road, or parking in a new lot located on the east side of Great Meadow Road. CHA noted that any of the parking options could be paired with each of the alternatives. CHA also noted that the need for new parking could be assessed once the path is open and user demand for parking is better defined.*
 - Potential parking accommodations should be further considered as part of this study and included in subsequent permitting for the path, whether the parking will be constructed concurrently with the path or at some future time. This approach will streamline the approval process for new parking if it pursued in the future. There was general consensus from CTDOT and attendees for this approach.
 - Pervious pavement or granular surface treatments should be considered for new parking areas.

5. CHA presented five preliminary alternatives for the Glastonbury path connection, all five of which connect the walkway to the proposed terminus at Naubuc Avenue in the vicinity of the Route 3 overpass. The following summary provides a brief description of the Glastonbury alternatives:
- **Alternative 1** – Following the northbound side of Route 3 along the top of the roadway embankment for most of its length to maximize the path elevation (relative to the 100-year flood elevation) and to minimize the potential for flooding. The path will be separated from the Route 3 shoulder by a concrete barrier and fence providing approximately 13 ft of separation between path users and vehicular traffic. A retaining wall will be used along the right side of the path to minimize new embankment fill within the floodplain and to minimize the potential for wetland impacts.
 - **Alternative 2** – Following the northbound side of Route 3 along the embankment at an elevation at or above the 10-year flood elevation. This elevation allows for greater separation (approximately 25-30 ft) between path users and Route 3 traffic and helps lessen the impact of traffic noise. No retaining wall will be used to reduce costs, but there will be considerable embankment fill within the floodplain and there will be potential wetland impacts along the bottom of the new path embankment.
 - **Alternative 3** – Following the northbound side of Route 3 along the embankment at an elevation at or above the 10-year flood elevation and cut into the side of the existing embankment slope. This path location will have less separation (approximately 18-20 ft) from Route 3 traffic than Alternative 2, but the elevation below the roadway will help lessen the impact of traffic noise. A retaining wall (assumed to be sheet piling) will be required between the roadway and the path to accommodate construction of the path inside the existing embankment slope. There will be no fill in the floodplain (existing embankment will be removed) and potential wetland impacts are anticipated to be minor.
 - **Alternative 4** – Providing significant separation (up to 100 ft or more) between path users and Route 3 traffic by diverging from Route 3 and running on the northbound side of the road outside of the existing roadway embankment for most of its length. This path location will minimize the effect of traffic on the user experience and will provide the most natural trail environment, but will be most susceptible to flooding. This alternative will also require considerable new embankment fill within the floodplain and wetland impacts will be the greatest of the alternatives.
 - **Alternative 5** – Looping from the walkway to the southbound side of Route 3 and following along the top of the Route 3 roadway embankment for most of its length. Similar to Alternative 1, the location will maximize the path elevation (relative to the 100-year flood elevation) and minimize the potential for flooding. The path will be separated from the Route 3 shoulder by a concrete barrier and fence providing approximately 13 ft of separation between path users and vehicular traffic. A retaining wall will be used along the left side of the path to minimize new embankment fill within the floodplain and to minimize the potential for wetland impacts.

A detailed matrix comparing the alternatives was provided at the meeting (*Note: the matrix with a Preliminary Alternatives Summary is available on [CTDOT's Putnam Bridge Multimodal Trail Connections Feasibility Study webpage](#)*).

6. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the Glastonbury alternatives:
- *Where would existing light poles be relocated for Alternatives 1 and 5?*
 - CHA noted that the light poles could be mounted to the concrete barrier, which would require widening of the barrier at each light pole location. The widening would reduce the width of the path shoulder along the barrier but would not affect the overall paved width of the path.
 - *Any fill within the 100-year floodplain will require compensatory flood storage. Can the amount of fill below the 100-year flood elevation be quantified for each alternative?*
 - It was noted that Alternative 3 would provide a net increase in flood storage as existing embankment material would be removed to accommodate the path.
 - It was questioned whether Alternative 3 could be modified to increase the separation between Route 3 and the path while creating no net change in the existing flood storage. CHA will assess this possibility.
 - *CHA noted that the 10-year flood elevation is several feet higher upriver of Route 3.*
 - *Is the rest area adjacent to the bridge necessary?*
 - CHA noted that the space shown for the rest area is intended to serve several purposes including: to accommodate amenities such as a trail sign/kiosk, benches, bike racks, and/or trash receptacles; to provide room for a maintenance or emergency vehicle to turn around at the bridge; and to provide a rest area for users.
 - It was noted that this space also allows bicyclists to mount/dismount at the bridge without blocking through movements on the path and it provides an overlook area for nature-watching.
 - *How long will construction of the path take? When is it anticipated the path will be built?*
 - Generally it will take one construction season to build the path.
 - The schedule for when construction will begin and end cannot be determined at this time. Several factors will affect the duration of the overall implementation process, including: the source and availability of funding; design schedule; and the regulatory review/environmental permitting process.
 - *Have potential parking opportunities been identified in Glastonbury?*
 - CHA noted that there is a possibility for existing commercial parking (in nearby Stop & Shop lot) to be formally allocated to parking for path users.
 - Potential parking impacts to other nearby businesses is a concern for the Town and it was stressed that formal alternative parking accommodations need to be identified.

- *Have potential parking opportunities been identified in Glastonbury (continued)?*
 - The lack of space along Naubuc Avenue for on-street parking was noted.
 - There may be space within the Route 3 right-of-way for some parking.
 - Parking at Whitney Avenue for the Farmington Canal Trail was a noted example.
 - CHA will investigate other parking opportunities for discussion at the next meeting.
 - *Can Alternative 2 be built with a retaining wall?*
 - Yes. Alternative 2 was developed without a retaining wall to determine comparative costs and impacts with Alternative 1.
 - *It was noted that separation between Route 3 and the path is key both from a maintenance perspective and a user perspective.*
 - During the winter months, a greater separation will reduce the amount of snow from Route 3 that could be plowed onto the path.
 - From a user perspective, greater separation will help buffer/reduce traffic noise, road spray, and headlight glare from the roadway.
 - It was noted that Alternative 1 was not attractive because of limited separation.
 - *Alternative 3 assumes that a sheet piling retaining wall would be used. It was noted that an aesthetic façade could be installed on the sheeting if desired.*
 - *Potential connections to the planned Goodwin College trail system should be shown so that any additional environmental/regulatory considerations for these connections can be identified and documented as part of the study.*
 - *The potential extension of the shared use path along residential segments of Naubuc Avenue to connect the path to the Putnam Boulevard intersection was a noted concern of the Town due in part to increased activity and noise levels adjacent to residences.*
 - It was noted that maintenance of a path, if extended along a segment of Naubuc Avenue, would not be provided by the Town.
 - Sidewalk should be considered an alternative to any potential extension of the path.
 - *Several attendees noted that Alternative 3 appears favorable based on the preliminary assessment. Alternative 3 provides separation between the roadway and the path and is located within the existing embankment which will help reduce environmental impacts.*
7. CHA highlighted the next steps for the study including:
- The next AC meeting is anticipated for late May 2013. The purpose of the meeting will be to review and discuss preferred alternatives for presentation at the public meeting.
 - A public meeting is anticipated for June 2013.
 - CHA will follow up with Wethersfield and Glastonbury regarding the need for additional coordination meetings with other town representatives.
8. The meeting concluded at approximately 11:00 a.m.

Sign-In | Advisory Committee Meeting No. 2

Date: Thursday, April 4, 2013

Name / Representing	Contact Information	In Attendance
Aloise, Rob CRCOG	Principal Transportation Engineer 241 Main Street Hartford, CT 06106 raloise@crcog.org 860.522.217 Ext. 214	<input checked="" type="checkbox"/>
Andrews, Todd Goodwin College	Vice President for College Relations & Advancement One Riverside Drive East Hartford, CT 06118 TAndrews@goodwin.edu 860.727.6937	<input type="checkbox"/>
Bagley, Kathy Wethersfield	Director of Parks and Recreation 505 Silas Deane Highway Wethersfield, CT 06109 kathy.bagley@wethersfieldct.com 860.721.2890	<input type="checkbox"/>
Bergeron, Anna CTDOT	Transportation Planner 2800 Berlin Turnpike Newington, CT 06131 Anna.Bergeron@ct.gov 860.594.2140	<input checked="" type="checkbox"/>
Bockus, Tim East Hartford	Director of Public Works Public Works Administration 61 Ecology Drive East Hartford, CT 06108 tbockus@easthartfordct.gov 860-291-7361	<input type="checkbox"/>
Bowman, Sarah CHA	Project Engineer 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 sbowman@chacompanies.com 518.453.8726	<input checked="" type="checkbox"/>
Dauphinais, Deb CT Bicycle and Pedestrian Advisory Board	Bicycles East 331 New London Turnpike Glastonbury, CT 06033 ddauphinais@BicyclesEast.com 860.659.0114	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 2

