Corridor Study

Route 28 Bike-Pedestrian Corridor

Salem
New Hampshire

Prepared for **Town of Salem, New Hampshire**

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Introduction

The continued redevelopment of the Route 28 corridor through Salem presents both challenges and opportunities for improving bicycle and pedestrian access and safety. The following report outlines the needs and solutions that will provide a roadmap for systematically integrating bicycle and pedestrian infrastructure improvements into the fabric of the corridor. The work contained herein is based on field observations, public input and guidance from Town officials. It incorporates information on physical and environmental constraints, existing bike and pedestrian infrastructure and relevant design standards. The report identifies opportunities for corridor wide bike and pedestrian improvements along with their associated conceptual cost estimates and potential funding sources.

2

Existing Conditions

Study Area

This study focuses on the Route 28 transportation corridor from the Methuen, Massachusetts border to Windham, New Hampshire. The 5.2 mile long Route 28 transportation corridor includes the former Manchester-Lawrence railroad corridor that roughly parallels the west side of the Route 28 right-of-way. The study area also extends laterally beyond the Route 28 corridor in an effort to recognize bike and pedestrian origins, destinations and potential connections that could feed into the Route 28 corridor.

Existing Pedestrian Accommodations

It is clear from the Town's inventory of the existing Route 28 sidewalks that pedestrian accommodations are anything but continuous along the corridor. In addition, the predominantly commercial land use has buildings that are very often separated from the Route 28 sidewalks by large parking lots. Within the dense commercial zones the Route 28 sidewalks that do exist are crossed by a high number of busy commercial driveways. There are approximately seventy curb cuts and nine intersecting roadways along the west side of Route 28 alone.

The above conditions all make pedestrian travel along the corridor difficult, uninviting and at times unsafe. In areas where there are no sidewalks, the pedestrians are forced to walk in the roadway shoulder, in landscaped borders where available, or in the adjacent business parking lots. There are few lateral sidewalks that extend from the stores to the edge of Route 28, so even if sidewalks did exist along the corridor the pedestrians would be forced to walk in driveways or through parking lots to reach their shopping destinations. The corridor has evidently evolved over time with haphazard regard for pedestrian needs. The potential still exists, however, to improve pedestrian accommodations as properties

are redeveloped or as public infrastructure is rehabilitated. The corridor can be improved by establishing sidewalk policies and standards and by identifying and prioritizing the sidewalk improvements that are needed.

There are relatively few painted crosswalks across Route 28 even though there are neighborhoods, employers, service providers, and retail destinations on both sides of Route 28. There are crosswalks associated with traffic signals in the following Route 28 intersections, listed south to north:

- Hampshire Road
- (former) Circuit City Plaza drive
- Kelly Street
- Best Buy Plaza drive
- Main Street (Salem Depot)
- Old Rockingham Road

The following signalized intersections do not have crosswalks across Route 28:

- Pattee Road
- Hagop Road/Home Depot Drive
- Target/DeMoulas Plaza Drive
- Cluff Crossing Road
- Rockingham Park Boulevard
- WalMart Drive
- Range Road/Lake Street

It may be feasible to add Route 28 pedestrian crossings at some of the above intersections that currently have none. This is discussed in more detail in Chapter 4.

The Route 28 corridor also lacks crosswalks that run longitudinally across major site drives and cross streets. This is somewhat understandable in areas where there are no sidewalks along Route 28, but longitudinal crosswalks need to be considered where new sidewalks and/or a multi-use path are added along the corridor.

Existing Bike Accommodations

There are no designated bike accommodations, such as bike lanes, bike paths or bike routes, within the study corridor. The paved shoulders along Route 28 are generally narrow or nonexistent, and the sparse sidewalks are not intended for bike use.

Bicyclists are allowed to ride on Route 28, but very few are observed doing so. It is presumed that this is primarily due to the narrow or nonexistent shoulders, the high

number of commercial drives and turning vehicles, and the high traffic volumes and relative speeds. All of these factors combine to make for an inhospitable environment for cyclists. This is not to say that the corridor lacks demand for bike accommodations, however. The local and regional bike and pedestrian needs are discussed further in the next chapter.

Environmental Considerations

There are environmental and cultural resources that exist within the Route 28 corridor and the associated former B&M Manchester-Lawrence rail corridor. This study does not include a detailed environmental inventory, but rather makes note of the primary resources that are observed within the study area and that should be considered when planning physical bike and pedestrian improvements. The primary environmental resources include prime wetlands and floodplain. The existing raised railroad embankment passes along expansive prime wetlands in the north and south central portions of the corridor. These wetlands provide some of the finest natural viewsheds along the otherwise urbanized rail corridor, and development of a multi-use path on the raised rail bed within this corridor will enhance public access to and appreciation of this resource. There are also small isolated wetlands that have been identified and located in poorly drained areas and ditches along segments of the corridor, including the northern segment between Old Rockingham Road and Range Road.

