

Georgetown Recreational Path

Feasibility and Conceptual Design Study

Town of Georgetown, MA



ENGINEERS
FST
Since 1914

FAY, SPOFFORD & THORNDIKE

July 2007

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Feasibility & Conceptual Design Study
Georgetown, Massachusetts**

July 2007

Prepared For:



TOWN OF GEORGETOWN, MASSACHUSETTS

Prepared By:



FAY, SPOFFORD & THORNDIKE LLC
Engineers • Planners • Scientists

Executive Summary

The goal of this Feasibility & Conceptual Design Study was to determine the feasibility of developing a shared-use path along the Georgetown section of the former Boston & Maine Railroad, now used as a utility corridor. The corridor is owned both in fee and easement by National Grid, and is privately owned in the center of Town. The 4.5-mile Georgetown Path is part of the regional Border to Boston Trail, a proposed 30-mile trail (or shared use path) linking eight Essex County communities – Danvers, Wenham, Topsfield, Boxford, Georgetown, Newbury, Newburyport and Salisbury, Massachusetts.

The Study outlines the corridor's potential as a shared-use path and assesses the key design issues involved with the conversion process, including anticipated project impacts, required environmental clearances and right of way related issues.

Two major design issues identified and addressed as part of the Study included the challenge created by the existing parallel rows of utility poles along the corridor and the need to realign the path through the center of Town.

Along the corridor, the existing utility poles are either staggered or located in parallel. The conceptual design plans call for four proposed typical cross sections to address the varying horizontal offset between poles. Each cross section draws upon the design guidelines set forth in the MassHighway Project Development & Design Guide and the flexibility afforded to communities based on context specific conditions. Use of these typical sections will allow for a continuous 10-foot surface width, permit maintenance and emergency vehicle access, and provide protection for trail users.

In the center of Town, near Railroad Avenue, the former railroad corridor is held in private ownership. Therefore numerous alternatives were evaluated in terms of their consistency with the project goal of creating a safe and continuous path that can be used and enjoyed by the public. The preferred alternative closely follows the existing utility easement held by National Grid and is the most direct route through this area. Implementation of this alternative will require the cooperation of the private property owners to negotiate easement/takings with the Town.

The environmental screening completed as part of the Study closely mirrors MassHighway's 25% Design Early Environmental Coordination for Design Projects checklist. The screening evaluated wetland & water resources, cultural & historic resources, and hazardous materials along the project corridor. Critical areas identified during this screening included wetland resource areas, Blanding's Turtle habitat, a wellhead protection area, and a cluster of known contamination issues in the vicinity of Railroad Avenue, Moulton Street and West Main Street (Route 97). Such critical areas warrant the need for location specific solutions and the implementation of mitigation measures designed to avoid/minimize impacts as a result of path development. This approach will respect the concerns of regulatory agencies and streamline the permitting process.

Based on a review of this information, a conceptual shared-use path design was developed which includes the proposed path cross sections, at-grade intersection treatments, bridge structures, parking facilities and access points, mitigation measures and trail enhancements. The preliminary cost estimate for the construction of the 4.5-mile path is approximately \$4.4 million.

Collectively, the information presented in the Study supplemented with the conceptual design plans and details will assist the Town and MassHighway's Border to Boston Task Force in developing an implementation plan for designing, permitting, and constructing the shared use path. The next step will be to negotiate an agreement with National Grid and the other property interests in order to obtain rights to the corridor for the purposes of developing a shared-use path.

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1 Corridor Overview

The purpose of this Section is to provide an overview of the Georgetown Recreational Path project corridor.

1.1 Regional Overview

The Georgetown Recreational Path forms a portion of the Border to Boston Trail, a proposed, 30-mile rail trail (or shared use path) linking eight Essex County communities – Danvers, Wenham, Topsfield, Boxford, Georgetown, Newbury, Newburyport and Salisbury, Massachusetts. In the future, the proposed path could eventually extend south to connect to other proposed shared use paths within the region.

As envisioned, this path will connect areas of cultural, economic, social and natural significance along the multi-community corridor and provide a non-motorized transportation alternative for residents, workers and tourists of all ages and abilities.