Date: Thursday, April 4, 2013

Name / Representing	Contact Information	In Attendance
Popper, Stuart Bike Walk CT	Director of Planning & Development, Cromwell 41 West Main Street Cromwell, CT 06416 spopper@cromwellct.com	<input type="checkbox"/>
Shooshan-Stoller, Ken FHWA	Bike/Ped Coordinator FHWA Connecticut Division Office 628-2 Hebron Avenue, Suite 303 Glastonbury, CT 06033 kenneth.shooshan-sto@dot.gov Phone:	<input checked="" type="checkbox"/>
Stein, Jeff Bike Walk Glastonbury, Inc.	Secretary, Bike Walk Glastonbury 142 Olde Stage Rd Glastonbury, CT 06033-3250 jstein49@aol.com Phone:	<input checked="" type="checkbox"/>
Turner, Michael Wethersfield	Director of Public Work/Town Engineer 505 Silas Deane Highway Wethersfield, CT 06109 mike.turner@wethersfieldct.com (860) 721-2850	<input type="checkbox"/>
Name: Glenn Elliott Representing: FHWA	Title: Env. Protection Specialist Address: FHWA CT Division 628-2 Hebron Ave Glastonbury CT 06033 Email: G.Elliott@dot.gov Phone: 860-494-7577	<input checked="" type="checkbox"/>
Name: Gary Minor Representing: Goodwin College	Title: Director College Relations Address: One Riverside Dr. East Hartford, CT 06118 Email: Gminor@goodwin.edu Phone: 860-727-6733	<input type="checkbox"/>
Name: Ben Lynch Representing: U.S. House of Representatives 1st District John Larson Congressman	Title: Address: 221 Main Street Hartford CT 06106 Email: Ben.Lynch2@mail.house.gov Phone: 860-278-8888	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 2

Date: Thursday, April 4, 2013

Name / Representing	Contact Information	In Attendance
Giannotti, Laurie CTDEEP	Title: 79 Elm Street Hartford, CT 06106-5127 Laurie.Giannotti@ct.gov 860.424.3578	<input checked="" type="checkbox"/>
Head, Dave CTDOT	Transportation Supervising Planner 2800 Berlin Turnpike Newington, CT 06131 David.Head@ct.gov 860.594.2149	<input checked="" type="checkbox"/>
Horan, Denise East Hartford	Town Engineer Town Hall - Lower Level 740 Main Street East Hartford, CT 06108 dhoran@easthartfordct.gov 860.291.7380	<input checked="" type="checkbox"/>
Johnson, Richard Glastonbury	Town Manager 2155 Main Street Glastonbury, CT 06033 richard.johnson@glastonbury-ct.gov 860.652.7500	<input type="checkbox"/>
Kennedy, Kelly Bike Walk CT	Executive Director PO Box 270149 West Hartford, CT 06127-0149 kelly.kennedy@bikewalkct.org 860.904.2420	<input type="checkbox"/>
Parker, Jeff CHA	Project Manager 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 jparker@chacompanies.com 860.257.4557	<input checked="" type="checkbox"/>
Pennington, Dan Glastonbury	Director of Physical Services, Town Engineer 2155 Main Street Glastonbury, CT 06033 daniel.pennington@glastonbury-ct.gov 860.652.7736	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 2

Date: Thursday, April 4, 2013

Name / Representing	Contact Information	In Attendance
Name: Gary LaBella Representing: Goodwin College	Title: Asst. Dir. of College Relations Address: One Riverside Drive, East Hartford, CT 06118 Phone: 860-727-6946	<input checked="" type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>

Meeting Summary | Advisory Committee Meeting No. 3

Date/Time: Wednesday, May 29, 2013, 9:00 a.m.

Location: Riverfront Community Center, Conference Room, 300 Welles Street, Glastonbury

Purpose: Review refined alternatives and new preliminary alternatives for shared use path connections to the future Putnam Bridge walkway. Discuss public meeting preparations.

Attendees: Attendee sign-in sheet attached.

Summary of Meeting Discussion:

1. Dave Head opened the meeting at approximately 9:00 a.m. Advisory Committee (AC) members, CTDOT staff, CHA staff, and public attendees provided introductions.
2. CHA reviewed the preliminary Glastonbury alternatives presented at AC Meeting No. 2 in April.
3. CHA presented Alternative 6, a new alternative for the Glastonbury path connection. Alternative 6 follows along the northbound side of Route 3 and is generally a composite of Alternative 2 (path on new embankment) and Alternative 3 (path cut into existing embankment). The objective for this new alternative was to create more separation from Route 3 while still minimizing environmental impacts and not significantly increasing construction cost. In the area of the bridge, the path will diverge from Route 3 and provide the greatest separation from the roadway, approximately 50 feet. Since there is an existing berm at the end of the bridge and the elevation of the roadway and bridge are relatively high, potential floodplain and wetland impacts are reduced. As the path continues towards Naubuc Avenue, the alignment will gradually shift closer to Route 3 with an average separation of 29 feet.
4. CHA presented a sketch illustrating the path approach to the Route 3 Bridge in Glastonbury. The sketch represents the potential layout in this area, including a rest area with amenities and aesthetic enhancements (such as benches, overlook area, wayfinding/informational signage, lighting, and textured/colored pavement) adjacent to the path.
5. CHA presented an updated comparison matrix for the Glastonbury alternatives showing an estimated construction cost of \$2.6 million for Alternative 6.
 - It was noted that the estimated construction costs for Alternatives 1 and 5 were revised down from the previous version of the matrix.
 - The revisions reflect changes in assumed retaining wall type (sheet piling instead of segmental block), and assumed unit prices for major items (consistent with CRCOG guidelines for Federal funding program applications) that were applied to all alternatives.

6. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the Glastonbury alternatives:
- *Where will the excavation be to mitigate for fill in the 100-year floodplain? There is concern about additional flooding and ponding in the area as a result of this excavation.*
 - Material could be removed from the existing berm at the east end of the bridge. Depending on the quality of this material, there is potential to use it for construction of embankments for the path.
 - It is anticipated that the material will be removed down to an elevation that is above the elevation of the floodplain; consequently, no ponding of water would occur within the excavated area after heavy rain or flood events.
 - *Will fencing be provided along the path to deter users from trespassing on adjacent private property?*
 - It is anticipated that either the existing right-of-way fencing will be replaced, or new fencing will be erected between the path and DOT's right-of-way for the purpose of deterring users from trespassing. Additionally, railing will be provided along the south side of the path to protect users from steep side slopes, and protective fencing will be provided along the north side between the roadway and the path.
 - *Will the path still be usable when the bridge is fully replaced in approximately 25 years?*
 - Yes, it is anticipated that the path will still be usable when the bridge is replaced. Proposed retaining walls can be designed for a 50-year life. Proposed bituminous pavement surface would need to be repaired and replaced periodically over the same time frame.
 - *What would the lighting relocation noted on the comparison matrix entail for Alternative 6?*
 - For a relatively short distance on the bridge approach, the path would be separated from the roadway by a concrete barrier adjacent to the existing shoulder. The location of the barrier would impact the existing lights, requiring relocation. It is anticipated that new lights could be mounted on top of the concrete barrier.
 - *What type of structure crosses Keeney Cove and what type of modifications to the structure are required to accommodate a path crossing here?*
 - The existing structure is a double box culvert. It is anticipated that relatively minor modifications will be required to accommodate the path on the existing structure.
 - *There was some concern expressed about the location of the potential shared use path connection to the proposed Goodwin College trail network as shown on the map due to its proximity to private property.*
 - It was noted that the potential connection is shown because the connection would be desirable to help achieve regional interconnectivity between trail/path networks. The feasibility of a connection in terms of potential property impacts, environmental impacts, and actual location would be evaluated under a separate study.

- The need to not restrict existing farm access in this area was noted as an important property owner concern.
 - *There was general agreement among the AC members that Alternative 6 represented a reasonable compromise between providing greater separation from the roadway and limiting potential floodplain and wetland impacts.*
 - *There was also general consensus that Alternative 6 should be advanced in the study and presented as the favorable/preferred Glastonbury alternative at the public meeting.*
 - It was noted that the other alternatives and the process for selecting Alternative 6 should be presented at the public meeting.
7. CHA presented recommended sidewalk improvements and parking accommodations on Naubuc Avenue in Glastonbury.
- A new parking lot with approximately 10 spaces is proposed on DOT's right-of-way on the east side of Naubuc Avenue across from the shared use path terminus. The access drive would align opposite the driveway for Venora's Salon.
 - The recommended sidewalk improvements include sidewalk on both sides of Naubuc Avenue and would provide full connectivity between the path terminus, new parking, and existing sidewalks on Naubuc Avenue, Putnam Boulevard, and Glastonbury Boulevard.
 - It was noted that not all of the recommended sidewalk improvements would have to be built concurrently with the path and could be implemented in phases over time. It was also noted that, at a minimum, a complete sidewalk connection should be provided between the path terminus, new parking, and sidewalks on Glastonbury Boulevard and Putnam Boulevard on at least one side of Naubuc Avenue concurrently with the path construction.
8. CHA presented a sketch illustrating the path terminus at Naubuc Avenue in Glastonbury. The sketch represents the potential layout in this area, including proposed parking lot location, sidewalks, midblock crosswalk, and trailhead area with amenities and aesthetic enhancements (such as a bench, wayfinding/informational signage, and landscaping). Proposed bollards to prevent motorized vehicle access to the path are also shown in the sketch.
9. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the recommended sidewalk and parking improvements on Naubuc Avenue:
- *Are the sidewalk and parking costs included in the cost estimate for Alternative 6?*
 - Yes, the estimated construction costs shown in the comparison matrix for all six Glastonbury alternatives include costs for the new parking and recommended minimum sidewalk improvements (sidewalk on the east side of Naubuc Avenue between Glastonbury Boulevard and Putnam Boulevard and sidewalk on the west side between the path and existing sidewalk to the south).