The corridor also crosses Policy Brook and the Spicket River. Segments of the study area fall within the floodplains associated with these streams, and in fact the rail

corridor in the vicinity of Duffy Avenue could provide an alternative route for emergency vehicles when Route 28 floods.

Other potential environmental considerations include threatened and endangered species, hazardous materials and water quality. Cultural resources in the form of historic structures or archaeological artifacts will be investigated as part of the project development process under NEPA, but no known cultural resource impacts are anticipated. The majority of the land along the rail corridor or Route 28 has been highly disturbed and discovery of significant archaeological artifacts is unlikely.

3

Bike and pedestrian Demand

Local Origins and Destinations

There are many bike and pedestrian origins and destinations within and surrounding the Route 28 corridor. The local origins include the adjacent housing developments, apartment buildings, and residential neighborhoods that feed into the Route 28 corridor from adjoining streets and driveways. The local destinations include the entire Route 28 commercial zone as well as schools, recreation facilities, institutions, major employers and other public and private facilities that are within an easy walk or bike ride of the corridor. The Town estimates that there are over 4,800 households within ¼ mile of the corridor. When compared to other potential rail to trail corridors around New Hampshire the abandoned Boston and Maine Railroad Manchester to Lawrence Branch that parallels Route 28 would be considered among the most densely settled and commercialized corridors in the state.

Regional Significance

The study corridor falls along a developing regional rail trail known to some as the Granite State Trail. This trail is envisioned to one day connect the communities of Salem, Windham, Derry, Londonderry and Manchester by developing a paved shared use trail on the former Boston and Maine Railroad Manchester to Lawrence Branch (M&L) corridor. In Massachusetts the trail would continue south from Salem through the town of Methuen. At the northern end in Manchester the trail would branch out to other communities to the north, east and west, and one day may connect through Concord to the Northern trail which is already nearly continuous to Lebanon. It is expected that adding this regional dimension to the corridor would increase both recreational and transportation use of the Salem Route 28 rail corridor.

The fact that the Granite State Trail will roughly parallel the Interstate 93 corridor is significant since it will provide regional alternative transportation via bike, or by connecting bike to transit or the I-93 Exit 2 and 5 Park and Ride facilities in the area.

Sections of the Granite State Trail are already complete or nearing completion in Windham and Derry, and planning efforts continue in Manchester and Londonderry. In May of 2012 Methuen, MA completed track and tie removal and construction of a compacted recycled asphalt base on their section of the former M&L rail corridor up to the Salem Town line.

Bike / Pedestrian Users

In 2008 the Salem Bicycle and Pedestrian Corridor Committee conducted a card survey of over 2,500 households that are within ¼ mile of the Route 28 corridor. That survey showed that 25% of the respondents said they would use the shared use path daily, while another 59% said they would use it weekly. Interestingly, there was an even split between those that would bike vs. walk on the proposed bike-ped corridor. This even split might be explained by the purpose of their trips. It is easy to envision residents of the immediate neighborhoods walking on the bike-ped corridor to shop at the local stores or to walk for health and enjoyment. In some urban and suburban communities people are calling their multi-use paths their "new Main Streets" since residents find that these trails provide the same opportunities for shopping and social interaction on foot that was once only found on Main Streets.

Local bike trips would likely be for recreation, commuting to local jobs, or riding to the many business and commercial destinations along the corridor. Regional bike trips would likely be for recreation, especially on weekends, or as alternative transportation for commuting during the week. To some the path will be a destination and to others it will be a means to get to their destinations.

In 2009 a Salem Pedestrian/Bicycle Corridor Demand Analysis study was completed by Hawk Planning Resources, LLC. That study conducted a literature review to determine best practices for estimating bike and pedestrian use on new multi-use path facilities, such as the one that is envisioned for the M&L corridor in Salem. The study took into account the geographic distribution of the Town's population in relation to the corridor on a segment by segment basis. It then estimated a range of likely bike and pedestrian use.

The study concluded that the combined annual bicycle and pedestrian use of the trail would fall within a range of 35,000 to 350,000. That would equate to an average of 96 to 960 trips per days over the course of a full year.

The study produced a very wide range of estimated bike and pedestrian utilization. The low end of the range, 96 trips / day seems very low since that only amounts to 8 trips / hour for the busiest 12 hours of the day over the 5.3 mile long path.

Conversely, the high end of the range, 960 trips/day, would amount to 80 trips per hour for the busiest 12 hours of the day. If those 80 trips were broken out into one mile segments it means approximately 15 bike/pedestrian trips would be generated per mile per hour per day. In the dense commercial segments of the corridor this seems plausible, especially where both residential and commercial zones abut the corridor, such as in segments 3 and 4. But segments such as the northern segment would be expected to generate less use, and seasonal inclement weather would further reduce the expected average daily bike and pedestrian use.