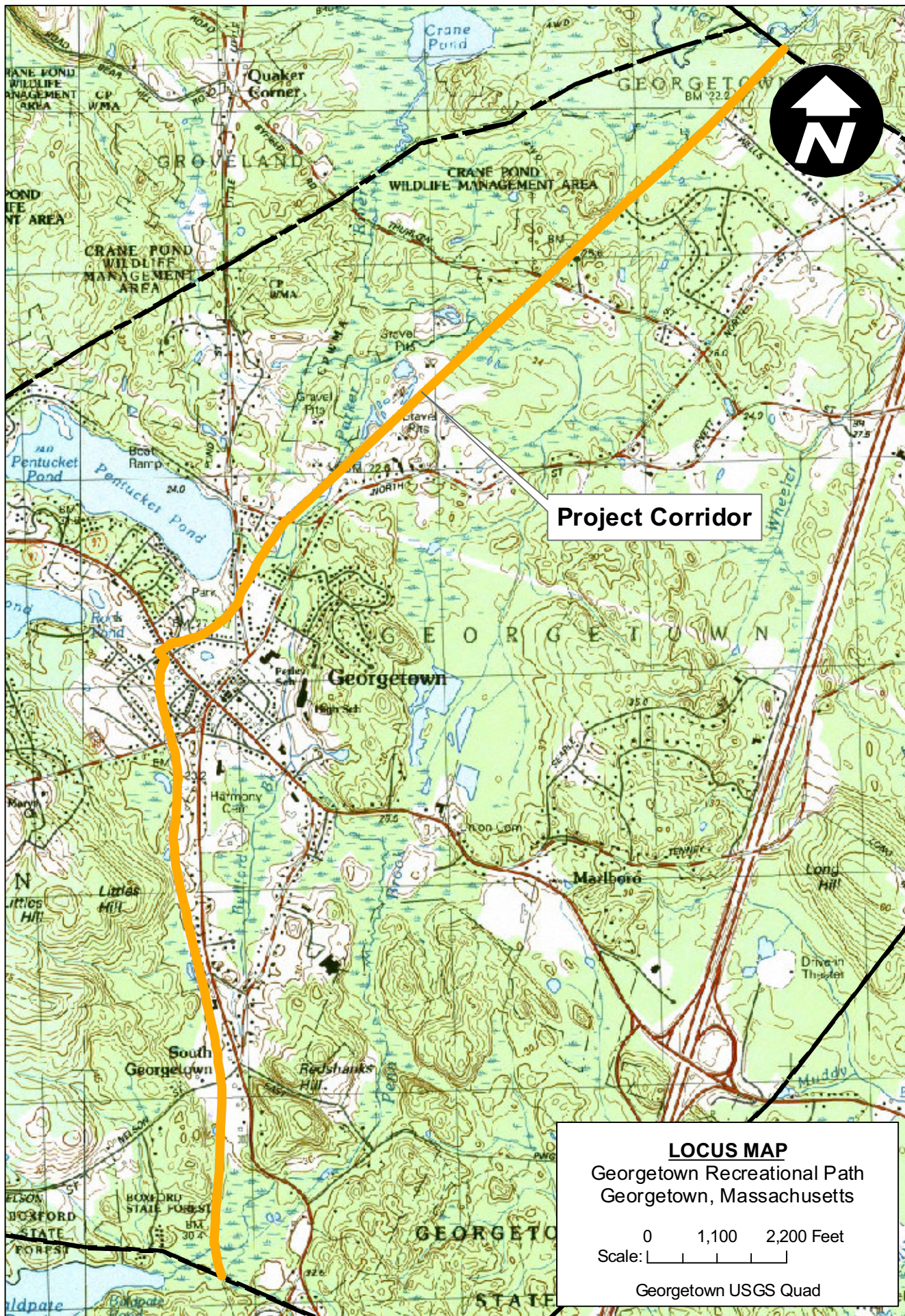
The proposed project corridor follows the alignment of the former Boston & Maine Railroad. This corridor is now owned by a combination of interests including National Grid (formerly Massachusetts Electric), Massachusetts Bay Transportation Authority (MBTA), and Guilford Transportation, LLC, a private railroad holding company.

1.2 Project Area Description

The Georgetown Recreational Path extends from the Boxford Town Line north to the Byfield (Newbury) Town Line, a distance of approximately 4.5 miles, as shown on the Locus Map on the following page.

