

5

Implementation Plan

Section 4 presented detailed recommendations for transportation improvements and land use strategies in the Route 6 Hop River corridor. This section outlines how the transportation improvements can be implemented over time through a series of projects and provides guidance on the implementation process.

5.1 Improvement Program

The overall transportation improvement program consists of 27 potential projects and initiatives that, once implemented, will accomplish the recommendations presented in Section 4. The details of these potential projects are presented in the following sections.

5.1.1 Project Definitions

Projects in the improvement program are defined by project location, type, and priority.

Project Location

The project location is either specific to one of the four corridor towns (Bolton, Coventry, Andover, or Columbia), or applies to more than one town, in which case the location is considered “multi-town.”

Project Type

The project type is classified as small, medium, or large based on three criteria – implementation time, complexity, and approximate construction cost. The project types and their associated criteria are summarized in Table 5-1.

Table 5-1. Project Type Summary

Project Type	Implementation Time	Complexity	Approximate Construction Cost
Small Project	Less than 5 years	Low – Moderate	Low: Less than \$2 million
Medium Project	6 – 10 years	Moderate	Moderate: \$2 million - \$5 million
Large Project	More than 10 years	Moderate – High	High: Greater than \$5 million

Implementation time refers to the approximate length of time that is required to complete a project; it is measured from when the project is initiated (see Section 5.2.1, page 5-23, for discussion on project initiation) to when construction is completed.

Project complexity is a qualitative measure that reflects the level of engineering required to implement the project and the level to which the project will impact rights-of-way (ROW), environmental resources, or utilities. As the complexity of the project increases, the timeframe required to implement the project increases. For the purposes of this implementation plan, the various levels of project complexity are defined as follows:

- **Low Complexity.** Little or no additional planning required. Limited design effort. Typically limited or no utility, environmental, or ROW impacts.
- **Moderate Complexity.** Some additional planning required. Detailed design effort. Typically some utility, environmental, or ROW impacts.
- **High Complexity.** Significant planning and design efforts could be required. Typically significant utility, environmental, or ROW impacts.

The provided approximate construction costs are planning-level approximations of the cost of building the project, exclusive of allowances for utility relocations, ROW acquisition, site remediation, and engineering. Costs are reported in 2012-dollars and were estimated using a methodology consistent with CTDOT's latest *Preliminary Cost Estimating Guidelines*¹.

Project Priority

The project priority is reported in terms of transportation priority and community priority. There are three grades of transportation priority which are generally defined based on the relative need and urgency for the safety, accessibility, and/or mobility improvements provided by each project. More specifically, transportation and community priorities are defined as:

Transportation Priorities:

- ★★★ There is an urgency to initiate the project due to a critical safety need and significant safety benefits. There are some moderate to significant accessibility or mobility benefits of the project.
- ★★ There is a moderate level of safety benefit from the project, but there is no urgency to initiate the project based on safety need. There are some accessibility or mobility benefits of the project.
- ★ There may be some safety benefit from the project, but there is no safety need. There may be some accessibility or mobility benefits of the project.

Community Priorities:

- Community priority will generally be defined based on the REDC's preference for which projects should be initiated first, and in addition to transportation elements, takes into account non-transportation elements including potential for economic development, aesthetic value, and community vision.

¹ The methodology outlined in CTDOT's *Preliminary Cost Estimating Guidelines* consists of estimating quantities and prices for major construction items (such as excavation, pavement, curbing, sidewalk, drainage, traffic signals) and applying factors (as a percentage of the sum of major items) to account for minor items (25%), lump sum items (14.5%, including mobilization and traffic control), incidental items (25%-30%), and contingencies (10%).

All transportation priorities referenced in this plan were assigned based on input from the REDC and CRCOG. In general, these priorities, as well as community priorities, are subjective and should be reviewed on an as-needed basis in the future as the implementation of the projects in this plan evolves. This review should be conducted with input from the individual towns, REDC, CRCOG, WINCOG, and CTDOT.

5.1.2 Bolton Projects

The overall improvement program includes eight potential projects that are located in Bolton. Of these projects, two are considered small; five are medium; and one is large. Two projects are considered top (★★★) transportation priorities.

This section describes each of the Bolton projects and provides a summary of the project type, project priority, and approximate construction cost for each.

1. Bolton Notch – Interim Safety Improvements at Notch Road	Bolton
<p>Summary: Mitigate safety concerns at Notch Road by improving intersection warning signage and sight lines.</p>	<p>Project Type: Small Cost: \$200,000 Priority: ★★</p>

This project includes:

- Installing a new dynamic intersection warning sign on the eastbound approach to replace the existing warning sign for Notch Road. Flashing beacons for the new sign would only be activated by vehicles waiting on the Notch Road approach to Route 6/Route 44.
- Improving sight lines from Notch Road by removing rock ledge and vegetation.



See Section 4.1.2 for other recommendations in the Bolton Notch Focus Area.

2. Bolton Notch – Low-speed Boulevard Improvements

Bolton

Summary: Relocate the Route 6/44 expressway terminus to the west and implement low-speed boulevard improvements along Route 6/44 overlap to encourage slower speeds into the corridor.

Project Type: Medium
Cost: \$3.0 mill.
Priority: ★

This project requires the reclassification of the section of Route 6/44 between the existing eastbound Route 6 flyover and Notch Road from a principal arterial – expressway to principal arterial – other.