As a result of these observations we recommend using an annual use figure of 245,000 bike/pedestrian trips once the Route 28 multi-use path is completed. This figure falls 2/3 of the way toward the high end of the range that the Hawk study produced. We recommend using a higher figure than the average of the range in the Hawk study for the following reasons:

- The Salem corridor falls along what is expected to become a regional non-motorized corridor, the Granite Stare Trail, and this will eventually increase regional bike use along the trail, especially as a non-motorized alternative to I-93.
- The corridor touches some economically challenged areas where residents may not own motor vehicles and would therefore be expected to utilize the bike/pedestrian corridor on nearly a daily basis to access stores, supermarkets, jobs and transit stops for connections to points beyond.

The supportive survey results, the Hawk Corridor Demand Study, and anecdotal evidence and observations show that there is both local and regional demand for a shared use path and sidewalks along the Route 28 corridor. It is therefore reasonable to conclude that a portion of the current unmet bicycle and pedestrian demand is being met by automobile use instead. Therefore, the development of Route 28 bike and pedestrian improvements will enable a perceptible mode shift from motor vehicles to bikes and walking, or multi-mode split as a transit system is implemented.

4

Build Solutions

Multi-Use Path Definitions and Design Standards

The existing rail corridor provides an opportunity to construct a continuous north-south paved multi-use path that would primarily serve bicyclists and pedestrians. The following section describes the proposed improvements for the multi-use path as well as cross connections to it.

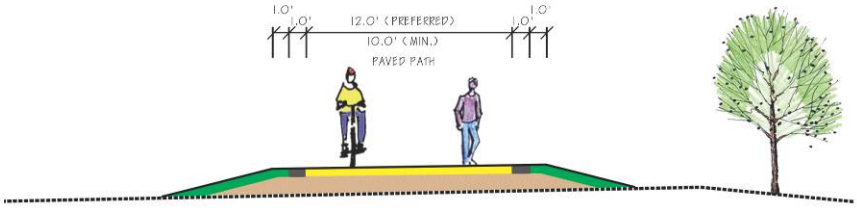
Definition:
Multi-use Path: (also: Shared-use Path or Trail)
A path that does not permit motorized vehicles (except for publicly authorized emergency and service vehicles, and motorized wheelchairs) and which is intended to accommodate multiple non-motorized users, including bicyclists, pedestrians, wheelchair users, joggers, equestrians, roller bladers, skateboarders, etc. Similar to bicycle path, but explicitly more inclusive.

Manchester's 10' wide Piscataquog Trail

Design Standards:

Minimum Multi-use Path Width: The minimum width for the Route 28 multi-use path shall be twelve (12) feet; provided, however, that the Town Engineer (or its designee, hereafter) may reduce this required width to ten or as low as eight (8) feet where severely constrained by physical obstacles and hazards, environmental or cultural resources, or restrictive right-of-way width, and only in instances where he or she determines that the path presents a satisfactory and safe alignment vertically and horizontally.

The minimum width for multi-use path side connections shall be ten (10) feet, or greater if in high traffic areas, or less in severely constrained areas, at the discretion of the Town Engineer.



Typical Multi-use Path Section

Path Materials: Multi-use paths shall be paved using machine applied hot bituminous asphalt pavement material. The wearing course shall be minimum 1" thick NHDOT Type "F" and the binder course shall be minimum 1.5" thick Type "B". The base courses shall consist of 6" Crushed Gravel over 12" Gravel. Where wet conditions are expected a minimum 12" layer of sand shall be included below the gravel, and a medium weight geotextile fabric shall be installed below the sand in areas with high groundwater and soft soils. Existing site conditions may warrant additional measures to address poor soils, steep side slopes, or drainage concerns. Conversely, in areas where the existing rail bed consists of stable well drained soils and/or ballast the 12" gravel layer may be reduced.

Clearances and Shoulders: Multi-use paths shall have a minimum two-foot wide graded shoulder area of dense graded crushed stone, fine gradation, on both sides of the path. Multi-use paths shall have a minimum three-foot clearance from trees, poles, steep slope breaks, and other obstructions unless this requirement presents practical difficulty, in which case the Town Engineer may approve a deviation if adequate warning signage is provided. Vertical clearance under structures shall be eight (8)-foot minimum with ten (10) feet desirable to accommodate equestrians and emergency vehicles.

In areas where it is desirable to separate runners from other users, and where space permits, one of the granular shoulders shall be widened to 4 feet and signing shall be provided to encourage running on the shoulder.