The Georgetown municipal Town boundary was recently amended and a plan of this change is included in Appendix A.

The proposed path will generally follow the former Boston & Maine Railroad corridor, now a utility corridor owned by National Grid. According to the Rail Road Valuation Maps, the existing corridor varies in width from 40 to 80 feet wide along its length.



Project Corridor

LOCUS MAP
Georgetown Recreational Path
Georgetown, Massachusetts

0 1,100 2,200 Feet
Scale:

Georgetown USGS Quad

1.3 Ownership

The former railroad corridor is owned both in fee and easement by National Grid, and is privately owned in the center of Town.

National Grid operates the southern section of corridor under easement and the northern section is held under fee. Use of the corridor for a shared-use path will require written approval from National Grid. According to National Grid's Recreational Trails Policy, the company will consider a Town or organization's recreational trail proposal that can allow the trail to co-exist on their utility rights-of-way. Each proposal is evaluated on a case-by-case basis. A copy of the Policy is included in Appendix B. National Grid requires that the shared use path does not interfere with the safe operation, maintenance and future use of the utility infrastructure. When evaluating proposals, they consider a number of factors including safety of the public and their workers, protection of utility structures and facilities, access and environmental impacts.

In the center of Town, near Railroad Avenue, the former railroad corridor is held in private ownership. Use of this section of corridor for a shared-use path will require an easement from the individual property owners.

2 Railroad History

Prior to being converted to a utility right-of-way for electrical distribution, the project corridor was part of the Newburyport Railroad which ran between Wakefield and Newburyport. The following is a brief historical perspective on the role the railroad once played in Georgetown.

Shortly after the initial trio of Massachusetts railroads (the Boston & Lowell, the Boston & Worcester, and the Boston & Providence) were chartered in the early 1830s, a fourth rail line which would connect Boston with Salem was proposed. This proposal was met with stiff opposition from existing stagecoach, freight wagon, and packet boat operators, and the attempt to obtain a charter was rejected in 1833. In an effort to broaden support for the railroad, its backers next proposed a line from Boston through Salem to Newburyport, Portsmouth, and Portland. This strategy proved to be successful, and the Eastern Railroad was chartered in 1836. Construction began late that year. The line reached Salem in 1838, Ipswich in 1839, and Newburyport in 1840. Later that same year, service began to Portsmouth, New Hampshire, with the ultimate destination of Portland being achieved in 1842.

Only a few years later in the mid 1840s, Newburyport residents sought an alternative to the monopolistic practices of the Eastern Railroad through the construction of a new railroad that would provide them with a second connection to Boston and other destinations. The railroad that resulted from this desire to introduce competition was built as three separate lines. The first of the three was called the Newburyport Railroad, receiving its charter in 1846 to construct a line westward from Newburyport to the community of Georgetown. Construction of this initial 8.5-mile section of railroad was initiated at Pond Street in the center of Newburyport in 1849 and completed to Georgetown in 1850. The Newburyport Railroad crossed the main line of the Eastern Railroad at a location south of Newburyport's center below Parker Street.

In 1851, the second of the three railroads, called the Danvers & Georgetown Railroad, was chartered to extend the line south to Danvers, a distance of 12 miles. Construction began in 1853 and was completed in 1854. Agreement was reached for the Newburyport Railroad to operate this latter line even before it opened. In 1855, the Danvers & Georgetown officially merged into the Newburyport Railroad.

The third and final component of the new line was chartered in 1852 as the Danvers Railroad. It constructed, beginning in 1853, a 9.5-mile line from Danvers to a connection with the Boston & Maine Railroad at South Reading Junction. The Boston & Maine leased the Danvers before operation of the Danvers began. The goal of an alternative route to Boston was realized in 1854 when the Newburyport Railroad and the Boston & Maine Railroad began operation of through passenger and freight service over the route in competition with the Eastern Railroad. Shortly thereafter, the Boston & Maine took control of the Newburyport, and formally leased it in 1860.