- *Installation of “Share the Road” warning signs was suggested on the Naubuc Avenue approaches to the path.*
 - *Can the shared use path be carried over Naubuc Avenue and loop down to the east side of the roadway, eliminating the need for a midblock crossing?*
 - This notion was considered early in the study and it was determined that modifications to the existing Route 3 bridge or a new pedestrian bridge would be required to accommodate the crossing and that this requirement would generally be cost-prohibitive for the project.
 - When the existing bridge is rehabilitated or replaced in the future, accommodations for a shared use path crossing over Naubuc Avenue should be considered as part of that project.
 - *It was noted that there are existing midblock crossings in the Town of Glastonbury. Is the proposed midblock crossing too close to the existing signal and pedestrian crossings at Glastonbury Boulevard? Also, was the potential traffic generation associated with the path and proposed new parking estimated and considered in the preliminary layout of the access drive and crossing location?*
 - The signalized intersection is located approximately 740 feet from the proposed midblock crossing. Most pedestrians will most likely not walk this distance to cross the street, especially if parking is provided directly across from the path terminus.
 - The signal at Glastonbury Boulevard creates platoons of vehicles along Naubuc Avenue which in turn will provide gaps for pedestrians and bicyclists to cross at the midblock crossing. Sight lines would also be sufficient at the crossing.
 - Potential traffic generation was not estimated. It is anticipated that new vehicle trips associated with parking for the path would generally be negligible relative to existing traffic volumes on Naubuc Avenue (which has average daily traffic of 8100 vehicles, per CTDOT’s 2009 counts).
 - The location of the midblock crossing and sidewalk ramp as shown in the sketch was based on anticipated bicyclist movements directly between the path and roadway. This location could be adjusted during design if an alternative location (such as adjacent to the access drive/Venora’s Salon driveway intersection) is determined to be more desirable relative to path operations and access.
10. CHA reviewed the preliminary Wethersfield alternatives presented at AC Meeting No. 2 in April.
11. CHA presented Alternative 3 (Modified), a new alternative for the Wethersfield path connection from the walkway to the proposed terminus at the intersection of Great Meadow Road and the I-91 Exit 25 off ramp. This alternative generally maintains the proposed alignment and grades of Alternative 3 (with minor modifications near the terminus), but utilizes a retaining wall along a section of the path to reduce the limits of the embankment and eliminate potential wetland impacts in this area.

12. CHA presented a sketch illustrating the path terminus at Great Meadow Road. The sketch represents the potential layout of this area including pedestrian crossing enhancements, intersection improvements, and trailhead area with amenities and aesthetic enhancements (such as a bench, wayfinding/informational signage, and landscaping).
13. CHA presented an updated comparison matrix for the Wethersfield alternatives showing an estimated construction cost of \$600,000 for Alternative 3 (Modified). Alternative 3 (Modified) replaced the original Alternative 3 in this matrix.
14. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the Wethersfield alternatives:
 - *It was noted that CTDEEP's preference, as expressed at a May 3, 2013 project coordination meeting with CTDOT, is for any new parking improvements to be located on the east side of Great Meadow Road as close as practicable to the existing Route 3 bridge.*
 - *Does the \$600,000 estimated construction cost include parking improvements?*
 - No, parking is not currently reflected in any of the Wethersfield estimates because it has been assumed that the need for parking improvements would be determined subsequent to the construction of the path and would therefore be provided as a separate improvement project.
 - Wethersfield representatives expressed a desire to have the estimated cost for parking included as part of this project.
 - CHA will estimate the construction cost for the potential parking improvements and include this cost in the overall construction costs for all of the alternatives shown in the matrix.
 - *Would the bollards shown at the path terminus be removable and who would be able to remove them?*
 - Yes, the bollards would be removable by unlocking with a key. The town, emergency services, and CTDOT maintenance personnel would have keys for the bollards.
 - *There was general consensus that Alternative 3 (Modified) should be advanced in the study and presented as the favorable/preferred Wethersfield alternative at the public meeting.*
15. It was noted that the towns should start investigating potential funding opportunities as soon as the feasibility study is complete. It was also noted that, if possible, the towns should move forward concurrently with the design and construction of their respective connections such that these connections will be completed at the same time and will provide a fully functional and continuous facility.
16. Potential funding sources, both traditional and innovative, will be discussed during as part of the public meeting presentation.

17. CHA presented preliminary details of the public information meeting scheduled for Tuesday, June 18, 2013. There will be an open house session at 6:30 p.m., followed by a formal presentation at 7:00 p.m. and a question and answer session. Public notification will include:
 - A meeting flyer to be sent to the AC in the coming days with a request for assistance in distributing the flyer.
 - A letter mailed to property owners/residents on Naubuc Avenue in the study area. Wethersfield representatives indicated that a similar notification was not necessary in Wethersfield.
 - Display ads in the *Glastonbury Citizen*, *Reminder News*, and *Rare Reminder* (two runs each), and *Hartford Courant* (one run). AC members did not identify any other publications for additional advertising.

18. The meeting concluded at approximately 11:00 a.m.

Sign-In | Advisory Committee Meeting No. 3

Date: Wednesday, May 29, 2013

Name / Representing	Contact Information	In Attendance
Aloise, Rob CRCOG	Principal Transportation Engineer 241 Main Street Hartford, CT 06106 raloise@crco.org 860.522.2217 Ext. 214	<input checked="" type="checkbox"/>
Andrews, Todd Goodwin College	Vice President for College Relations & Advancement One Riverside Drive East Hartford, CT 06118 TAndrews@goodwin.edu 860.727.6937	<input checked="" type="checkbox"/>
Bagley, Kathy Wethersfield	Director of Parks and Recreation 505 Silas Deane Highway Wethersfield, CT 06109 kathy.bagley@wethersfieldct.com 860.721.2890	<input checked="" type="checkbox"/>
Bergeron, Anna CTDOT	Transportation Planner 2800 Berlin Turnpike Newington, CT 06131 Anna.Bergeron@ct.gov 860.594.2140	<input type="checkbox"/>
Bockus, Tim East Hartford	Director of Public Works Public Works Administration 61 Ecology Drive East Hartford, CT 06108 tbockus@easthartfordct.gov 860-291-7361	<input checked="" type="checkbox"/>
Bowman, Sarah CHA	Project Engineer 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 sbowman@chacompanies.com 518.453.8726	<input checked="" type="checkbox"/>
Dauphinais, Deb CT Bicycle and Pedestrian Advisory Board	Bicycles East 331 New London Turnpike Glastonbury, CT 06033 dadauphinais@BicyclesEast.com 860.659.0114	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 3

Date: Wednesday, May 29, 2013

Name / Representing	Contact Information	In Attendance
Giannotti, Laurie CTDEEP	Title: 79 Elm Street Hartford, CT 06106-5127 Laurie.Giannotti@ct.gov 860.424.3578	<input type="checkbox"/>
Head, Dave CTDOT	Transportation Supervising Planner 2800 Berlin Turnpike Newington, CT 06131 David.Head@ct.gov 860.594.2149	<input checked="" type="checkbox"/>
Horan, Denise East Hartford	Town Engineer Town Hall - Lower Level 740 Main Street East Hartford, CT 06108 dhoran@easthartfordct.gov 860.291.7380	<input type="checkbox"/>
Johnson, Richard Glastonbury	Town Manager 2155 Main Street Glastonbury, CT 06033 richard.johnson@glastonbury-ct.gov 860.652.7500	<input type="checkbox"/>
Kennedy, Kelly Bike Walk CT	Executive Director PO Box 270149 West Hartford, CT 06127-0149 kelly.kennedy@bikewalkct.org 860.904.2420	<input type="checkbox"/>
Parker, Jeff CHA	Project Manager 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 jparker@chacompanies.com 860.257.4557	<input checked="" type="checkbox"/>
Pennington, Dan Glastonbury	Director of Physical Services, Town Engineer 2155 Main Street Glastonbury, CT 06033 daniel.pennington@glastonbury-ct.gov 860.652.7736	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 3

Date: Wednesday, May 29, 2013

Name / Representing	Contact Information	In Attendance
Purtill, George Property Owner	Partner, Wrights Island Farms Glastonbury, CT 06033 george.m.purtill@snet.net	<input checked="" type="checkbox"/>
Popper, Stuart Bike Walk CT	Director of Planning & Development, Cromwell 41 West Main Street Cromwell, CT 06416 spopper@cromwellct.com	<input type="checkbox"/>
Shooshan-Stoller, Ken FHWA	Bike/Ped Coordinator FHWA Connecticut Division Office 628-2 Hebron Avenue, Suite 303 Glastonbury, CT 06033 kenneth.shooshan-sto@dot.gov Phone:	<input checked="" type="checkbox"/>
Stein, Jeff Bike Walk Glastonbury, Inc.	Secretary, Bike Walk Glastonbury 142 Olde Stage Rd Glastonbury, CT 06033-3250 jstein49@aol.com Phone:	<input type="checkbox"/>
Turner, Michael Wethersfield	Director of Public Work/Town Engineer 505 Silas Deane Highway Wethersfield, CT 06109 mike.turner@wethersfieldct.com (860) 721-2850	<input checked="" type="checkbox"/>
Name: Representing: Sharp, David Bike Walk Glastonbury	Title: President Address: 1924 Main St. Glastonbury, CT 06033 Email: davidsharp@bikewalkct.org Phone: (860) 918-1722	<input checked="" type="checkbox"/>
Name: Representing: MICHAEL LONGO	Title: PROPERTY OWNER Address: Email: Phone:	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 3

Date: Wednesday, May 29, 2013

Name / Representing	Contact Information	In Attendance
Name: Representing:	Title: BICYCLE ADVOCATE Address: SHEUSIGN STREET EAST HARTFORD, CT 06118 Email: SARAH CHRISTOPHER@yalebox.com Phone: 860-992-9859	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>

Meeting Summary | Advisory Committee Meeting No. 4

Date/Time: Tuesday, April 15, 2014, 9:00 a.m.

Location: Riverfront Community Center, Conference Room, 300 Welles Street, Glastonbury

Purpose: Review and discuss the recommendations of the draft study report. Review and discuss AC member comments on the draft study report.

Attendees: Attendee sign-in sheet attached.