See Section 4.1.2 for more details about the recommendations in the Bolton Notch Focus Area.

Physical improvements include providing a tree-lined median, narrower shoulders, and smaller-scale signing that are consistent with a 40 mph roadway.

Note: The approximate construction cost for this project includes boulevard improvements between the existing eastbound Route 6 flyover and Notch Road. Boulevard improvements east of Notch Road are included under Project 3 (below, this page).

3. Bolton Notch – Notch Road Ext. and Route 6/44 Improvements

Bolton

Summary: Modify the junction of Route 6 and Route 44 to enhance safety and to improve connectivity between Route 6, Route 44, and Notch Road.

Project Type: Large
Cost: \$25 mill.
Priority: ★★★

This project would implement the recommendations of the preferred concept for the Bolton Notch Focus Area (see Section 4.1.2 for details) and would include:



See Section 4.1.2 for more details about the recommendations in the Bolton Notch Focus Area.

- Extending Route 44 as a low-speed boulevard through the junction
- Providing Notch Road Extension to connect to Route 44 just west of Quarry Road
- Providing new ramp connections between Notch Road Extension and Route 6
- Providing new multimodal connections and accommodations within the junction.

Note: Project 2 (above, this page) should be implemented prior to or in conjunction with the improvements of this project. Modifications to the Route 6/44 overlap to encourage reduced speeds approaching the junction is a key component of the overall improvements for Bolton Notch.

4. Bolton Notch – Pedestrian and Bicycle Improvements

Bolton

Summary: Construct a new shared use path along westbound Route 44 to improve pedestrian and bicycle connectivity through Bolton Notch.

Project Type: Small
Cost: \$300,000
Priority: ★★

This project includes construction of a 10 ft wide shared use path along the north side of westbound Route 44 between the Hop River Trail trailhead at Bolton Notch State Park and Quarry Road. The path will improve bicycle and pedestrian access from Route 44 east through the Route 6/44 junction where non-motorized access is prohibited on the roadway.

The alignment of the path should minimize potential impacts to rights-of-way and existing utilities. Where feasible, the alignment should also be consistent with the other recommendations in the Bolton Notch Focus Area.



See Section 4.1.2 for other recommendations in the Bolton Notch Focus Area.

5. Bolton Crossroads – Route 6 Speed Mitigation

Bolton

Summary: Implement low-speed village arterial improvements along Route 6 between Bolton Notch and the eastern limit of the future village to encourage slower speeds.

Project Type: Medium
Cost: \$2 mill.
Priority: ★★★

This project includes providing landscaped medians (where possible considering left turn lanes and access needs); 11 ft travel lanes, 5 ft outside shoulders, and street trees along Route 6 within the limits of the future Bolton Crossroads village.



See Section 4.1.3 for more details about the recommendations in the Bolton Crossroads Focus Area.

6. Bolton Crossroads – Phase 1: Route 6-Route 44 Connector

Bolton

Summary: First phase of a three-phase program to implement the transportation elements of the Bolton Crossroads Focus Area recommendations.

Project Type: Medium
Cost: \$3 mill.
Priority: ★

The Phase 1 project provides a new Route 6-Route 44 connector roadway that would serve to both provide a direct connection between Route 6 and Route 44 and provide access to new development opportunities north of Route 6.

It is possible to implement Phase 1 as two separate initiatives with the first initiative restricted to constructing the southern half of the new connector that is located exclusively on State-owned property, ending in a temporary cul-de-sac. The second initiative would construct the northern half of the connector across privately-owned lands to make the full connection between Route 6 and Route 44.



See Section 4.1.3 for more details about the recommendations in the Bolton Crossroads Focus Area.

7. Bolton Crossroads – Phase 2: Village Streets West

Bolton

Summary: Second phase of a three-phase program to implement the transportation elements of the Bolton Crossroads Focus Area recommendations.

Project Type: Medium
Cost: \$3.5 mill.
Priority: ★★

The Phase 2 project provides a portion of the new local street network south of Route 6 and west of the Route 6-Route 44 Connector intersection that would create the framework for the western half of the future village development opportunity. Approximately 1200 ft of new local streets are included in this work.

This project could be undertaken independently of, or concurrently with, new development in this area.

Three properties would be affected by the implementation of Phase 2 project elements.



See Section 4.1.3 for more details about the recommendations in the Bolton Crossroads Focus Area.

8. Bolton Crossroads – Phase 3: Village Streets East

Bolton

Summary: Third phase of a three-phase program to implement the transportation elements of the Bolton Crossroads Focus Area recommendations.

Project Type: Medium
Cost: \$3 mill.
Priority: ★★

The Phase 3 project provides the remaining portion of the new local street network south of Route 6 and east of the Route 6-Route 44 Connector intersection that would create the framework for the eastern half of the future village development opportunity. Approximately 1000 ft of new local streets are included in this work.

This project could be undertaken independently of, or concurrently with, new development in this area.

Four properties would be affected by the implementation of Phase 3 project elements.



See Section 4.1.3 for more details about the recommendations in the Bolton Crossroads Focus Area.

5.1.3 Coventry Projects

The overall improvement program includes two potential projects that are located in Coventry. Both of these projects are considered large projects. One project is considered a top (★★★) transportation priority.

This section describes the two Coventry projects and provides a summary of the project type, project priority, and approximate construction cost for each.