Fences and Railings: Bike and pedestrian safety railings shall be incorporated adjacent to multi-use paths where adequate (3-foot minimum) recovery area cannot be provided between the paved path and hazards. Judgment of the Town Engineer shall be followed where hazards outside of the minimum recovery area are considered serious enough to warrant railings along the path. The railings shall be placed no closer than 2 feet from the edge of the path surface. The minimum railing height shall be 42 inches, except it shall be 54 inches across bridges or adjacent to walls over 4 feet high. Railings shall meet ADA guidelines for rail height and maximum opening size.

Fences shall be installed in locations where it is desirable to prevent pedestrian passage. As a general rule the Town does not plan fencing for security purposes along the paths, but abutting property owners may chose to install fence within their property if they are concerned about security.

Grade: The maximum grade of the multi-use path shall be five (5) percent. The path may exceed the maximum five (5) percent grade for short sections in cases where topographic conditions present practical difficulties in achieving that grade. If difficult grade problems cannot be overcome, measures should include the provision of rest stops or lower grade "switchbacks."

Intersection Crossings: When a bicycle lane, bicycle path, or multi-use trail crosses a road intersection or major commercial drive, ADA compliant ramps and adequate warning and safety signing and striping must be provided, subject to the approval of the Town Engineer. When the intersection is controlled by traffic signals, pedestrian signals must be studied and added in where appropriate in accordance with the guidance of the manual on Uniform Traffic Control Devices (MUTCD).

Markers and Signage: Designated bicycle routes shall be equipped with bicycle route markers, mile markers (for routes more than two miles) and other appropriate signs and markers as determined by the Town Engineer and consistent with the Manual on Uniform Traffic Control Devices or other specifications accepted by the Town Engineer. The multi-use trail shall include wayfinding signs at road crossings and connecting path junctions.

Additional design guidance may be found in the latest versions of the following sources:

ADAAG: The ADA (Americans with Disabilities Act of 1990) Accessibility Guidelines (ADAAG) provides guidance on various design criteria that must be satisfied in order to provide access to all users including the disabled. The ADAAG includes guidance on parameters such as maximum grade, minimum width, railing

design requirements, surface requirements, sidewalk and crosswalk standards, and other relevant criteria.

AASHTO Guide for the Development of Bicycle Facilities This guide provides detailed information on the development of on and off road bicycle facilities.

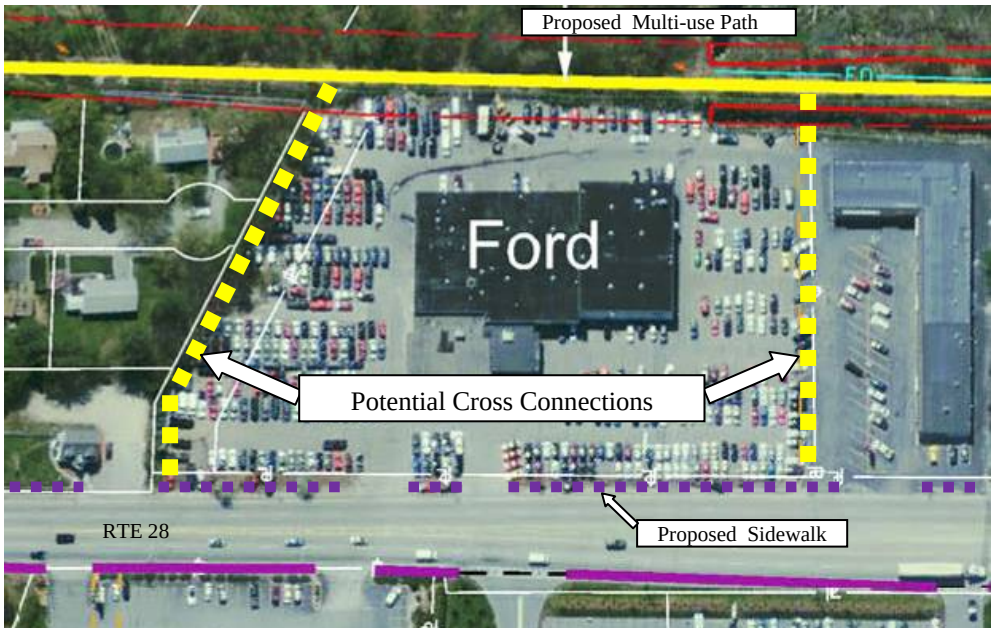
MUTCD: The Manual on Uniform Traffic Control Devices This manual prescribes national design guidance on signing, pavement markings and traffic signals, including in reference to bike and pedestrian facilities.

Cross Connections

The development of a paved multi-use path along the former railroad bed will provide the north-south bike and pedestrian transportation backbone for the Route 28 corridor. But in order to maximize the effectiveness of such a facility it will be advantageous to identify, enhance and formalize the connections that provide access to the path from the many origins and destinations on both sides.