Summary of Meeting Discussion:

1. Jeff Parker opened the meeting at approximately 9:05 a.m. Advisory Committee (AC) members, CTDOT staff, and CHA staff provided introductions.
2. CHA inquired whether AC members in attendance had reviewed the draft study report and the majority indicated that they had not yet reviewed the report.
3. CHA provided an overview of the Wethersfield shared use path recommendations contained in the draft report and highlighted notable modifications that were incorporated subsequent to the June 2013 public meeting. These modifications include:
 - Vegetative screening to obscure motorists' view of the path as approaching from northbound Route 3. This modification was provided in response to a public comment.
 - Path lighting for the length of the path.
4. CHA noted that embankment placed for construction of the temporary haul road for the Putnam Bridge rehabilitation project was going to be left in place so that the material can be used for future construction of the Wethersfield shared use path. Access to the haul road will be prohibited from Great Meadow Road and access to the bridge walkway will be blocked from the haul road.
5. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the Wethersfield recommendations:
 - *Clarification was requested of the callout for "potential future river access" shown on the Wethersfield exhibit.*
 - The callout shows a potential location from where access to the Connecticut River could be provided from the recommended parking area on Great Meadow Road, if access were to be provided by others in the future.
 - CTDOT noted that future *reconstruction* of the Putnam Bridge is conditional on providing river access and boat launch in Wethersfield to satisfy prior CTDEP permit requirements.

6. CHA provided an overview of the Glastonbury shared use path recommendations contained in the draft report and highlighted notable modifications that were incorporated subsequent to the June 2013 public meeting. These modifications include:
 - Significant drainage modifications along Route 3 to mitigate construction impacts to existing catch basin outlet pipes.
 - Path lighting for the length of the path.
7. The following comments and questions (in italics followed by responses or additional discussion, where applicable) were provided in response to the Glastonbury recommendations:
 - *R. Aloise questioned CTDOT representatives about opportunities to construct the shared use path recommendations as a change order on the current Putnam Bridge rehabilitation project.*
 - CTDOT indicated that the shared use path could not be constructed as a change order, due in part to schedule and cost constraints of that project.
 - *CTDOT questioned maintenance responsibilities and specifically how invasive plant species would be managed long term.*
 - It was noted the draft study report includes a preliminary maintenance plan that outlines potential responsible parties for various regular, seasonal, and as-needed maintenance activities.
 - Although invasive species have not been identified at this study phase, weed and invasive plant control will be incorporated in the preliminary maintenance plan.
 - *D. Pennington noted the Town's concerns regarding potential flood plain impacts and questioned whether the Glastonbury path recommendations included fill within the 100-year flood elevation.*
 - J. Parker noted that based on the conceptual plan and available information, it was estimated approximately 950 cubic yards of fill would be placed below the 100-year flood elevation to construct the path; however, the recommendations and project costs include provisions for excavation of the artificial berm on the north (east) end of the bridge to provide compensatory flood storage, resulting in no net increase in material below the 100-year flood elevation.
8. CHA presented the current estimated construction costs for the path recommendations, noting that these costs reflect: modifications discussed previously (see items 5 and 6); full scope of amenities, parking accommodations, and sidewalk improvements in both Wethersfield and Glastonbury; detailed accounting of *major* construction items; more conservative estimate of contingency costs; inflation between 2013 and 2018; design and permitting; and construction engineering. CHA also noted that additional costs, which are indeterminable during the study phase without more information, will be associated with environmental mitigation, property acquisition, and utility relocations in Glastonbury.

9. CHA noted that, with respect to the total project costs in Wethersfield and Glastonbury (\$1.4 million and \$6.24 million + indeterminable costs, respectively), CTDOT has expressed its commitment to providing the access to the bridge walkway and will likely implement the recommendations as a State project. CTDOT noted that funding for the project is currently not available. It was also noted that funding will require a local match of up to 20% for any Federal funds utilized for implementation.
10. CHA indicated the study report provides guidance on implementation and funding, including suggestions and resources for alternative funding mechanisms that can be utilized for the local match of project funds. It was noted that municipal contributions derived from local tax revenues or capital improvement budgets should be considered only after all other potential funding resources have been exhausted.
11. CHA identified several project components – including parking accommodations in Wethersfield and Glastonbury, some sidewalk improvements in Glastonbury, and some path amenities – that could be deferred for implementation under future projects for an approximate 10% reduction in initial path construction costs.
12. It was noted that a key first step in the implementation process will be for Capitol Region Council of Governments to prioritize the project for inclusion in the regional Transportation Improvement Program (TIP) and to coordinate with CTDOT for inclusion on the Statewide TIP (STIP). CHA also noted that support for the project offered by the towns and by local representatives will be important to implementation.
13. CHA outlined several improvement recommendations in the draft report that could also be implemented to improve bicycle and pedestrian access to the shared use path in Wethersfield and Glastonbury. These recommendations include: connectivity and safety enhancements; signing improvements; Heritage Way Bikeway route modifications; and adjacent street modifications.
14. AC members in attendance provided no specific comments on the draft study report.
15. CHA indicated the draft report would be posted to CTDOT’s study webpage by April 16 and that a two-week public review and comment period would be provided. CHA will send an email notification to AC members and study contacts to announce availability. CHA requested AC members help publicize the availability of the report.
 - *D. Pennington suggested that a one-month public review and comment period be provided.*
 - CTDOT concurred that a one-month comment period would be provided allowing for review and comments until May 15, 2014.
16. It was noted the study report will be updated to address public comments and published in summer 2014.
17. The meeting concluded at approximately 11:00 a.m.

Sign-In | Advisory Committee Meeting No. 4

Date: Tuesday, April 15, 2014

Name / Representing	Contact Information	In Attendance
Aloise, Rob CRCOG	Principal Transportation Engineer 241 Main Street Hartford, CT 06106 raloise@crco.org 860.522.2217 Ext. 214	<input checked="" type="checkbox"/>
Andrews, Todd Goodwin College	Vice President for College Relations & Advancement One Riverside Drive East Hartford, CT 06118 TAndrews@goodwin.edu 860.727.6937	<input type="checkbox"/>
Bagley, Kathy Wethersfield	Director of Parks and Recreation 505 Silas Deane Highway Wethersfield, CT 06109 kathy.bagley@wethersfieldct.com 860.721.2890	<input type="checkbox"/>
Bergeron, Anna CTDOT	Transportation Planner 2800 Berlin Turnpike Newington, CT 06131 Anna.Bergeron@ct.gov 860.594.2140	<input checked="" type="checkbox"/>
Bockus, Tim East Hartford	Director of Public Works Public Works Administration 61 Ecology Drive East Hartford, CT 06108 tbockus@easthartfordct.gov 860-291-7361	<input type="checkbox"/>
Dauphinais, Deb CT Bicycle and Pedestrian Advisory Board	Bicycles East 331 New London Turnpike Glastonbury, CT 06033 ddauphinais@BicyclesEast.com 860.659.0114	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 4

Date: Tuesday, April 15, 2014

Name / Representing	Contact Information	In Attendance
Giannotti, Laurie CTDEEP	79 Elm Street Hartford, CT 06106-5127 Laurie_Giannotti@ct.gov 860.424.3578	<input type="checkbox"/>
Horan, Denise East Hartford	Town Engineer Town Hall - Lower Level 740 Main Street East Hartford, CT 06108 dhoran@easthartfordct.gov 860.291.7380	<input type="checkbox"/>
Johnson, Richard Glastonbury	Town Manager 2155 Main Street Glastonbury, CT 06033 richard.johnson@glastonbury-ct.gov 860.652.7500	<input type="checkbox"/>
Kennedy, Kelly Bike Walk CT	Executive Director PO Box 270149 West Hartford, CT 06127-0149 kelly.kennedy@bikewalkct.org 860.904.2420	<input type="checkbox"/>
Minor, Gary Goodwin College	Director of College Relations One Riverside Drive East Hartford, CT 06118 Gminor@goodwin.edu 860.727.6733	<input checked="" type="checkbox"/>
Parker, Jeff CHA	Project Manager 2139 Silas Deane Hwy, Suite 212 Rocky Hill, CT 06067 jparker@chacompanies.com 860.257.4557	<input checked="" type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 4

Date: Tuesday, April 15, 2014

Name / Representing	Contact Information	In Attendance
Pennington, Dan Glastonbury	Director of Physical Services, Town Engineer 2155 Main Street Glastonbury, CT 06033 daniel.pennington@glastonbury-ct.gov 860.652.7736	<input checked="" type="checkbox"/>
Purtill, George Property Owner	Partner, Wrights Island Farms Glastonbury, CT 06033 george.m.purtill@snet.net	<input type="checkbox"/>
Popper, Stuart Bike Walk CT	Director of Planning & Development, Cromwell 41 West Main Street Cromwell, CT 06416 spopper@cromwellct.com	<input checked="" type="checkbox"/>
Rattan, Kate CTDOT	Non-motorized Transportation Coordinator 2800 Berlin Turnpike Newington, CT 06131 Katherine.Rattan@ct.gov 860.594.2146	<input checked="" type="checkbox"/>
Shooshan-Stoller, Ken FHWA	Bike/Ped Coordinator FHWA Connecticut Division Office 628-2 Hebron Avenue, Suite 303 Glastonbury, CT 06033 kenneth.shooshan-sto@dot.gov Phone:	<input type="checkbox"/>
Stein, Jeff Bike Walk Glastonbury, Inc.	Secretary, Bike Walk Glastonbury 142 Olde Stage Rd Glastonbury, CT 06033-3250 jstein49@aol.com 860.659.1228	<input type="checkbox"/>

Sign-In | Advisory Committee Meeting No. 4

Date: Tuesday, April 15, 2014

Name / Representing	Contact Information	In Attendance
Turner, Michael Wethersfield	Director of Public Work/Town Engineer 505 Silas Deane Highway Wethersfield, CT 06109 mike.turner@wethersfieldct.com (860) 721-2850	<input checked="" type="checkbox"/>
Name: Dan Sharp Representing: Bike Walk Glastonbury	Title: VP Address: 1929 main st. Glastonbury, CT 06033 Email: dan@bikewalkct.com dsharp@pcpa-co2.net Phone: (603) 633-0801	<input type="checkbox"/>
Name: Colleen Kissane Representing: CT DOT	Title: Trans. Asst. Planning Director Address: 2800 Berlin Turnpike Newington, CT Email: colleen.kissane@ct.gov Phone: 860-594-2132	<input checked="" type="checkbox"/>
Name: Michelle Lynch Representing: CT DOT	Title: Trans. Engineer 3 Address: 2800 Berlin Turnpike Newington, CT Email: michelle.lynch@ct.gov Phone: (860) 514-3206	<input checked="" type="checkbox"/>
Name: Robert Brown Representing: CT DOT	Title: Address: Email: Phone:	<input type="checkbox"/>
Name: Representing:	Title: Address: Email: Phone:	<input type="checkbox"/>

Meeting Summary | Public Information Meeting

Date/Time: Tuesday, June 18, 2013, 6:30 p.m.