Competition between the Boston & Maine and the Eastern continued for years. Both railroads evolved into rail systems as they gained control of other railroads. The rivalry

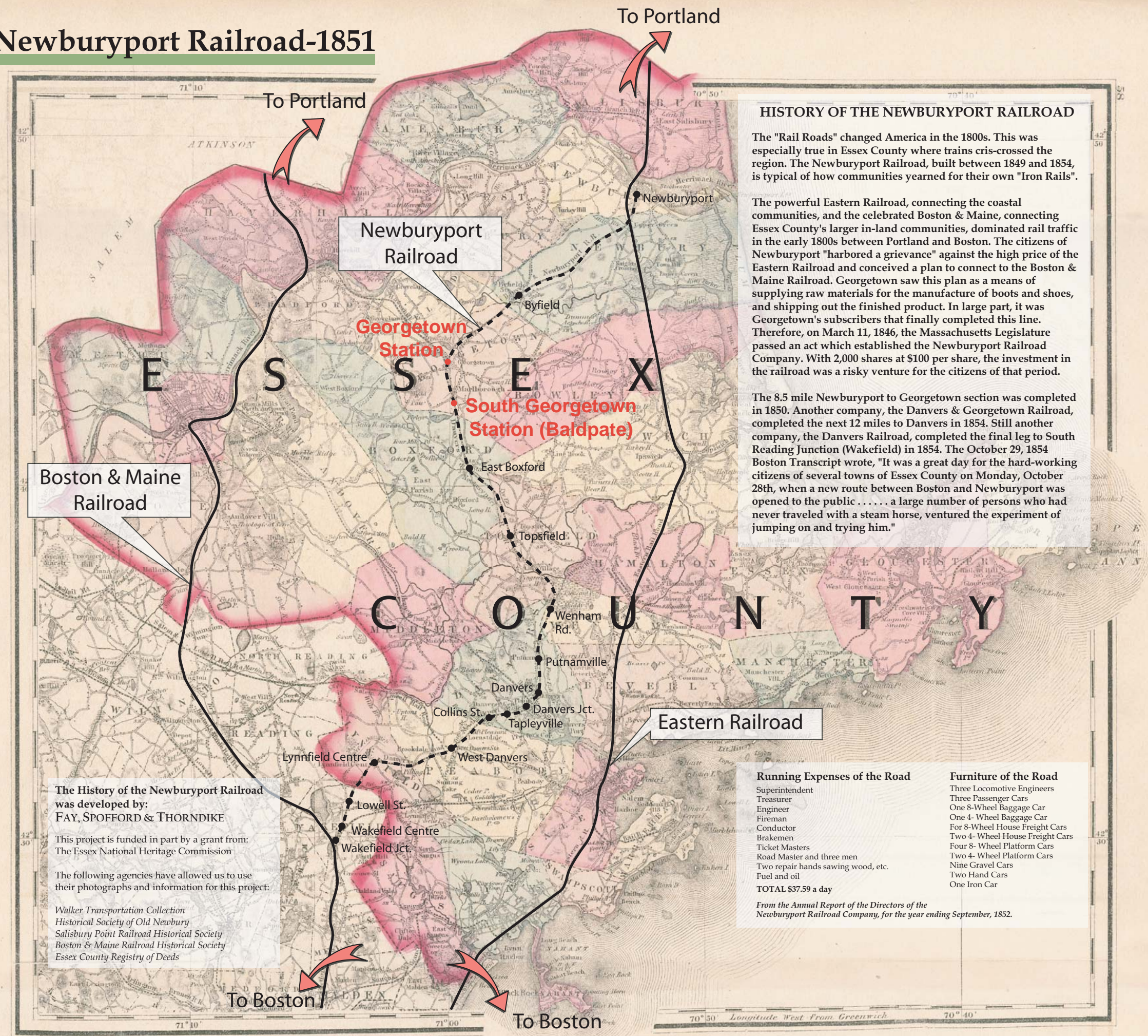
ended in 1875 when the Eastern effectively went bankrupt. After years of negotiations, court battles, and political intrigue, the Boston & Maine leased the entire Eastern system in December 1884. Even after this point, service was still provided over both routes from Newburyport to Boston.

The Boston & Maine first proposed complete abandonment of the Newburyport in 1924. Faced with opposition from passengers and shippers, the railroad withdrew its application for abandonment, but cut service to two daily round-trip passenger trains between Newburyport and Boston. By 1940, the Boston & Maine petitioned to the Interstate Commerce Commission to abandon that portion of the Newburyport north of Topsfield. Despite opposition once again from passengers and shippers, approval was received and the line was officially abandoned between Topsfield and the crossing of the former Eastern main line in Newburyport in December 1941.