Beginning at the southern end of the corridor at the Methuen border the rail corridor is separated from Route 28 by as much as 450 feet. The land use between the rail corridor and Route 28 is predominantly business/retail with some residential development mixed in. This separation between the rail corridor and Route 28 continues until just north of Kelley Road, and it begins again in the vicinity of the Depot and ends at Old Rockingham Road. There are over 40 business parcels that are located between the rail corridor and Route 28.

In most instances there are no formal bike or pedestrian connections between the rail corridor, the businesses and Route 28. The buildings tend to be isolated islands surrounded by parking lots. In some cases there are even fences between the businesses and the rail corridor. The below graphic shows an example of how it may be possible to add connecting paths between the proposed multi-use path and sidewalks on Route 28.



This condition could be improved by including connections between the trail and Route 28 as the trail is developed as well as by providing such connections as properties are redeveloped. The belief is that these connections will help improve bike and pedestrian mobility, increase utilization of the trail and reduce automobile trips to the businesses, thus reducing traffic on Route 28 and increase parking capacity for the businesses.

There are a handful of possible connections along the corridor based on available existing space as well as possible existing easements. But as properties are redeveloped the intent would be to include new cross connections as long as terrain, environmental constraints and site conditions allow.

Possible connections are depicted on the attached Route 28 Pedestrian/Bicycle Corridor plans.

<u>Suggested Town Policy:</u>

Multi-use paths, bike lanes and/or bike routes shall be implemented where the Town has identified appropriate corridors and locations. This includes connections to the proposed multi-use trail in the former Manchester-Lawrence railroad corridor. These connections shall be added where possible and where appropriate for the intended public non-motorized access.

Route 28 Crossings

Route 28 presents a formidable obstacle to pedestrians wherever there are no formal pedestrian crossings. High traffic volumes and speeds in conjunction with as many as 8 lanes can make crossing without pedestrian signals difficult if not perilous. As discussed earlier, there are origins and destinations on both sides of Route 28 and establishing more signalized crossings would benefit non-motorized mobility within the study area.

Adding pedestrian crossings to existing signalized intersections can have a negative impact on the overall traffic operation of those intersections. Some of the existing intersections already experience significant peak hour delay and adding pedestrian signals would degrade operations further. An analysis of the existing signalized intersections shows that actuated pedestrian phases could be added at a few intersections without severely impacting traffic levels of service.

These intersections include:

- Signal at Wal-Mart Driveway
- Signal at Post Office Driveway
- Signal at Home Depot Driveway
- Signal at Patee Road
- Signal at Best Buy Driveway
- Signal at Target Driveway

The results of a detailed evaluation of all of the signalized intersections that lack pedestrian accommodations is included in the Appendix.

Since enhanced pedestrian mobility would come at the expense of motor vehicle levels of service, the Town must weigh the benefits and impacts and make decisions on the prioritization of pedestrian mobility and safety vs. motor vehicle convenience. It may be advantageous to add pedestrian crossings to only one or two well spaced locations from the above list of intersections such that a balance is struck between improved pedestrian access and overall system traffic operations. It is a stated goal of the Town to accommodate pedestrian crossings without adding to motorist delays.

Route 28 Sidewalks

As noted in the Existing Conditions chapter, continuous sidewalks are generally lacking along Route 28. The Town should consider adding more sidewalks to fill in the gaps. This is most critical in the dense commercial zones where pedestrian demand is the greatest.

New sidewalks can be added as part of planned sidewalk improvement projects or they can be added opportunistically as part of roadway maintenance or transportation improvement projects. With continuous sidewalks along Route 28 the Town would be more justified in requiring pedestrian connections within private developments between the public sidewalks and the new businesses.

The attached aerial plans of the Route 28 corridor depict (in purple) the approximate locations of existing sidewalks. This makes it easy to see the discontinuities as well as the adjacent land use and likely pedestrian origins and destinations.

Specific Improvements by Segment

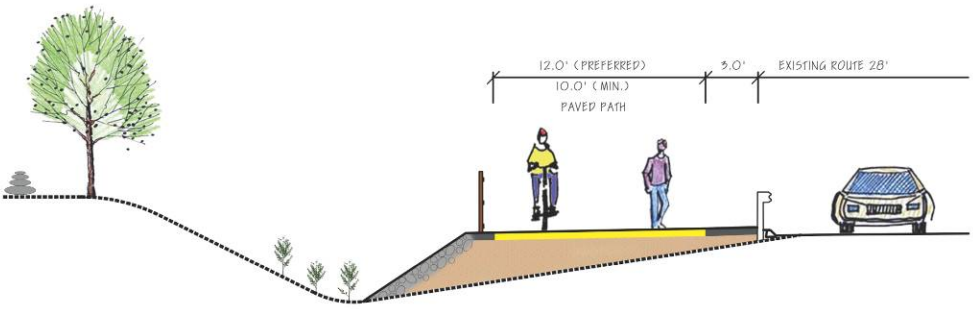
For this study the Route 28 corridor is broken into four distinct segments. These segments have logical termini and unique characteristics. The proposed build solutions for each of the four segments are described from north to south as follows.