Location: Riverfront Community Center, 300 Welles Street, Glastonbury, CT

Overview:

- **Purpose.** The purpose of the meeting was to receive public input, comments, and questions on the study and the alternatives presented.
- **Attendance.** More than 40 people attended the meeting (excluding study team members from CTDOT and CHA). CTDOT was represented by David Head and Anna Bergeron. CHA (CTDOT's consultant) was represented by Jeff Parker, Sarah Bowman, and Juliette Flotat.
- **Format.** The meeting began with a 30-minute open house session where attendees reviewed study information and exhibits and talked one-on-one with study team members. David Head, CTDOT's project manager, opened the presentation portion of the meeting at approximately 7:00 p.m. Jeff Parker, CHA's project manager, made a formal presentation that was followed by a public question and comment period.
- **Meeting Materials.** Attendees were provided an information packet that included a summary of Frequently Asked Questions and a comment form. Materials for public review during the open house session included exhibits entitled: *Study Overview*, *Study Area & Context*, *Planning & Design Goals*, *Preliminary Path Connections*, and *What Happens Next?*

Summary of Public Comments and Questions:

(The public comments and questions are provided in italics followed by CHA/CTDOT's responses.)

- *Will security measures, such as cameras or call boxes, be put in place along the path?*
 - Although security measures have not been specifically defined at this point in the study, provisions for user safety and security will be a key consideration during the design of the path connections. General recommendations will be included in the study report.
 - It is the Department's experience that call boxes are targets for vandalism. Additionally, the proliferation of cell phones has diminished their value. However, the potential need for call boxes on this project can be further evaluated.
 - Lighting on the bridge will sufficiently light the walkway. Lighting along the path to further enhance user safety can also be considered.
- *What is the slope of the Wethersfield path connection?*
 - The grade of the favorable alternative (Alternative 3 (Modified)) is approximately 4% to 5% along the majority of the path. The grade flattens out near the intersection with Great Meadow Road.

- *What surface type was assumed for the path?*
 - It is assumed the path will have a paved surface.
- *What surface will the bridge walkway have?*
 - The walkway will have a composite surface that is lightweight and provides sufficient slip resistance.
- *Who will be responsible for snow removal and maintenance for the path connections and bridge walkway?*
 - CTDOT is responsible for snow removal and maintenance of walkways on state bridges. Generally, the municipalities will be responsible for the path connections. It is noted that maintenance responsibilities are open to discussion and will be further defined when design progresses.
 - It is noted that the design of the walkway on the south side of the bridge encourages natural snow melt.
- *What is the estimated cost for the maintenance of the path connections?*
 - Maintenance costs have not been estimated at this time. The study team will assess the potential maintenance costs based on comparative costs for other municipally-maintained paths in the area.
- *What is the width of the path connections and bridge walkway?*
 - The paved width of the path connections is assumed to be 10 feet. For planning purposes, an additional 2 feet of gravel shoulder has been assumed for both sides of the path connections. As shown in the plans and graphics, the overall width is 14 feet.
 - The walkway will be 6 feet wide.
- *Who would be the primary first responder for an incident on the path connections? How will access from the bridge be provided to the walkway if there is barrier in between?*
 - It is anticipated that police and emergency services will be provided in similar fashion as to how these services are currently provided for Route 3: police service provided by Connecticut State Police and fire/emergency services provided by local companies.
 - Emergency personnel and vehicle access can be provided to the path from the local roadway intersections.
 - It is anticipated that emergency personnel access to the walkway will be provided through gates in the barrier/fence on the bridge.
- *Does the \$2.6 million cost estimate for the Glastonbury path connection include costs for the other potential amenities (such as benches, signs, landscaping) that were noted in the presentation?*
 - These items are not specific line items in the cost estimate, however, the estimating methodology used for this study indirectly accounts for minor construction items like these as a percentage of the major construction items (such as earthwork, pavement, etc.).

- *Has the environmental permitting effort been estimated and is this included in the \$2.6 million cost estimate for the Glastonbury path connection?*
 - The permitting effort will be part of subsequent design efforts. The design efforts are not included in the \$2.6 million construction cost estimate.
- *The previous study documentation showed an estimated cost of more than \$5 million for the Glastonbury alternatives, but the cost estimates are now half of that number. What has changed?*
 - To clarify, the previous cost estimates ranged from approximately \$2.2 million (Alternative 4) to \$5.3 million (Alternative 5). The current range is approximately \$2 million to \$3.9 million. The cost estimate for the favorable Glastonbury alternative (Alternative 6) is \$2.6 million.
 - The reasons for the change in costs include a change in some of the assumptions for specific construction items (in particular a change in the type of retaining wall used for each of the alternatives) and a change in the estimating guidelines that were used (in particular a shift to the guidelines developed by the Capitol Region Council of Governments (CRCOG) for estimating projects for the 2013 STP-Urban funding program application).
 - It is noted that the \$2.6 million cost estimate is an order-of-magnitude estimate developed for planning-level purposes and is subject to further refinement as the study is completed and as future design is advanced.
- *Are there any anticipated right-of-way (ROW)/property acquisitions needed for the path construction, particularly in the area of the Verona Salon?*
 - Based on the property line information available for the feasibility study, it is not anticipated that property acquisition will be necessary for the path construction.
 - It is noted that the assumed sidewalk improvements on Naubuc Avenue to connect the path to the existing sidewalk network will likely require some property acquisition. The extent of the impacts is difficult to determine based on the available property line information, but some strip takings are anticipated along Naubuc Avenue. The actual sidewalk improvements to be provided in conjunction with the path construction, and the associated impacts, will be further defined during subsequent design efforts.
 - At this time, the assumed sidewalk improvements include new sidewalk along the east side of Naubuc Avenue between Glastonbury Boulevard and Putnam Boulevard and a short segment of sidewalk on the west side of Naubuc Avenue to connect the path to an existing segment of sidewalk. These are the extents of the recommended minimum sidewalk improvements that will provide adequate pedestrian connectivity to the path.
- *Who owns the property where the potential parking area is being shown on Naubuc Avenue in Glastonbury?*
 - The parking area is shown within CTDOT's existing ROW.

- *Are the potential parking area and sidewalk improvements on Naubuc Avenue included in the \$2.6 million construction cost estimate?*
 - Yes. However, it is noted that potential ROW costs associated with sidewalk improvements are not included in this estimate.
- *If the current Route 3 bridge rehabilitation is expected to have a service life of 20 years, when will CTDOT begin planning for a replacement bridge?*
 - It is estimated that planning would have to begin in approximately 10 to 12 years in order to have a replacement structure ready in 20 years.
- *How many pedestrians and bicyclists utilize the bridges to the north and south of the project area?*
 - We do not know at this time and we will have to see what data is available. CROG has done counts in the past.
- *What are the limits of the section of path in Glastonbury that would be on new embankment and what is the volume of embankment that would be placed in that area?*
 - The section of path on new embankment would generally be located near the bridge in Glastonbury where the floodplain and wetland boundaries are less constrictive.
 - The actual volume has been approximated and would have to be looked up as the number is not known off-hand. It is noted that no net increase in material placed in the 100-year floodplain is anticipated. It is assumed that material excavated in some areas for path construction or for compensatory flood storage can be used to construct the embankments.
 - It is noted this assumption is contingent upon the quality of the on-site materials being suitable for the construction of new embankments. The validity of this assumption would be determined through geotechnical evaluations conducted during subsequent preliminary design efforts.
- *Why is the embankment section required?*
 - The embankment section was included in the favorable Glastonbury alternative, where possible, to provide greater separation between the path and Route 3 and to minimize the extent of retaining walls needed for path construction, which will help reduce costs.
- *For \$2.6 million, can the scope of the project be broadened to consider replacement of the Point Road bridge, which currently restricts the natural ebb and flow of water in Keeney Cove? Replacing the existing bridge with a structure with a larger opening would help offset some of the original impacts associated with the Route 3 construction and could be considered mitigation for other potential impacts associated with new path construction.*
 - This possibility can be proposed to CTDEEP.
 - It is noted that it would be very costly to build a new Point Road crossing. Such a project would also likely require ROW acquisition.