9. Coventry Ridge – Phase 1: Site Access (Future Reloc. South Street) Coventry

Summary: First phase of a two-phase program to implement the transportation elements of the Coventry Ridge Focus Area recommendations.	Project Type: Large
	Cost: \$10 mill.
	Priority: ★

The Phase 1 project provides site access to the Coventry parcel by constructing approximately 1200 ft of the future Relocated South Street alignment from the new intersection with Route 6, over Hop River.

The project includes modifying the Route 6 approaches to the new intersection to provide landscaped medians, 11 ft travel lanes, and 5 ft outside shoulders.

It is assumed that this project could be undertaken by a private developer in conjunction with a future site development project.

One property would be affected by the implementation of Phase 1 project elements.



See Section 4.1.4 for more details about the recommendations in the Coventry Ridge Focus Area.

10. Coventry Ridge – Phase 2: Relocated South Street Coventry

Summary: Second phase of a two-phase program to implement the transportation elements of the Coventry Ridge Focus Area recommendations.	Project Type: Large
	Cost: \$7 mill.
	Priority: ★★★

The Phase 2 project completes the relocation of South Street by constructing approximately 1800 ft of new roadway that extends from the Coventry parcel site access (see project 9, page 5-8) over Ash Brook to meet existing South Street.

The project includes eliminating the existing South Street intersection, or otherwise modifying access to prohibit local vehicular traffic.

Four properties would be affected by the implementation of Phase 2 project elements.



See Section 4.1.4 for more details about the recommendations in the Coventry Ridge Focus Area.

5.1.4 Andover Projects

The overall improvement program includes four potential projects that are located in Andover. Of these projects, two are considered small, and two are large projects. One project is considered a top (★★★) transportation priority.

This section describes each of the Andover projects and provides a summary of the project type, project priority, and approximate construction cost for each.

11. Historic Andover – Pedestrian and Speed Mitigation Improvements	Andover
<p>Summary: Upgrade the pedestrian crossings at Long Hill Road and construct new sidewalk to connect the Park and Ride to Long Hill Road. Implement low-speed village arterial improvements along Route 6.</p>	<p>Project Type: Small Cost: \$2 mill. Priority: ★★★</p>

This project includes:

- Upgrading the pedestrian crossings at Long Hill Road to provide: new pedestrian signal heads and crosswalks; exclusive pedestrian signal phasing; a new connection from the Hop River Trail down to the Long Hill Road crossing from the west; and ADAAG-compliant ramps.
- Constructing a sidewalk from the Long Hill Road intersection to the existing Park and Ride lot. The sidewalk would provide direct access from the Park and Ride lot to the Hop River Trail and other community destinations such as the library and post office.
- Providing pedestrian-level lighting and street trees along the sidewalk to create a buffer from traffic on Route 6 and to promote walkability in the area.
- Constructing landscaped medians (where possible) and providing 11 ft travel lanes and 5 ft outside shoulders along Route 6 within the limits of the future Historic Andover village.



See Section 4.1.5 for other recommendations in the Historic Andover Focus Area.

12. Andover Hop River Trail Access Improvements, Route 6

Andover

Summary: Provide new trail identification and directional signage improvements on Route 6 for trail parking and access in Andover.

Project Type: Small
Cost: \$5,000
Priority: ★

This project includes providing new auto-scale and pedestrian-scale trail identification and directional signage on Route 6 to direct Hop River Trail users to trail parking and trail access locations in Andover. Pending construction of the planned new trailhead and parking area (by CTDEEP) on Route 6 just east of Route 316, signage should be provided for trail parking at the existing Park and Ride lot. Once the new trailhead is completed, signage should be revised to direct access to this location.

See Section 4.3.3 for other recommendations for Hop River Trail improvements.

13. Historic Andover – Phase 1: Village Streets East

Andover

Summary: First phase of a two-phase program to implement the transportation elements of the Historic Andover Focus Area recommendations.

Project Type: Large
Cost: \$6 mill.
Priority: ★★

The Phase 1 project provides a portion of the new local street network adjacent to Long Hill Road that would create the framework for the eastern half of the future village development opportunity. Approximately 900 ft of new local streets are included in this work.



See Section 4.1.5 for more details about the recommendations in the Historic Focus Area.

It is assumed that this project could be undertaken by a private developer in conjunction with a future site development project.

Five properties would be affected by the Phase 1 project elements. The work requires relocation of the existing town maintenance garage and on-site relocation of the existing Park and Ride lot.

The planning-level cost estimate does not include any remediation of the existing town maintenance garage site.

14. Historic Andover – Phase 2: Village Streets West

Andover

Summary: Second phase of a two-phase program to implement the transportation elements of the Historic Andover Focus Area recommendations.

Project Type: Large
Cost: \$3 mill.
Priority: ★★

The Phase 2 project provides the remaining new local street network that would create the framework for the western half of the future village development opportunity. Approximately 900 ft of new local streets are included in this work.

It is assumed that this project could be undertaken by a private developer in conjunction with a future site development project.

Three properties would be affected by the Phase 2 project elements, including one residential property requiring relocation.



See Section 4.1.5 for more details about the recommendations in the Historic Focus Area.

5.1.5 Columbia Projects

The overall improvement program includes six potential projects that are located in Columbia. Of these projects, one is considered small; four are medium; and one is large. Two projects are considered top (★★★) transportation priorities.

This section describes each of the Columbia projects and provides a summary of the project type, project priority, and approximate construction cost for each.