Segment 1 – Windham Town Line to Old Rockingham Road

Multi-use Path:
This segment of path will be an extension of the paved rail trail that is being completed in Windham to the Salem border. There are plans to also include trailhead parking near this junction on a parcel of land near the Range Road (former Route 111) intersection.

The multi-use path crossing of Range Road will require modifications to the existing intersection to address safety and operational considerations. This intent is to add a signalized crosswalk for the path within the intersection. To allow this the free right turn slip lanes into and out of Range Road would be converted to standard right turn lanes. The Route 111 bypass project has likely resulted in lower traffic volumes on Range Road so the planned geometric modifications and pedestrian signalization should be accommodated reasonably well. It is believed that further modifications to this intersection are being considered by NHDOT and coordination is necessary to ensure that the path project is incorporated in any resulting improvement plans.

The multi-use path will need to avoid and minimize impacts to wetlands as it heads south from Range road. Those wetlands occupy the drainage swale that exists between the Route 28 roadway embankment and the former rail bed. There is also a need to stay away from and below Old Rockingham Road in response to neighborhood concerns. The intent is to therefore build the path roughly adjacent to Route 28. This will require construction of some new guardrail, embankment and railing to minimize filling of the wetlands. The trail width will likely be reduced to 10 feet through this segment to reduce impacts further.



Typical Multi-use Path Adjacent to Route 28

Route 28 Crosswalks:
The path will provide an opportunity to connect the neighborhood to the commercial development on the east side of Route 28 via a proposed crosswalk at the Wal-Mart traffic signal. A crosswalk and pedestrian phase would be considered at that signal. Coordination with Wal-Mart will be necessary since bike and pedestrian accommodations would then be needed between Route 28 and the store.

Segment 1 will end at the existing Old Rockingham Road signalized intersection, which currently includes signalized crosswalks across Old Rockingham Road and Route 28.

Sidewalks:
The multi-use path will provide pedestrian access along the entire west side of Route 28, but the east side has very little existing sidewalk and would benefit from future efforts to connect all of the east side businesses with sidewalks over time.

Segment 2: - Old Rockingham Road to Rockingham Park Race Track

Multi-use Path:
This segment of the path passes southerly past extensive prime wetlands and flood prone areas before reaching the Salem Depot. The current plans is to cross Pelham Road at the former rail crossing location, but the path should be integrated into future Salem Depot redevelopment plans that may offer opportunities to relocate the crossing further away from the Route 28/Pelham Road intersection.

South of the Salem Depot the path enters a flat and easily developed stretch to the end of the segment near the racetrack side entrance or opposite the Post Office driveway.

Sidewalks:
There are relatively continuous existing sidewalks on both sides of Route 28 through this segment.

Cross Connections:
The location of cross connections between the multi-use path and the Route 28 sidewalks will likely be influenced by the redevelopment plan for the Salem Depot.

Miscellaneous:
Today there are cases of private encroachment onto the existing rail corridor. These include the Agway store and others. Development of the trail will require that these encroachments be rectified. This may include sharing the right-of-way through creative design accommodations in instances where the businesses would be severely impacted by complete prohibition from the rail right-of-way.

It is worth noting that the historic Salem Depot train station was recently restored and is immediately adjacent to the proposed multi-use path within the rail corridor. The development of the path within the existing rail corridor will provide increased public access to and appreciation of this historic attraction.

Segment 3: - Rockingham Park Race Track to Kelley Street

Multi-use Path:
The path will continue along the former rail bed until it reaches Rockingham Park Boulevard. Crossing the Boulevard represents one of the greatest challenges along the corridor since adding an exclusive signalized pedestrian phase to cross the 9 travel lanes would result in unacceptable peak hour delay. The ideal solution from a traffic and safety perspective is a grade separated crossing, although a pedestrian bridge is also a very costly solution. Another alternative is to divert the path west along Rockingham Park Boulevard to a crossing at the existing Race Track entrance signal. There are however wetlands on both sides of the Boulevard, and there is concern over whether bicyclists and pedestrians will actually divert out of their way to the other signal as opposed to crossing unprotected at the Route 28 signal.

South of Rockingham Park Boulevard the path would pass by large parking lots (Kohls and Christmas Tree Shops). It would then cross Cluffs Crossing Road through a signalized crossing. Then it would pass dense single family and multi-unit housing developments before re-entering the commercial zone just before Kelley Street.