Shown on the following pages are two graphics that illustrate the history of the railroads in Georgetown. The first graphic highlights the history of the Newburyport Railroad on an 1851 map. This same year, the Danvers & Georgetown Railroad was chartered. The second graphic shows the nexus of the two rail lines in Central Georgetown in 1914.

The history of the railroads should be told to the public in the form of interpretive trailside exhibits along the corridor, as discussed further in Section 3.3 of this Study.

Newburyport Railroad-1851



HISTORY OF THE NEWBURYPORT RAILROAD

The "Rail Roads" changed America in the 1800s. This was especially true in Essex County where trains criss-crossed the region. The Newburyport Railroad, built between 1849 and 1854, is typical of how communities yearned for their own "Iron Rails".

The powerful Eastern Railroad, connecting the coastal communities, and the celebrated Boston & Maine, connecting Essex County's larger in-land communities, dominated rail traffic in the early 1800s between Portland and Boston. The citizens of Newburyport "harbored a grievance" against the high price of the Eastern Railroad and conceived a plan to connect to the Boston & Maine Railroad. Georgetown saw this plan as a means of supplying raw materials for the manufacture of boots and shoes, and shipping out the finished product. In large part, it was Georgetown's subscribers that finally completed this line. Therefore, on March 11, 1846, the Massachusetts Legislature passed an act which established the Newburyport Railroad Company. With 2,000 shares at \$100 per share, the investment in the railroad was a risky venture for the citizens of that period.

The 8.5 mile Newburyport to Georgetown section was completed in 1850. Another company, the Danvers & Georgetown Railroad, completed the next 12 miles to Danvers in 1854. Still another company, the Danvers Railroad, completed the final leg to South Reading Junction (Wakefield) in 1854. The October 29, 1854 Boston Transcript wrote, "It was a great day for the hard-working citizens of several towns of Essex County on Monday, October 28th, when a new route between Boston and Newburyport was opened to the public a large number of persons who had never traveled with a steam horse, ventured the experiment of jumping on and trying him."

The History of the Newburyport Railroad was developed by:
FAY, SPOFFORD & THORNDIKE

This project is funded in part by a grant from:
The Essex National Heritage Commission

The following agencies have allowed us to use their photographs and information for this project:

Walker Transportation Collection
Historical Society of Old Newbury
Salisbury Point Railroad Historical Society
Boston & Maine Railroad Historical Society
Essex County Registry of Deeds

Running Expenses of the Road

Superintendent
Treasurer
Engineer
Fireman
Conductor
Brakemen
Ticket Masters
Road Master and three men
Two repair hands sawing wood, etc.
Fuel and oil
TOTAL \$37.59 a day

From the Annual Report of the Directors of the
Newburyport Railroad Company, for the year ending September, 1852.

Furniture of the Road

Three Locomotive Engines
Three Passenger Cars
One 8-Wheel Baggage Car
One 4-Wheel Baggage Car
For 8-Wheel House Freight Cars
Two 4-Wheel House Freight Cars
Four 8-Wheel Platform Cars
Two 4-Wheel Platform Cars
Nine Gravel Cars
Two Hand Cars
One Iron Car



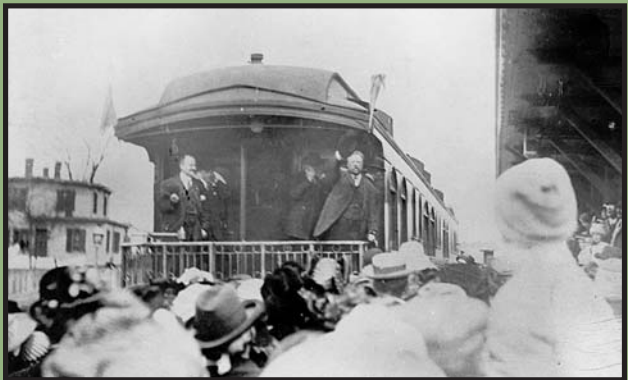
Georgetown Station



South Georgetown Station (Baldpate)