15. Lighthouse Corners – Phase 1: Roundabout

Columbia

Summary: Phase 1 of a two-phase program to implement the transportation elements of the Lighthouse Corners Focus Area recommendations. Specifically, construct a two-lane roundabout at Route 6 and Route 66 in Columbia to address safety and traffic capacity needs.

Project Type: Large
Cost: \$10 mill.
Priority: ★★★

The Phase 1 project includes:

- Relocating the Route 6 and Route 66 intersection and constructing a two-lane roundabout with realigned approach roadways.
- Providing landscaped medians; 11 ft travel lanes, 5 ft outside shoulders, and street trees along the approach roadways (excluding the Route 6 expressway approach).

Relocation of the intersection also provides an opportunity to expand the existing Park and Ride within State right-of-way.

One property would be affected by the implementation of the Phase 1 project elements.



See Section 4.1.6 for more details about the recommendations in the Lighthouse Corners Focus Area.

16. Lighthouse Corners – Phase 2: Village Streets

Columbia

Summary: Phase 2 of a two-phase program to implement the transportation elements of the Lighthouse Corners Focus Area recommendations. Specifically, construct new local streets.

Project Type: Medium
Cost: \$5 mill.
Priority: ★★

The Phase 2 project includes:

- Constructing approximately 700 ft of new local streets and a new Park and Ride lot located north of Route 6.
- Constructing approximately 1000 ft of new local streets located south of Route 6 and west of the roundabout.

These new streets would create the framework for new village development opportunities.

It is assumed that this project could be undertaken by a private developer in conjunction with a future site development project.

Four properties would be affected by implementation of the Phase 2 project elements.



See Section 4.1.6 for more details about the recommendations in the Lighthouse Corners Focus Area.

17. Lighthouse Corners – Route 66 East Flooding Mitigation

Columbia

Summary: Two-phase project to address flooding issues on Route 66 East in Columbia.

Project Type: Medium
Cost: \$750,000
Priority: ★

This project includes two phases:

Phase 1 – Investigation. Investigate the causes and necessary mitigation measures to address flooding issues on Route 66 East between Route 6 and Columbia Plaza.

Phase 2 – Mitigation. Implement appropriate mitigation measures. It is anticipated that mitigation could be implemented as an independent project initiative, or together with future pavement reconstruction on Route 66 East.

Depending on the urgency of the issue, the mitigation could be implemented as part of the roundabout improvements at Lighthouse Corners (see project Co-5, page 5-15).



See Section 4.1.6 for more details about the recommendations in the Lighthouse Corners Focus Area.

18. Columbia – Route 66 East Roadway Improvements

Columbia

Summary: Provide a variety of measures on Route 66 East to improve safety for motorists, bicyclists, and pedestrians.

Project Type: Medium
Cost (Total): \$4.5 mill.
Priority: ★★

This program is divided into three initiatives that could be implemented as one project, or as separate projects based on priority.

Initiative 1: Speed Mitigation Measures. Cost: \$1.5 million.
 Initiative 1 includes installation of:

- Landscaped median on the east side of Flanders Road intersection to shadow a left turn lane at Flanders Road.
- Dynamic speed display sign for eastbound traffic located adjacent to the proposed landscaped median.
- Street trees along both sides of the roadway from east of Flanders Road to Cards Mill Road to provide a sense of roadway enclosure.



See Section 4.2.3 for more details about safety improvements on Route 66 East.

Initiative 2: Curve Safety Measures. Cost: \$75,000.
 Initiative 2 includes:

- Installation of new warning signs (chevrons or directional arrows) to improve curve delineation along Route 66 East.
- Clearing of roadside vegetation and grading of earthen slopes to improve sight lines along the inside of horizontal curves.

Initiative 3: Shoulder Improvements. Cost: \$2.9 million.
 Initiative 3 includes:

- Widening the existing pavement to provide consistent travel lane and shoulder widths of 11 ft and 5 ft, respectively. Resulting overall width of 32 ft provides narrow lanes to help mitigate speeds and wider shoulders for bicyclists.
- Providing new guardrail systems, where warranted, with reflectorized delineators.

Initiative 3 could involve some impacts to existing roadside utilities and stormwater drainage systems, and some minor grading impacts that could result in construction easements or property strip takings.

19. Columbia – Cards Mill Road Intersection Improvements

Columbia

Summary: Reconfigure the intersection of Cards Mill Road and Commerce Drive with Route 66 East in Columbia to address existing safety issues.

Project Type: Small
Cost: \$600,000
Priority: ★★★

This project includes reconfiguring the intersection to eliminate the skewed Cards Mill Road approach to Route 66 East and to provide access management at the intersection.

The project could include new gateway signing in this location that is consistent with the recommendations of the Corridor Master Plan from REDC’s 2010 Study.



See Section 4.2.1 for other side road intersection improvements.

20. Columbia – Hop River Trail Access Improvements, Route 66 East

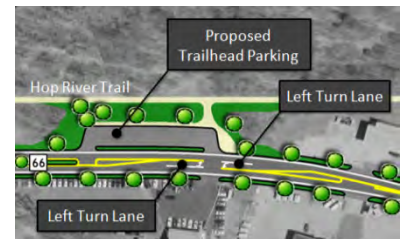
Columbia

Summary: Improve Hop River Trail access from Route 66 East in Columbia by providing a new trailhead with parking and amenities east of Flanders Road, and improving existing access just east of the Willimantic River.