- *What was the rationale for assuming a paved path surface?*
 - A paved surface was assumed for several reasons, including: to best accommodate a variety of users (consistent with the planning goals of the study); to be conservative in terms of potential costs for the path construction; and to provide better surface durability with lower maintenance over time. It is noted that a stone dust surface is a potential and acceptable alternative to a paved surface, though it would provide more resistance and may be less desirable for road bicyclists, skaters, and wheelchair users; and has the potential for more surface deterioration/washouts that could require more regular maintenance.
- *An attendee noted that the favorable alternatives are a reasonable compromise between costs, environmental impacts, and user experience.*
- *When will the bridge rehabilitation and walkway be completed?*
 - The anticipated completion is 2015.
- *How high is the retaining wall in the favorable Glastonbury alternative?*
 - The retaining wall is generally 5 to 6 feet high along the length of the path, though could be somewhat higher in some areas. Users will typically be below the elevation of traffic on Route 3, which will help reduce vehicular noise levels on the path.
- *Are there any paths in Connecticut or out of state that have a similar design (cut into a roadway embankment with a retaining wall on one side) and do you know what the user experience has been with those paths?*
 - CTDOT and CHA are not aware of any paths in Connecticut with similar design features.
 - It is noted that the Mohawk-Hudson Bike Trail adjacent to I-890 in Schenectady, NY is similar, though specific user experience is not known.
- *What type of barrier will there be between the path and Route 3 adjacent to the Wethersfield connection? It is possible that pedestrian and bicycle activity on the path could be a distraction to motorists merging onto Route 3 in this area.*
 - There would be a concrete barrier with a fence on top located between the path and the roadway for some distance from the bridge. This protective barrier would also provide a visual barrier.
 - It is noted that recommendations for vegetative screening will be considered further west beyond the limits of the concrete barrier to limit the potential for visual distractions.

Appendix 2

Local Roadway Inventory

Natural Diversity Data Base Area Maps


Table A2-1. Local Roadway Inventory

Street Name	Limits	Functional Classification	ADT Volume [vpd]	Speed Limit	Number of Lanes	Lane Widths	Shoulder Widths	Overall Width	Pedestrian Facilities	Bike Facilities	Transit Service
Naubuc Avenue "North 1"	Route 3 (S) Putnam Boulevard (N)	Minor Arterial	8300 (2012)	30 mph	2	11' +	None Marked	22~23'	None	On-road Network (CRCOG 2008)	CTTransit Route 91, 95
Naubuc Avenue "North 2"	Glastonbury Boulevard (S) Route 3 (N)	Minor Arterial	8300 (2012)	30 mph	2	15~20' + Turn Lane	None Marked	40~42'	Some Sidewalk LT None RT	On-road Network (CRCOG 2008)	CTTransit Route 91, 95
Naubuc Avenue "South"	Glastonbury Boulevard (N) to the South	Minor Arterial	4600 (2012)	30 mph	2	14~16'	None Marked	30' +	None	On-road Network (CRCOG 2008)	None
Glastonbury Boulevard "West"	Naubuc (W) Route 3 Ramps (E)	Collector	8700 (2012)	30 mph	4 + Median/LT Turn Lanes	12'	1'	72' (including 20' Median)	Sidewalk LT & RT Crosswalks Ped Signals	On-road Network (CRCOG 2008)	CTTransit Route 91, 95
Glastonbury Boulevard "East"	Route 3 Ramps (W) Main Street (E)	Minor Arterial	13800 (2012)	30 mph	4 + Median/LT Turn Lanes	12'	1'	72' (including 20' Median)	Sidewalk LT & RT Crosswalks Ped Signals	On-road Network (CRCOG 2008)	CTTransit Route 91, 95
Putnam Boulevard "West"	Naubuc (W) Route 3 Ramps (E)	Collector	4600 Est. (2012)	30 mph	4	12'	2'	52'	Sidewalk LT No Crosswalks	None Designated	CTTransit Route 91, 95
Putnam Boulevard "East"	Route 3 Ramps (W) Main Street (E)	Minor Arterial	9800 (2012)	30 mph	4	12'	2'	52'	Sidewalk LT Crosswalks at Main	None Designated	CTTransit Route 91, 95
Main Street	Glastonbury Boulevard (S) Putnam Boulevard (N)	Minor Arterial	12700 (2012 E. Hartford)	35 mph	4	12' +	2'	54' +	Sidewalk LT & RT Crosswalks Ped Signals	"Priority Road"	CTTransit Route 91, 95
Great Meadow Road	Exit 25 (S) to the North	Local	3400 (2012) (Within Exit 26)	30 mph	2	12'	4'	32'	None	Heritage Way Bikeway	None

Natural Diversity Data Base Areas

WETHERSFIELD, CT

June 2013

 State and Federal Listed Species & Significant Natural Communities

 Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources. Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

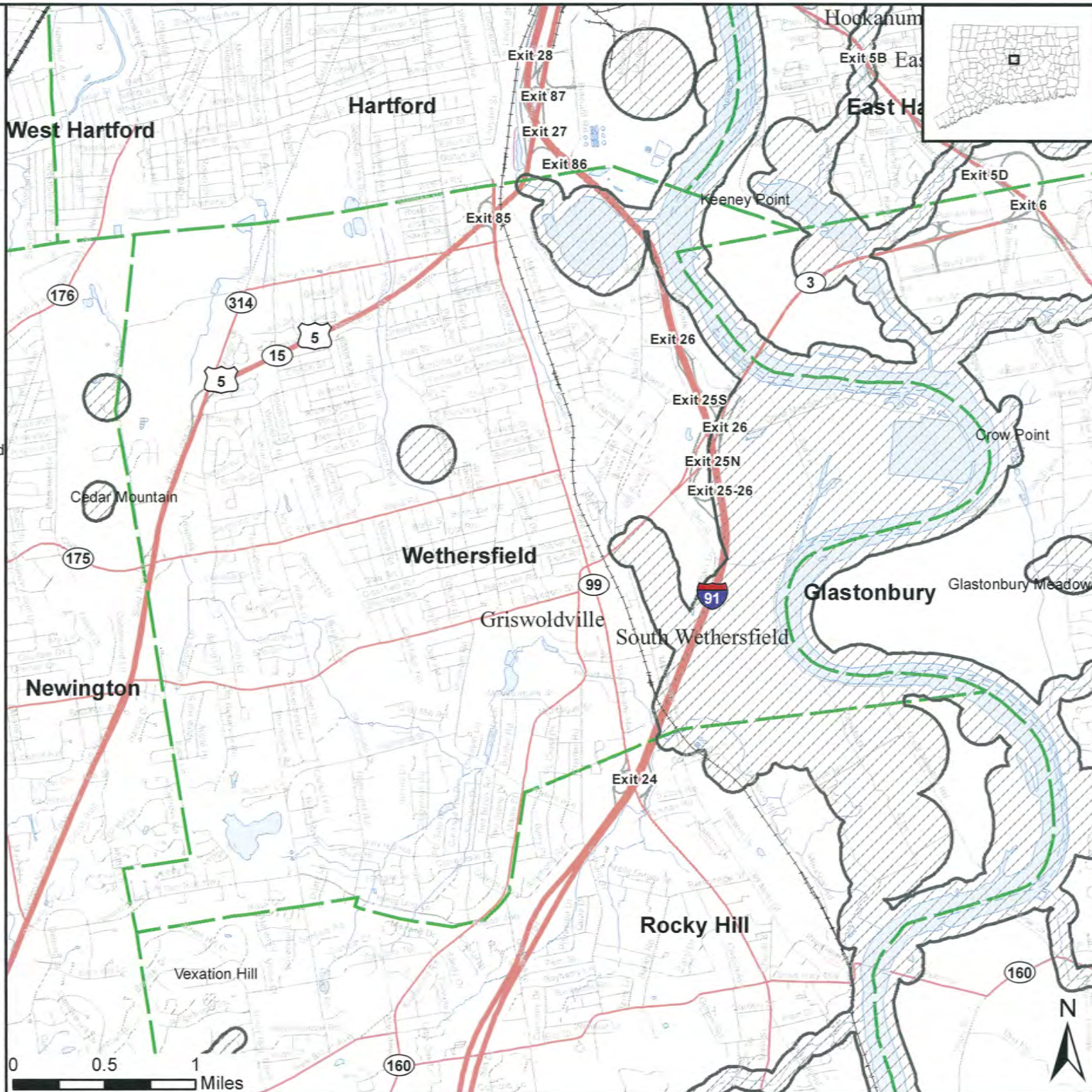
www.ct.gov/deep/nddbrequest

This file has PDF Layers. Look for the Layers tab on the left. Expand the layers and use the "eye" icons to change visibility.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011



Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division





Connecticut Department of
Energy & Environmental Protection
Natural Diversity Data Base

NDDB Request 201107211
DOT07119998PL-SP833
Putnam Bridge Pedestrian Walkway
Glastonbury/Wethersfield, CT

Plant Community:
Freshwater Tidal Marsh



Map created 11/18/2011

0 625 1,250 2,500 3,750 5,000 Feet

Appendix 3

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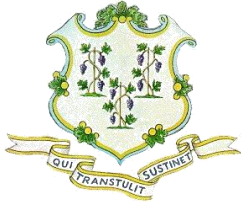
Appendix 4

CTDOT Office of Environmental Planning Transmittal to State Historic Preservation Office

Comprehensive Cost Summaries

Regulatory Approval and Permit Requirements

Resources for Alternative Funding Mechanisms



STATE OF CONNECTICUT

DEPARTMENT OF TRANSPORTATION

2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546



Transmittal:

From: Mandy Ranslow
Date: July 15, 2013
Through: Mark W. Alexander
To: Daniel Forrest
Deputy State Historic Preservation Officer

Project: State No.: 711-9998
F.A.P. No.:
Project Title: Putnam Bridge Trail Feasibility Study
Town: Glastonbury & Wethersfield

Subject: SHPO Consultation Documentation

Description of Activity:

On December 12, 2012 the Connecticut Department of Transportation (Department) submitted information to the State Historic Preservation Office (SHPO) regarding a feasibility study to construct a multi-use trail along the William Putnam Memorial Bridge (no. 00417), which connects the towns of Glastonbury and Wethersfield and carries Route 3 over the Connecticut River.