Construction of the path through this segment would require removal of existing track and ties and consideration for drainage and utilities.

Cross Connections:
Connections to the adjacent neighborhoods are an important consideration. The residents will likely use the path extensively for transportation to the many nearby businesses, for recreation, and for social interaction. But the residents may also be concerned about security, so formal connections from the trail to the residential developments should be considered with neighborhood input.

Sidewalks:
The multi-use path will satisfy the pedestrian needs along the west side of Route 28. On the east side of Route 28 sidewalks are missing from the target store northward to Veterans Memorial Parkway. There are a number of important destinations within that stretch, including retail stores and food shopping centers, so it is expected that the addition of continuous sidewalks would be of great benefit.

Route 28 Crosswalks:
There are no crosswalks across Route 28 between the Best Buy driveway intersection (which does have a crosswalk) and the Salem Depot intersection. It would be advantageous to add at least one crosswalk at an intermediate crossing, possibly in conjunction with adding sidewalks in that area. The Target drive signal or the Cluffs Crossing Road intersection would be strategic locations since they would provide access between the residential neighborhood s on one side and the food supermarkets and stores on the other. The Cluffs Crossing Road intersection currently operates at relatively poor levels of service however and would suffer further from the addition of a crosswalk. The Target drive intersection could more reasonably accommodate pedestrian signals.

Segment 4: - Kelley Street to Methuen, MA Town Line

Multi-use Path:
This segment contends with physical and environmental challenges, and it also has the greatest separation between the rail corridor and Route 28. The rail corridor crosses the Spicket River via a wooden trestle as shown in the below photo. That structure appears to be salvageable for adaptive reuse for a muti-use path. It would require new decking and railings for that use.

There is the possibility that the path would also be used for emergency vehicles between Duffy Avenue and the drive to the animal shelter during extreme flood events when Route 28 floods in that vicinity. In that event the bridge would need to be evaluated and designed to support those vehicles.

South of the Spicket River there is an informal road crossing to Garabedian Drive that should either be discontinued or formalized.

There is then a long stretch where the raised rail bed abuts expansive prime wetlands on the west side and dense commercial development on the east side. It may be necessary to install railings or fence where there are steep drop offs from the trail to the wetlands or to the adjacent developments.

Prior to reaching Hampshire Road the existing rail bed cuts through ledge. The cut is narrow and wet due to poor drainage. Construction of the multi-use path will require clearing, ditching and installation of subdrain. Right-of-way fence may also be needed to prevent dumping of yard waste and snow onto the path by abutters from above the path.

Prior to the Methuen, MA border there appears to be space within the rail right-of-way for a small trailhead parking lot.

Sidewalks:

There are some minor gaps in the Route 28 sidewalks within this segment and these should be filled over time. Note that pedestrian enhancements are planned within the Hampshire Road / Route 28 intersection as part of transportation improvements associated with adjacent development.

Cross Connections:

This segment would benefit from cross connections between Route 28 and the multi-use path since the separation distance is so great and since there are so many destinations that front on Route 28. These connections could take place opportunistically as properties are redeveloped or it may be possible to utilize existing easements in a few locations.

5

Improvement Costs and Cost Recovery

The following sections discuss the probable costs and potential funding sources associated with developing the envisioned Route 28 Corridor bike and pedestrian improvements.

Conceptual Cost Estimates

The following conceptual cost estimates are based on the segment by segment improvements that are described in the previous chapter. More detailed calculations are included in the Appendix.

Segment 1 – Windham Town Line to Old Rockingham Road

Multi-use Path Construction:	$ 744,000
Planning, Permitting, Engineering, Construction Inspection:	$ 148,000
	$ 892,000

Segment 2: - Old Rockingham Road to Rockingham Park Race Track

Multi-use Path Construction:	$ 520,000
Planning, Permitting, Engineering, Construction Inspection:	$ 104,000
	$ 624,000

Segment 3: - Rockingham Park Race Track to Kelley Street

Multi-use Path Construction:	$ 548,000
Planning, Permitting, Engineering, Construction Inspection:	$ 110,000
	$ 658,000

Grade Separated Rockingham Park Bike/Ped Crossing (Est.) $ 1,500,000.