Project Type: Small
Cost: \$30,000
Priority: ★

This project includes improvements in two locations:

- North side of Route 66 East, approximately 700 ft east of Flanders Road within State-owned rights-of-way: Providing a new gravel parking area for up to 18 vehicles with direct trail access and trailhead amenities; and providing trail identification and directional signage on Route 66 East for bicyclists, pedestrians, and motorists.
- North side of Route 66 East, approximately 100 ft west of the Willimantic River crossing and Windham town line within State-owned rights-of-way: Providing better pedestrian and bicycle access including new pedestrian-scale trail identification and directional signage on Route 66 East; site improvements with new trailhead signage, benches, and trash receptacles; and secure bike parking.



Shown: Route 66 East, 700 ft east of Flanders Road

See Section 4.3.3 for other Hop River Trail improvements.

5.1.6 Multi-town Projects

The overall improvement program includes seven potential projects that are multi-town projects. All of these are considered small projects. None of the projects is considered a top (★★★) transportation priority.

This section describes each of the multi-town projects and provides a summary of the project type, project priority, and approximate construction cost for each.

21. Gateway Signing (Bolton, Andover, Columbia) Multi-town

Summary: Install gateway signing in key locations in the Route 6 Hop River Corridor.	Project Type: Small
	Cost: \$40,000
	Priority: ★

This project includes the installation of gateway signs and associated landscaping in the following locations:

- East of Notch Road along eastbound Route 6 in Bolton.
- North of Route 6 and Route 66 intersection along the expressway Route 6 westbound approach to the intersection in Columbia.
- East of Cards Mill Road along westbound Route 66 East in Columbia.
- Along eastbound and westbound Route 6 on the approaches to the Historic Andover area.



See Section 4.1 for other recommendations in the Bolton Notch, Historic Andover, and Lighthouse Corners Focus Areas.

It is anticipated that each of these signs would be located within State-owned rights-of-way and would require maintenance agreements and Highway Encroachment Permits from CTDOT prior to installation.

22. Route 6 Side Road Intersection Improvements

Multi-town

Summary: Address safety and corridor access issues at side roads on Route 6 by providing signing, pavement marking, and minor pavement improvements.

Project Type: Small
Cost: \$100,000
Priority: ★

This project includes improvements in:

- **Bolton** – Stony Road, Johnson Road, South Road, and Steeles Crossing Road.
- **Andover** – Hendee Road, Wales Road, and Shoddy Mill Road.
- **Columbia** – Roses Bridge Road.

It is anticipated that these improvements could be implemented together as an independent corridor improvement initiative, or as part of the next planned pavement rehabilitation project(s) in the corridor.



See Section 4.2.1 and Table 4-1 for location-specific recommendations.

23. Program of Bicycle Safety Improvements

Multi-town

Summary: Provide measures on Route 6 and Route 66 East to improve accessibility and safety for bicyclists in the corridor.

Project Types: Small
Cost (Total): \$15,000
Priority: ★★

This program is divided into two initiatives that could be implemented as one project, or as separate projects based on priority.

Initiative 1: Route 6 Bike Route Designation & Signing. Cost: \$5,000. This initiative includes:

- Installation of bike route marker signs along Route 6 subsequent to designation of Route 6 as a bike route.

Initiative 2: Route 66 East Bike Warning Signage & Shoulders. Cost: \$10,000. This initiative includes:

- Installation of bike warning signs on Route 66 East.
- Installation of new edge line markings on Route 66 East to delineate 11 ft travel lanes and maximize shoulder widths within existing pavement.



See Section 4.3.2 for details about bicycle improvements.

24. Hop River Trail Surface Improvements

Multi-town

Summary: Improve Hop River Trail accessibility by providing a uniform trail surface along its length in the Route 6 Hop River corridor.

Project Type: Small
Cost: \$1 mill.
Priority: ★★

This project includes widening narrow sections, grading, and resurfacing the trail with stone dust to provide a 10 ft wide, uniform surface that can accommodate shared use of the trail throughout the corridor.

In conjunction with this project, trail access from side roads should be improved to replace existing large boulders and gates that serve as vehicular barriers with measures, such as bollards, that are less hazardous to users.



See Section 4.3.3 for other Hop River Trail improvement recommendations.

25. Program of Hop River Trail Signing Improvements

Multi-town

Summary: Provide new Hop River Trail signing on Route 6, Route 66 East, and side roads to improve awareness of, and access to, the trail.

Project Types: Small
Cost (Total): \$30,000
Priority: ★

This program is divided into three initiatives that could be implemented as one project, or as separate projects based on priority.

Initiative 1: Trail Signage on Route 6 & Route 66 East.

Cost: \$10,000. Initiative 1 includes installation of:

- Pedestrian-scale trail identification and directional signage on Routes 6 and 66 East for bicyclists and pedestrians.
- Auto-scale trail identification and directional signage on Route 6 for motorists.

Initiative 2: Trail Markers and Directional Signage.

Cost: \$10,000. Initiative 2 includes installation of:

- Trail markers along the Hop River Trail in the corridor.
- Trail directional signs at select trail crossing and trailhead locations for nearby points of interest.

Initiative 3: Trail Crossing Signage & Markings.

Cost: \$10,000. Initiative 3 includes installation of:

- Pedestrian crossing signs on all local roadway approaches to trail crossings.
- Crosswalk markings at trail crossings on local roadways.