The Department's Office of Environmental Planning has recently received updated information for the proposed project including alignment, parking lot location, multi-modal connections, and streetscape improvements.

Technical Review of Project:

The Putnam Bridge was built in 1959. A SHPO letter dated 3-30-2012 referring to an associated project (no. 53-175) to rehabilitate the bridge determined that the Putnam Bridge is not eligible for the National Register of Historic Places.

This multi-use path is east of the National Register-listed Old Wethersfield Historic District. The path is outside the National Register-listed Glastonbury Historic District. It does not appear the proposed improvements will impact any standing listed historic resources.

There may be some minor impacts to properties on the west side of Naubuc Avenue south of Route 3 in Glastonbury. The eligibility of the residences will need to be assessed depending on the impacts to the properties.

The area of proposed trail connection in Wethersfield is located within soils classified as Udorthents-Urban Land Complex. This area appears to have been heavily disturbed by interchange construction between Route 3 and I-91 in the 1950s. This area does not appear to be archaeologically sensitive.

The proposed parking area in Glastonbury will be located between a shopping plaza and Route 3. There is an embankment from the normal ground level to Route 3. The soils are classified near Route 3 as Udorthents-Urban Land Complex, and the soils in the rest of the proposed parking area are classified as Haven and Enfield Soils with 0-3% slopes. Disturbance from the construction of the shopping plaza and the construction of Route 3 make this area unlikely to now contain intact archaeological resources.

The streetscape improvements along Naubuc Avenue include crosswalks, sidewalks, signs, and benches. These improvements are within the already disturbed right-of-way of the road.

The lowered portion of the trail off the bridge in Glastonbury will involve some cut slopes. The soils in this location are classified as Limerick and Lim Soils and Saco Silt Loam. This area does appear archaeologically sensitive if the multi-use trail will be located outside the existing disturbed portion of Route 3. This area will likely need an archaeological survey once design plans are finalized if this project moves beyond a feasibility study.

Request:

The Department requests SHPO's comments on the proposed multi-use trail project so that they may be implemented into the feasibility study. The Department will consider these comments when making a decision whether to move forward with this project. If the project should move forward the Department or the appropriate federal funding agency will consult with SHPO on future design plans as they are developed.

Attached Documents:

- SHPO Letter
- Maps
- Photos – Archeological Studies
- Supporting Documents – Proposed plans can be found at:

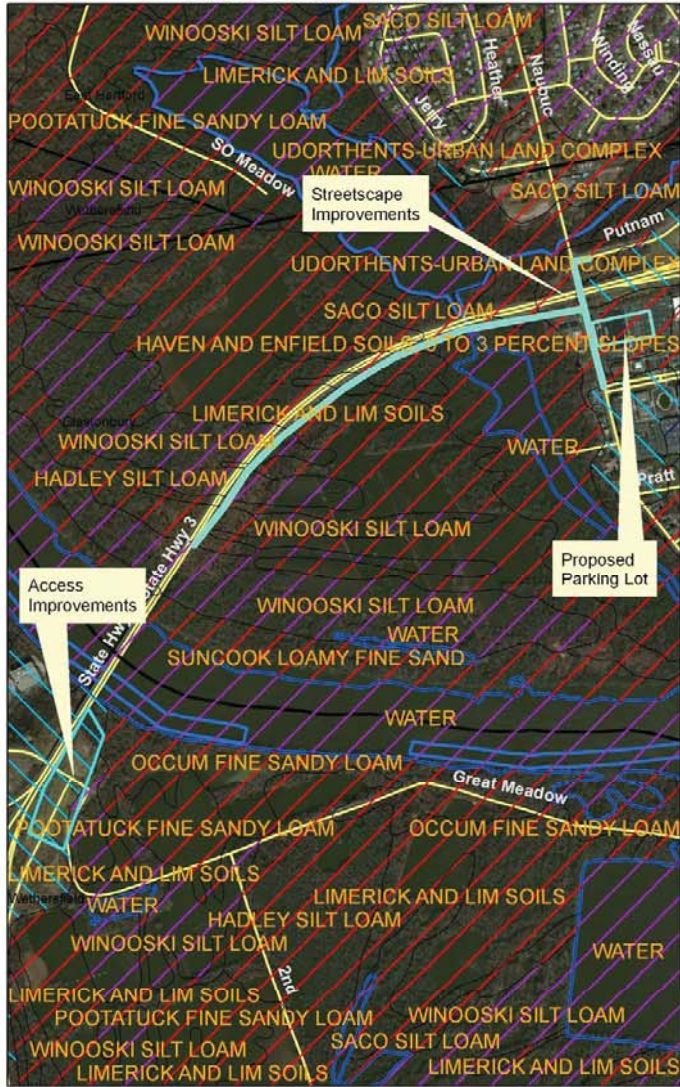
Wethersfield –

http://www.ct.gov/dot/lib/dot/plng_studies/putnamtrailstudy/putnam_revisedalts_wethersfield_ac-mtg03_13-0529_forweb.pdf

Glastonbury -

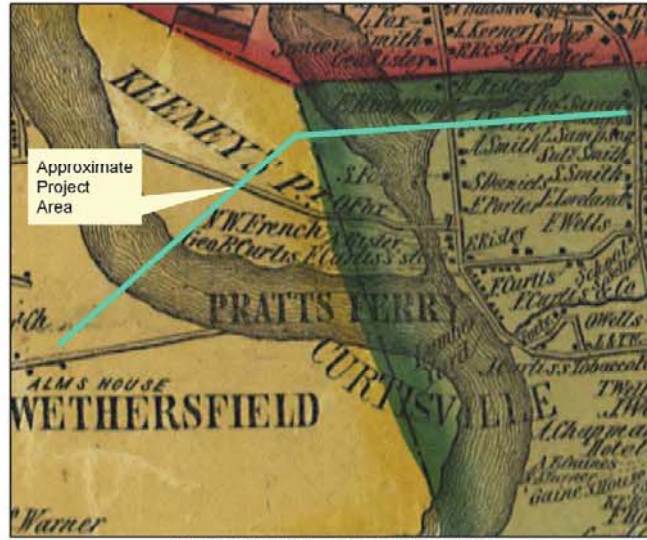
http://www.ct.gov/dot/lib/dot/plng_studies/putnamtrailstudy/putnam_revisedalts_glastonbury_ac-mtg03_13-0529_forweb.pdf

Detail of 2004 Aerial Photography

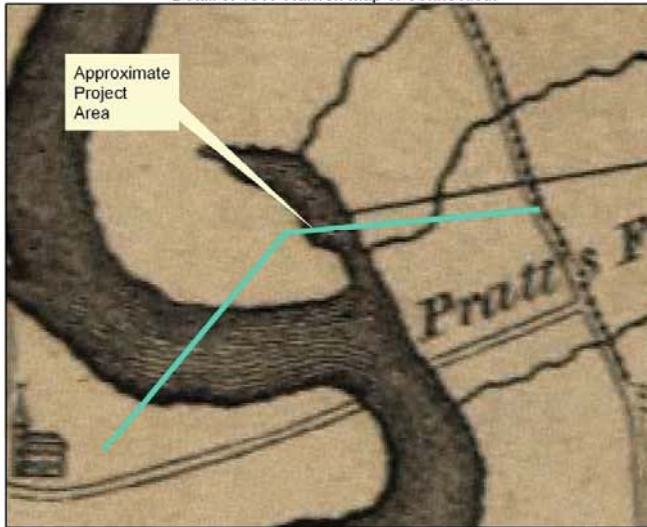


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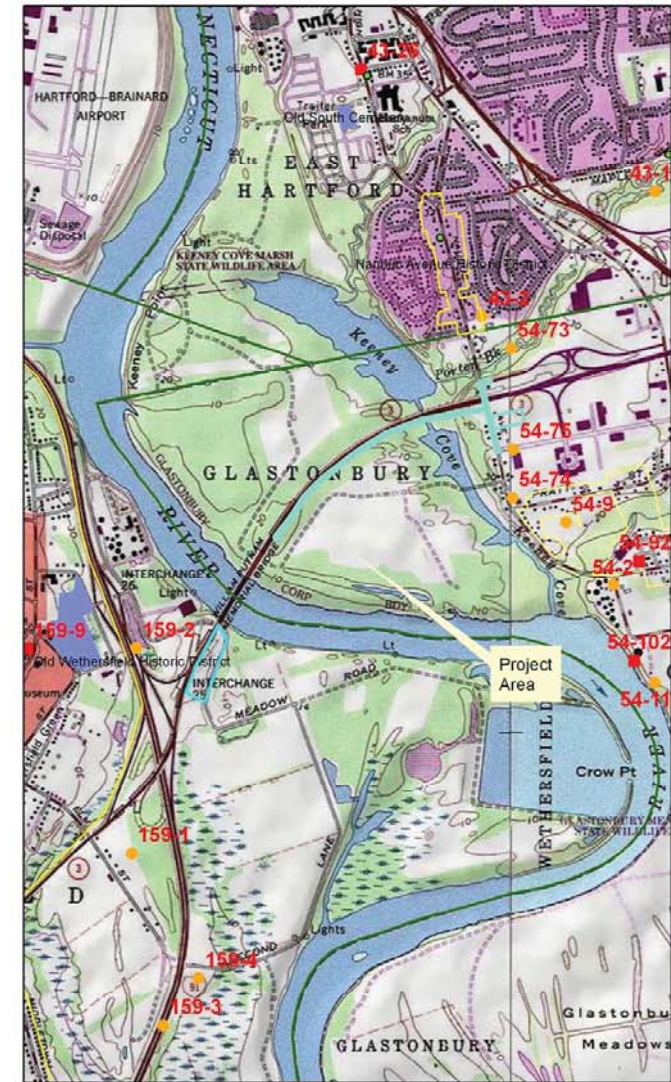
Detail of Woodward 1855 Hartford County Map