Segment 4: - Kelley Street to Methuen, MA Town Line

Multi-use Path Construction:	$ 610,000
Planning, Permitting, Engineering, Construction Inspection:	$ 122,000
	$ 732,000

Corridor Total: $ 4,406,000

Potential Funding Sources

Funding for the proposed improvements will likely need to come from a number of sources and implementation will likely occur over multiple phases. Examples of potential traditional funding sources include:

- Transportation Enhancements Grants and Local Matching Funds
- Department of Resources and Economic Development (DRED) Recreational Trails Program (RTP) grants.
- Congestion Mitigation and Air Quality (CMAQ) grants
- Local Gifts/Grants (example: Rotary or Kiwanis clubs)
- Local Fundraising by Trail Group
- Local donated in-kind services (donated volunteer labor and/or materials)

In addition, some creative funding may be possible, including:

- Voluntary private funding of path improvements.
- Derive salvage value from the exiting steel rail and apply it to the construction of the associated multi-use path. This approach can be undertaken with the help of organizations such as the "Iron Horse Preservation Society", and can result in segments of finished trail that require only modest additional local investment. Under this plan the State will essentially relinquish the salvage value of the steel rails to the Town for the development of the multi-use path project. If this approach is not used the removal of the rail and ties would actually be a project cost. That cost has been included in the above cost estimates.

6

Recommendations

Implementation Recommendations

The following recommendations are made for prioritizing the implementation of bike and pedestrian improvements within the Route 28 corridor.

General Approach:

Connect Origins and Destinations

This essentially means connect people to places. Consider where the greatest demand is for improvements and where the greatest number of people will be served.

Consider Safety

It may be desirable to prioritize specific locations where the envisioned bike and pedestrian improvements will provide a marked improvement on safety. This might include adding sidewalks and/or crosswalks where pedestrians are currently observed crossing without traffic controls or walking along the edge of the road.

Be Opportunistic

Integrate the bike/ped corridor improvements into public or private development projects as they unfold. This requires flexibility and agility with respect to local prioritization, and it may require partnering to accomplish common goals. Examples may include large opportunities such as the redevelopment of the Depot area or other major or minor developments where it is possible to integrate Route 28 sidewalks or the Multi-use path into the proposed development plan.

Weigh the Cost/Benefit

The areas of the greatest need are not always the most affordable. The costs should be weighed against the benefits when prioritizing the improvements.

Weigh Public Input

The implementation approach would ideally be publically vetted to gauge public support, receive input and ideas, and to complete a transparent and inclusive development process.

Specific Recommendations

The following is the recommended order of development of the segments, subject to changes in funding, adjacent development opportunities and local sentiment.

Iron Horse Preservation Society

There are currently plans to utilize the services of Iron Horse Preservation Society to remove track and ties wherever it exists in the corridor and construct a dense granular trail surface in those areas at little to no cost to the Town. Their efforts will leave a path that that can be walked and ridden but which is an intermediate step toward the goal of eventually having a paved path for the entire corridor. Iron Horse will not address difficult roadway crossing concerns, but they will save the Town from considerable costs associated with track and tie removal. When they are done portions of the corridor will resemble a usable path and that may generate community support for continuing with the development of the entire path. The Iron Horse work will generally occur in the southern half of the corridor where most of the track exists.

Segment 1: Northern Segment – Windham Town Line to Old Rockingham Road.

This northern segment was included in a tri-town Transportation Enhancements (TE) grant application that also included rail trail work in Derry and Windham. That grant application resulted in an award of enhancement funds to be divided by the three communities for their projects. It does not cover the full cost of the three projects. This segment should be advanced early because the enhancement funds are available and because it will form a logical southern extension of the trails in Derry and Windham. The expectation is that the Windham trail will be completed to the Salem town line in 2012.

Segment 3: Commercial Zone- Rockingham Park Race Track south to Kelley Street

This segment of the rail corridor touches a large number of residential units along its western side and a large number of business properties on its east side. The multi-use path would initially function as a local connector between these origins and destinations.

The portion of segment 3 south of Rockingham Boulevard should be developed early since it passes next to dense residential development as well as a dense commercial zone. The envisioned sidewalk, crosswalk and multi-use path improvements will allow people to walk and ride between all of these destinations. This segment would therefore provide independent utility without being connected into the final

sidewalk or multi-use path system. It would provide significant public benefit without being on a regional trail and should therefore be considered for early development.

The proposed grade separated crossing of Rockingham Park Boulevard remains a significant financial challenge that could delay the completion of this entire segment, but the portions to the south have standalone merit that place this segment high on the priority list. The crossing of Rockingham Park Boulevard remains a key component of the eventual completion of the overall Route 28 corridor.

Segment 4: Commercial Zone- Kelley Street to Methuen, MA Town Line

This segment has many of the same characteristics as Segment 3 and could even become a higher priority than segment 3 since the town of Methuen, MA has recently developed their rail trail up to the Salem border.

Segment 2: Salem Depot - Old Rockingham Road to Rockingham Park Race Track

This segment could become second in overall importance if the redevelopment plans for the Salem Depot area are formalized near term. It would then be logical to complete this segment as a continuation of segment 1.

As suggested earlier, external factors may dictate which segments fall into place when, and the Town should be flexible as developments unfold. Furthermore, it may be advantageous to complete portions of one segment if private development opportunities arise and if there are logical termini that would allow that segment to exist independently.