See Section 4.3.3, pages 4-43 and 4-44 for specific signing and marking needs.

See Section 4.3.3 for other recommendations for Hop River Trail improvements.

Implementation Consideration:

Coordinate trail marker and directional sign installation with the planned East Coast Greenway signing initiative (by others).

26. Park and Ride Lot Improvements

Multi-town

Summary: Provide various maintenance, bike parking, and bus shelter improvements at the three Park and Ride lots in the corridor to improve the convenience and comfort of using bus transit.

Project Type: Small
Cost: \$75,000
Priority: ★

This project includes:

- Repairing and maintaining appropriate lighting at the Andover and Columbia facilities.
- Installing bike lockers and/or bike racks at all three facilities.
- Installing a bus shelter at the Bolton facility.



See Section 4.3.4 for additional details on transit recommendations.

27. Express Bus Improvements

Multi-town

Summary: Provide measures to improve access and convenience of using bus transit in the Route 6 Hop River corridor.

Project Type: Small
Cost: \$50,000
Priority: ★

This project involves modifications to privately-owned buses that are contracted by CTTransit to provide Express service in the corridor. It is assumed that an agreement will be required between CTTransit and the bus owners to accommodate the following improvements:

- Installation of bike racks on buses to improve convenience of bike-bus commuter trips.
- Installation of bus tracking technology on buses and development of a smartphone application to provide real-time bus tracking capabilities for commuters.



See Section 4.3.4 for additional details on transit recommendations.

5.1.7 Improvement Program Summary

Table 5-2 provides a summary of the Bolton, Coventry, Andover, Columbia, and multi-town projects described in this plan. As shown in the table, there are six top priority (★★★) transportation projects that should be considered for immediate project initiation.

Table 5-2. Summary of Improvement Program

Project Location and Description	Reference	Coordinating Agencies ¹	Project Type	Approx. Constr. Cost	Transportation Priority ²
Bolton					
1. Bolton Notch – Interim Safety Improvements at Notch Road	p. 5-3	DOT	Small	\$200,000	★★
2. Bolton Notch – Low-speed Boulevard Improvements	p. 5-4	DOT	Medium	\$3.0 million	★
3. Bolton Notch – Notch Road Ext. and Route 6/44 Improvements	p. 5-4	DOT	Large	\$25 million	★★★
4. Bolton Notch – Pedestrian and Bicycle Improvements	p. 5-5	DOT	Small	\$300,000	★★
5. Bolton Crossroads – Route 6 Speed Mitigation	p. 5-5	DOT	Medium	\$2 million	★★★
6. Bolton Crossroads – Phase 1: Route 6-Route 44 Connector	p. 5-6	DOT	Medium	\$3 million	★
7. Bolton Crossroads – Phase 2: Village Streets West	p. 5-6	DOT	Medium	\$3.5 million	★★
8. Bolton Crossroads – Phase 3: Village Streets East	p. 5-7	DOT	Medium	\$3 million	★★
Coventry					
9. Coventry Ridge – Phase 1: Site Access (Future Reloc. South Street)	p. 5-8	DOT	Large	\$10 million	★
10. Coventry Ridge – Phase 2: Relocated South Street	p. 5-8	DOT	Large	\$7 million	★★★

Project Type	Implementation Time	Complexity	Planning-level Cost
Small Project	Less than 5 yrs	Low – Moderate	Low: Less than \$2 million
Medium Project	6 – 10 years	Moderate	Moderate: \$2 million - \$5 million
Large Project	More than 10 yrs	Moderate – High	High: Greater than \$5 million

¹**Coordinating Agencies:** In addition to the town or towns in which a project is located, the coordinating agencies for a project are those that will be involved in the implementation process. For clarity, the towns are not listed in the table.

²**Transportation Priorities:**

★★★. Urgency to initiate due to critical safety need and significant safety benefits. Some moderate to significant accessibility or mobility benefits.

★★. Moderate level of safety benefit, but no urgency to initiate based on safety need. Some accessibility or mobility benefits.

★. May be some safety benefit, but no safety need. May be some accessibility or mobility benefits.



Table 5-2. Summary of Improvement Program

Project Location and Description	Reference	Coordinating Agencies ¹	Project Type	Approx. Constr. Cost	Transportation Priority ²
Andover					
11. Historic Andover – Pedestrian and Speed Mitigation Improve.	p. 5-9	DOT	Small	\$2 million	★★★
12. Andover Hop River Trail Access Improvements, Route 6	p. 5-10	DOT/DEEP	Small	\$5,000	★
13. Historic Andover – Phase 1: Village Streets East	p. 5-10	DOT	Large	\$6 million	★★
14. Historic Andover – Phase 2: Village Streets West	p. 5-11	DOT	Large	\$3 million	★★
Columbia					
15. Lighthouse Corners – Phase 1: Roundabout	p. 5-12	DOT	Large	\$10 million	★★★
16. Lighthouse Corners – Phase 2: Village Streets	p. 5-13	DOT	Medium	\$5 million	★★
17. Lighthouse Corners – Route 66 East Flooding Mitigation	p. 5-13	DOT	Medium	\$750,000	★
18. Columbia – Route 66 East Roadway Improvements	p. 5-14		Medium	\$4.5 million	★★
• Initiative 1 – Speed Mitigation Measures		DOT	Small	\$1.5 million	★★
• Initiative 2 – Curve Safety Measures		DOT	Small	\$75,000	★★
• Initiative 3 – Shoulder Improvements		DOT	Medium	\$2.9 million	★★
19. Columbia – Cards Mill Road Intersection Improvements	p. 5-15	DOT	Small	\$600,000	★★★
20. Columbia – Hop River Trail Access Improvements, Route 66 East	p. 5-15	DOT/DEEP	Small	\$30,000	★