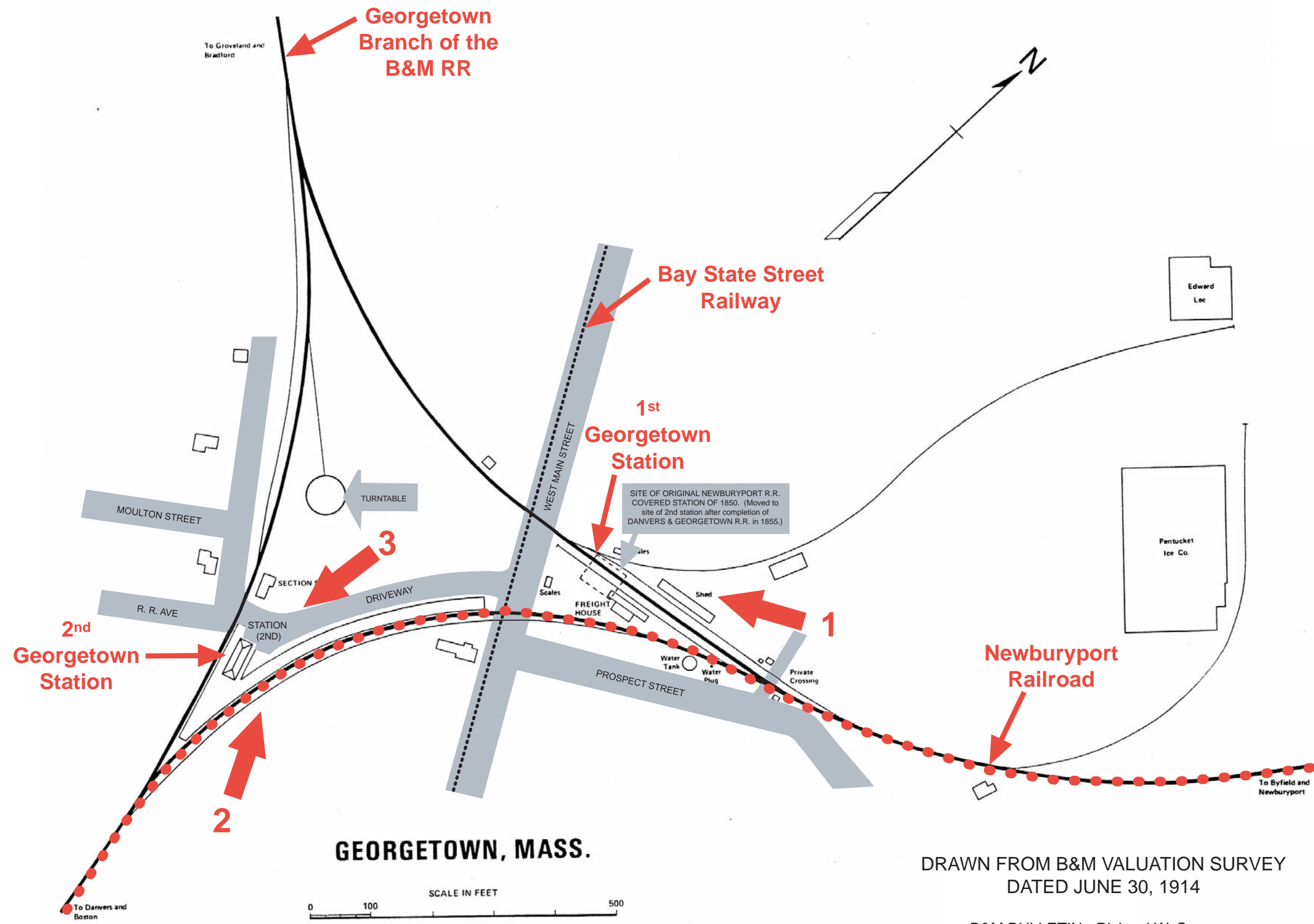


Teddy Roosevelt running for President in 1904 at Newburyport Station.



Teddy Roosevelt on his Whistle Stop Tour at the Georgetown Railroad Station.