Detail of 1811 Warren Map of Connecticut



Detail of USGS Topo Map



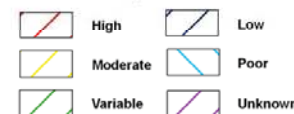
0 2,150 4,300 8,600 Feet

**Office of Environmental Planning
Environmental Review - Historical and
Archaeological Resources**

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CTDOT Project 711-9998
Feasibility Study
Multi-Use Path along Putnam Bridge
Route 3 over the Connecticut River
Glastonbury & Wethersfield

**Predicted Archaeological
Soil Sensitivity**



Historic District



**Approximate Location
of Archaeological Site**



July 11, 2013

Figure A4-1. Comprehensive Cost Summary | Wethersfield Recommendations

Major Items (Roadway & Structure)	Quantity	Unit	Unit Price	Cost
Earth Excavation	110	CY	\$15	\$1,700
Borrow	4400	CY	\$20	\$88,000
Processed Aggregate Base	230	CY	\$35	\$8,100
HMA Pavement	130	TON	\$100	\$13,000
Retaining Wall	1800	SF	\$60	\$108,000
Concrete Barrier Curb with Fence	250	LF	\$150	\$37,500
Railing (Cedar, Three-rail)	1125	LF	\$20	\$22,500
Overhead Sign Foundation Modification	1	EA	\$25,000	\$25,000
Great Meadow Parking Accommodations	1	LS	\$101,000	\$101,000
Great Meadow Improvements	1	LS	\$9,700	\$9,700
Lighting Modifications (Route 3)	1	LS	\$10,000	\$10,000
Lighting (Path)	625	LF	\$50	\$31,300
Amenities	1	Est.	\$15,000	\$15,000
A Major Items Subtotal				\$470,800
Minor Item Allowance	Value			
B Minor Items Subtotal	20%	of Line "A"		\$94,200
Lump Sum Items	Value			
Clearing and Grubbing	3%	of Line "D"		\$19,900
M & P of Traffic	4%	of Line "D"		\$26,600
Mobilization	7%	of Line "D"		\$46,500
Construction Staking	1%	of Line "D"		\$6,600
C Lump Sum Items Subtotal				\$99,600
D BASE ESTIMATE (A + B + C)				\$664,600
Contingency	Value			
E Contingency Subtotal	25%	of Line "D"		\$166,200
F CONTRACT COST, WITH CONTINGENCY (D + E)				\$830,000
Inflation (Simple Method)	Value			
Date of Estimate	8/30/2013			
Date of Expenditure	3/1/2018			
Base Years	4.5			
Annual Inflation	4%			
G Inflation Subtotal	18%	of Line "F"		\$149,000
H CONTRACT COST, WITH CONTINGENCY & INFLATION (F + G)				\$980,000
Construction Engineering	Value			
I Incidentals Subtotal	30%	of Line "H"		\$290,000
J TOTAL CONSTRUCTION COST (H + I)				\$1,270,000
Project Development	Value			
Consultant Design, Permitting	10%	of Line "F"		\$80,000
CTDOT Administration	6%	of Line "F"		\$50,000
TOTAL PROJECT DEVELOPMENT COST				\$130,000

Figure A4-2. Comprehensive Cost Summary | Glastonbury Recommendations

Major Items (Roadway & Structure)	Quantity	Unit	Unit Price	Cost
Earth Excavation	8100	CY	\$12	\$97,200
Borrow	100	CY	\$30	\$3,000
Processed Aggregate Base	1300	CY	\$35	\$45,500
HMA Pavement	720	TON	\$100	\$72,000
Permanent Steel Sheet Piling	19800	SF	\$35	\$693,000
Concrete Barrier Curb with Fence	150	LF	\$150	\$22,500
Metal Beam Rail (Type R-B 350)	3950	LF	\$25	\$98,800
Railing (Cedar, Three-rail)	4100	LF	\$20	\$82,000
5 ft Wire Fence	4000	LF	\$15	\$60,000
5 ft Chain Link Fence	3950	LF	\$27	\$106,700
Drainage Modifications (Route 3)	10	EA	\$17,000	\$170,000
Keeney Culvert Modifications	1	LS	\$132,000	\$132,000
Naubuc Sidewalk (East Side)	1	LS	\$145,000	\$145,000
Naubuc Sidewalk (West Side & North)	1	LS	\$47,000	\$47,000
Naubuc Sidewalk (West Side & South)	1	LS	\$50,000	\$50,000
Naubuc Avenue (Parking Accommodations)	1	LS	\$50,000	\$50,000
Lighting Modifications (Route 3)	1	LS	\$10,000	\$10,000
Lighting (Path)	4100	LF	\$50	\$205,000
Amenities	1	Est.	\$20,000	\$20,000
A Major Items Subtotal				\$2,109,700
Minor Item Allowance	Value			
B Minor Items Subtotal	20%	of Line "A"		\$421,900
Lump Sum Items	Value			
Clearing and Grubbing	3%	of Line "D"		\$89,400
M & P of Traffic	4%	of Line "D"		\$119,100
Mobilization	7%	of Line "D"		\$208,500
Construction Staking	1%	of Line "D"		\$29,800
C Lump Sum Items Subtotal				\$446,800
D BASE ESTIMATE (A + B + C)				\$2,978,400
Contingency	Value			
E Contingency Subtotal	25%	of Line "D"		\$744,600
F CONTRACT COST, WITH CONTINGENCY (D + E)				\$3,720,000
Inflation (Simple Method)	Value			
Date of Estimate	8/30/2013			
Date of Expenditure (Assumed)	3/1/2018			
Base Years	4.5			
Annual Inflation	4%			
G Inflation Subtotal	18%	of Line "F"		\$670,000
H CONTRACT COST, WITH CONTINGENCY & INFLATION (F + G)				\$4,390,000
Construction Engineering	Value			
I Incidentals Subtotal	25%	of Line "H"		\$1,100,000
J TOTAL CONSTRUCTION COST (H + I)				\$5,490,000
Project Development	Value			
Consultant Design, Permitting	12%	of Line "F"		\$450,000
CTDOT Administration	8%	of Line "F"		\$300,000
TOTAL PROJECT DEVELOPMENT COST				\$750,000

Regulatory Approval and Permit Requirements

Based on the location, scope, and potential impacts of the shared use path recommendations, there are multiple agencies that will have jurisdiction over the approvals and permits required for construction. The following summary highlights each regulatory agency and provides a list of the anticipated review, approval, certification, and/or permit requirements associated with the shared use path recommendations. The summary assumes that some Federal and/or State funding sources will be utilized for construction.

- **Connecticut Department of Energy and Environmental Protection (CTDEEP)**
 - *Flood Management Certification*, for work within the 100-year floodplain.
 - Water Resources Construction Activities General Permit.
 - Structures, Dredging and Fill Permit.
 - *Tidal Wetlands Permit*.
 - *401 Water Quality Certification*.
 - Stormwater and Dewatering Wastewater from Construction Activities General Permit.
 - *Natural Diversity Data Base (NDDB) State Listed Species Review*.
- **Army Corps of Engineers (ACOE)**
 - *Section 404 Permit*, for any impacts to Federally-regulated inland wetlands.
- **Federal Highway Administration (FHWA)**
 - *Categorical Exclusion Determination*. CTDOT's Office of Environmental Planning recommended a Categorical Exclusion classification for the shared use path connections based on review of potential project impacts in 2011. A Categorical Exclusion classification will eliminate the need for further action under NEPA/CEPA.
- **Connecticut Department of Transportation (CTDOT)**
 - *Encroachment Permit (Highway)*, for any work done within State right-of-way as part of any locally-administered projects or project-related improvements.
- **Connecticut State Historic Preservation Office (SHPO)**
 - *Section 106 Processing* (with Federal funding participation). [To be determined based on SHPO review].
- **Town of Wethersfield**
 - *Erosion and Sediment Control Certification* (from Inland Wetlands and Watercourses Commission).
 - *Planning and Zoning Commission Approval*, as required by the Town.
- **Town of Glastonbury**
 - *Flood Zone Special Permit*, for work within the 100-year floodplain.
 - *Inland Wetlands and Watercourses Permit*, for any wetland impacts.
 - *Right-of-way Permit*, for any work within Town right-of-way.
 - *Planning and Zoning Commission Approval*, as required by the Town.

Resources for Alternative Funding Mechanisms

There are several organizations that provide resources and clearinghouses with additional guidance, examples, case studies, and suggestions for alternative funding mechanisms that could be utilized by the municipalities and private/volunteer organizations to raise funds for the implementation of the Wethersfield and Glastonbury recommendations. The following resources are provided for information only.

Rails-to-Trails Conservancy

- Website: www.railstotrails.org
- Trail-Building Toolbox
- Financing/Funding for Management and Maintenance
- Library of Resources



National Trails Training Partnership

- Website: www.americantrails.org
- Funding Resources
- Grant Program Links
- Creative Funding Ideas and Examples



PeopleForBikes (formally *Bikes Belong*):

- Website: www.peopleforbikes.org
- PeopleForBikes Community Grant Program
- Tip Sheets for Fundraising and Recruiting Volunteers



Foundation Center

- Website: www.foundationcenter.org
- Searchable Directory of National Grant Programs and Foundations