Project Type	Implementation Time	Complexity	Planning-level Cost
Small Project	Less than 5 yrs	Low – Moderate	Low: Less than \$2 million
Medium Project	6 – 10 years	Moderate	Moderate: \$2 million - \$5 million
Large Project	More than 10 yrs	Moderate – High	High: Greater than \$5 million

¹**Coordinating Agencies:** In addition to the town or towns in which a project is located, the coordinating agencies for a project are those that will be involved in the implementation process. For clarity, the towns are not listed in the table.

²**Transportation Priorities:**

★★★. Urgency to initiate due to critical safety need and significant safety benefits. Some moderate to significant accessibility or mobility benefits.

★★. Moderate level of safety benefit, but no urgency to initiate based on safety need. Some accessibility or mobility benefits.

★. May be some safety benefit, but no safety need. May be some accessibility or mobility benefits.



Table 5-2. Summary of Improvement Program

Project Location and Description	Reference	Coordinating Agencies ¹	Project Type	Approx. Constr. Cost	Transportation Priority ²
Multi-town					
21. Gateway Signing (Bolton, Andover, Columbia)	p. 5-16	DOT	Small	\$40,000	★
22. Route 6 Side Road Intersection Improvements	p. 5-17	DOT	Small	\$100,000	★
23. Program of Bicycle Safety Improvements	p. 5-17		Small	\$15,000	★★
• Initiative 1 – Route 6 Bike Route Designation & Signing		DOT	Small	\$5,000	★★
• Initiative 2 – Route 66 East Bike Warning Signage & Shoulders		DOT	Small	\$10,000	★★
24. Hop River Trail Surface Improvements	p. 5-18	DEEP	Small	\$1 million	★★
25. Program of Hop River Trail Signing Improvements	p. 5-18		Small	\$30,000	★
• Initiative 1 – Trail Signing on Route 6 & Route 66 East		DOT/DEEP	Small	\$10,000	★
• Initiative 2 – Trail Directional Signage		DEEP	Small	\$10,000	★
• Initiative 3 – Trail Crossing Signage & Markings		DEEP	Small	\$10,000	★
26. Park and Ride Lot Improvements	p. 5-19	DOT	Small	\$75,000	★
27. Express Bus Improvements	p. 5-19	CTTransit	Small	\$50,000	★

Project Type	Implementation Time	Complexity	Planning-level Cost
Small Project	Less than 5 yrs	Low – Moderate	Low: Less than \$2 million
Medium Project	6 – 10 years	Moderate	Moderate: \$2 million - \$5 million
Large Project	More than 10 yrs	Moderate – High	High: Greater than \$5 million

¹**Coordinating Agencies:** In addition to the town or towns in which a project is located, the coordinating agencies for a project are those that will be involved in the implementation process. For clarity, the towns are not listed in the table.

²**Transportation Priorities:**

- ★★★. Urgency to initiate due to critical safety need and significant safety benefits. Some moderate to significant accessibility or mobility benefits.
- ★★. Moderate level of safety benefit, but no urgency to initiate based on safety need. Some accessibility or mobility benefits.
- ★. May be some safety benefit, but no safety need. May be some accessibility or mobility benefits.



5.2 Project Implementation

Many of the projects outlined in Section 5.1 could follow a traditional implementation process that is initiated and led by a public entity (such as a participating municipality or CTDOT) and carried through implementation by traditional funding mechanisms and a design-bid-build process. Some projects – or elements of some projects – could be initiated and implemented by private entities or private developers through a variety of other implementation mechanisms. Details of both the traditional implementation process and other implementation mechanisms are discussed in this section.

5.2.1 Traditional Implementation Process

For the purposes of discussion in this plan, the traditional project implementation process is generally led by a public entity and includes the following components: project identification; project initiation; design; construction; and on-going inter-agency coordination and community involvement. Each of these components is described in detail in this section.

Project Identification

The first part of the implementation process requires the identification of discrete projects or initiatives that can be advanced independently to address the specific needs of the study area. In general, project identification includes the following activities:

- Defining the scope, limits, purpose, and need for the project.
- Estimating the construction cost of the project to help determine what the funding requirements and funding mechanisms could be.
- Determining the lead agency and participating agencies or responsible parties who will be involved in the implementation process. For most projects, one or more of the participating towns, working with CRCOG, WINCOG, and/or CTDOT, will be responsible for identifying and promoting the projects that will move to *project initiation*. Whether the project is locally funded or State/Federally funded will determine which agency maintains the lead through implementation.

The improvement program outlined in Section 5.1, with the associated construction costs and prioritization ratings for each respective project, was developed as a guide to identifying projects for implementation. This guide should be used by the REDC, participating towns, CRCOG, WINCOG, and CTDOT as a starting point for the implementation process.