History of the Railroads in Central Georgetown



DRAWN FROM B&M VALUATION SURVEY
DATED JUNE 30, 1914

B&M BULLETIN - Richard W. Symmes



Photo 1
The original 1850 Georgetown Station. The train to the left is on a spur track to a building labeled Edward Lee. The train on the right is on the B&M RR mainline Georgetown branch on its way to Bradford.



Photo 2
The second Georgetown Station reflected the architecture of the late 1800's. This station replaced the first Georgetown station when the Newburyport RR was extended to Danvers in 1855.



Photo 3
This locomotive is heading south towards Boston on the Newburyport RR. It was common to have both passengers and freight on one train.

3 Environmental Resources

This section discusses the presence of environmental, cultural and historic resources along the project corridor. A preliminary screening was conducted to identify critical areas where impact avoidance/minimization and mitigation measures may need to be incorporated into the project design. The screening was based on information obtained from state agencies and available MassGIS data.

The screening closely mirrors the 25% Design Early Environmental Coordination for Design Projects checklist developed by MassHighway. The goal of the checklist is to identify potential environmental issues early in the project development process.

3.1 Wetland & Water Resources

The following text provides a general overview of the ponds, rivers and streams, wetlands, vernal pools, floodplain and groundwater conservancy areas along the project corridor. The corridor is located within the buffer zone of many of these wetland areas and is therefore subject to applicable local, state and federal wetland regulations, as discussed further in the Environmental Permitting section of this study.

For regulatory and permitting purposes, all wetland resource areas within 100 feet of the right-of-way will need to be delineated, as will perennial streams within 200 feet of the rail corridor. Once delineated, these areas will need to be incorporated into the baseline survey for the corridor. In conjunction with the delineation, detailed investigations will be required relative to resource area classification and jurisdictional determinations. This effort will occur as part of the preliminary design phase.

3.1.1 Ponds

There are three primary waterbodies in proximity to the project corridor - Baldpate Pond, Rock Pond and Pentucket Pond. The wetland systems and streams associated with these ponds border and cross beneath the former rail corridor. All three ponds have high conservation and recreational value.

Baldpate Pond is located about two miles south of Route 133 on Baldpate Road in Boxford. MassWildlife stocks the 66-acre natural great pond with trout each spring which makes this a popular fishing spot. The stream and expansive wetland system at the southern end of the project corridor is continuous to Baldpate Pond.

Rock Pond is located approximately 1,200 feet northwest of the project corridor along West Main Street (Route 97). This 57-acre natural great pond is fed by the headwaters of the Parker River. The pond is used for fishing and boating.

Pentucket Pond is located approximately 450 feet west of the project corridor past the center of Town. This 86-acre pond is popular for boating and fishing. The pond has long supported a spawning run of anadromous alewives which traverse the Parker River to reach their spawning grounds in Pentucket Pond. Public access is provided off of Lake Avenue and at American Legion Park off Pentucket Avenue.

There is also a small pond located adjacent to the corridor, north of Brook Street.

3.1.2 Rivers and Streams

The project corridor crosses:

- Penn Brook at the Georgetown / Boxford Town Line via a culvert
- Stream tributary to Bulford Brook north of Brook Street via Bridge No. 164
- Pentucket Pond Brook tributary to the Parker River via Bridge No. 165
- Parker River north of Mill Street via Bridge No. 166
- Stream tributary to Parker River south of Thurlow Street via a culvert

3.1.3 Wetlands

The southern portion of project corridor travels through a significant wetland resource system classified as a combination of shrub and wooded swamp (deciduous) by the Massachusetts Department of Environmental Protection (DEP).

Between Brook Street and Andover Street (Route 133), two large wetland areas (swamp) bound the corridor to the west.

North of Pond Street to the Newbury town border, the project corridor travels through a significant wetland resource system associated with the Parker River.

The consultant team's site walk noted one area along the corridor where a potential wetland system traverses the existing access road (i.e. rail bed). This area occurs between Brook Street and Andover Street (Route 133). The Town Committee also noted a potential wetland area between Andover Street and West Main Street. A detailed site-specific investigation will be required to determine the jurisdictional status of these potential wetland areas. As noted earlier, such resource areas will be delineated as part of the preliminary design phase.