Project Initiation

The next part of the implementation process requires the participating towns, working with CRCOG, WINCOG, and/or CTDOT, to initiate the process of moving the project forward to design and construction. In general, project initiation includes the following activities:

- Prioritizing the project within the context of other competing initiatives in the towns, regions, and State.
- Pursuing and securing funding for the engineering and construction of the project. Depending on the overall complexity and cost of the project, it might be necessary to secure funding in two phases: first for engineering, second for construction. If a phased approach is pursued and Federal monies are secured for engineering, it is likely that funding for construction will need to be identified early in the process.

The participating towns can begin initiating projects immediately by working with their respective town boards, state representatives, CRCOG, WINCOG, and CTDOT, as required, to identify potential Federal, State, and local funding opportunities. These funding opportunities could include one or more of the following:

- **Federal and State Funding.** It is anticipated that many of the projects that follow the traditional implementation process will be publically funded in part using State and/or Federal funding sources. To receive State or Federal funding, a project will have to meet the eligibility requirements of one or more funding programs and be approved to receive those funds through a competitive application process.

Potential Federal funding programs for which projects in the plan could be eligible include:

- Surface Transportation Program (STP).
- Highway Safety Improvement Program (HSIP).
- Transportation Alternatives (TA) Program.
- Congestion Mitigation and Air Quality (CMAQ) Program.

Potential State funding programs and resources could include:

- Local Capital Improvement Program (LoCIP).
 - Small Town Economic Assistance Program (STEAP).
 - Special Tax Obligation (STO) Bonds.
- **Local Funding.** It is possible that some projects in the plan could be funded in whole or in part using local capital improvement funds from one or more of the participating municipalities. Additionally, many of the Federal funding programs require local participation, which typically equates to 10% to 20% of the construction cost of the project.

Private Funding Opportunities

Private participation in project implementation is discussed in Section 5.2.2, Other Implementation Mechanisms.

Design

Design can be initiated once funding has been appropriated to a project. This part of the implementation process is described here in two key phases:

- **Preliminary Engineering,** including additional planning (as required), preliminary design efforts, and environmental documentation to satisfy CEPA/NEPA requirements, if applicable. The Preliminary Engineering phase for most large-scale projects would include the selection of a preferred alternative to be advanced to the Final Design phase.
- **Final Design,** including the acquisition of rights-of-way, utility coordination, and the preparation of final design plans and specifications.

Most low-complexity projects in this plan will take less than one year to design (if required); moderate-complexity projects less than three years; and high-complexity projects three years or more.

Construction

The last part of the project implementation process is construction. Construction activities include bidding and awarding the project; relocating public and private utility infrastructure; and physical implementation of the improvements.

Most low-complexity projects in this plan will take less than one year to construct; moderate-complexity projects less than two years; and high-complexity projects two years or more.

On-going Coordination

Coordination and cooperation among the participating towns, REDC, CRCOG, WINCOG, and CTDOT should be on-going throughout the project implementation process to ensure that priority projects, once identified, are progressed in a timely manner through the process. Successful implementation of the projects outlined in this implementation plan – particularly the more complex medium and large projects – will be contingent upon the early coordination efforts required to secure funding through State and Federal funding programs. This part of the process, which includes addition of the project into the regional TIP and STIP, can be a lengthy process as individual projects must compete for limited funding resources against other priority projects in the region and State.

The involvement of local residents, business owners, town officials, and other stakeholders in the project implementation process should also be on-going. The community's collective desire to champion and facilitate the initiation of various projects is one of the most critical elements to successfully implementing the projects outlined in this plan. Without strong community support, many of the projects in this plan may never be initiated.

5.2.2 Other Implementation Mechanisms

It is possible that some projects or elements of projects in this plan could be implemented or funded by private developers, companies, organizations, or individuals using primarily private resources. Mechanisms by which these projects or project elements could be implemented or funded will generally vary by the type of project (small, medium, or large) and could include:

- **Development Exactions.** A development exaction is generally any requirement placed on a developer as a condition of receiving municipal approval for a project. Various forms of development exactions can include dedication of public rights-of-way or lands; construction of public infrastructure; or payment of impact fees to fund necessary public improvements for a project². This implementation mechanism could apply to the medium and large projects in the plan that are closely tied to future development opportunities.
- **Joint Development Agreements.** Joint development agreements involve a public-private partnership to develop certain assets, such as infrastructure, land, or facilities³. Where local regulations permit such agreements, municipalities can partner with private developers to jointly undertake the funding and implementation of mutually-beneficial projects. This implementation mechanism could apply to the medium and large projects in the plan that are closely tied to future development opportunities.

² AASHTO Center for Excellence in Project Finance Website, <http://www.transportation-finance.org/>, 2013.

³ Ibid.

- **Donations.** For relatively small-scale infrastructure improvements or enhancement projects, private organizations, companies, or individuals can contribute funds, materials, professional services, or volunteer time towards the implementation or maintenance of these improvements. Various donations could include community service projects by local high school groups or Boy Scouts of America troops; volunteer and non-profit group undertakings (such as the Shoreline Greenway Trail organization in Connecticut); and free professional services provided by local construction companies, legal professionals, engineers, tradesmen, among others. This implementation mechanism could apply to various Hop River Trail surface, access, and signing improvements; gateway signing improvements; landscaped median maintenance; and streetscape improvements.
- **Sponsorship Programs.** Formal sponsorship programs could be established by the municipalities or local organizations to provide a mechanism by which small-scale amenities – such as benches, bike racks, trailhead signs, among other elements – are paid for and donated in the name of local businesses and organizations.