3.1.4 Vernal Pools

Vernal pools are small, shallow ponds characterized by lack of fish and seasonal periods of dryness. Vernal pools are unique wildlife habitats best known for the amphibians and invertebrate animals that use them to breed exclusively, and other organisms that spend their entire life cycles confined to vernal pool habitat.

There is one vernal pool located in the vicinity of the railroad corridor. Certified Vernal Pool 3899 is located approximately 50 feet northwest from the centerline of the corridor, approximately 350 feet north of Mill Street. The pool was certified on July 14, 2006. It is located outside of the endangered species habitat area.

This pool is certified by the Natural Heritage & Endangered Species Program (NHESP) according to the Guidelines for Certification of Vernal Pool Habitat (5/88, MA Division of Fisheries & Wildlife). Certified vernal pools are also protected under the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00), Georgetown Wetlands Protection Bylaw, Massachusetts Water Quality Certification (401 Program), Title 5 and the Forest Cutting Practices Act regulations.

Certification of a pool establishes that it biologically functions as a vernal pool but does not determine if a pool is within a resource area under the jurisdiction of the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00). Certified vernal

pools must occur within a resource area that comes under the jurisdiction of the Act or regulations before they receive protection. Performance standards exist for vernal pools that occur within *Land Subject to Flooding*. A detailed site-specific investigation will be required to determine the jurisdictional status of the vernal pool.

Similarly, certified vernal pools are protected under Section 40I of the federal Clean Water Act as administered by the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Under these regulations, any certified vernal pool is classified as an Outstanding Resource Water. The regulations, administered by the DEP, strictly prohibit discharges of solid or liquid fill within certified vernal pools. The certified vernal pool as well as the proposed activity must be within the jurisdiction of the State's Clean Water Act in order to receive protection.

The vernal pool appears to be outside of the limits of path construction. However, if needed, appropriate mitigation measures should be incorporated into the design and construction phases of the path project to protect the vernal pool habitat. Such measures include the delineation of construction work area using haybales and silt fencing and prohibiting direct discharges from path construction to be channeled (tributary) to the vernal pools.

3.1.5 Bordering Land Subject to Flooding

A review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps for the Town of Georgetown revealed that portions of the project corridor fall within Zone AE and Zone A floodplain boundaries. Cut and fill operations for path construction shall not cause any net increase in the surrounding natural flood elevation. No greater volume of fill shall be deposited on or within the floodplain than the volume that can be created by compensatory cutting within the floodplain. Compensatory storage will be required for all flood storage volumes that will be lost, if any, as a result of the path construction. This volume will be determined during the design stage.

Zone AE is an area inundated by 100-year flooding for which Base Flood Elevations (BFEs) have been determined. The Zone AE boundary encompasses corridor segments proximate to the Boxford / Georgetown boundary, bridges (2) north of Pond Street and Mill Street, and the Parker River Landing housing development. *Zone A* is an area inundated by 100-year flooding for which no BFEs have been determined. The Zone A area encompasses a portion of the corridor north of Charles Street.

3.1.6 Wellhead Protection Area

The northern portion of project corridor, from 850 feet south of Thurlow Street north into Newbury travels through a Zone II wellhead protection area, which bounds a public water supply (PWS) groundwater source. The Zone II boundary is determined by hydro-geologic modeling and approved by the DEP's Drinking Water Program.

3.2 Endangered Species

Information was requested from both the NHESP and the U.S. Fish & Wildlife Service (FWS), New England Field Office, regarding the presence/absence of State-listed and Federally-listed endangered/threatened species and species of special concern within

and proximate to the project corridor. The response letter from each agency is included in Appendix C.

According to the FWS, there are no Federally-listed or proposed, threatened or endangered species or critical habitat under the agency's jurisdiction along the rail corridor. Therefore, the preparation of a Biological Assessment or further consultation with the FWS under Section 7 of the Endangered Species Act is not required at this time.

As stated by the NHESP and/or indicated in the MA Natural Heritage Atlas, the rail corridor or a portion thereof is located within the following Priority Habitat of Rare Species (PH) and Estimated Habitats of Rare Wildlife (EH):

PH 1222/EH 819: This polygon area generally is located from the utility corridor located north of Mill Street to a point approximately 3,600 north of the Georgetown / Newbury Town Line. Along this length, the rail corridor is bounded on its west side by Town of Georgetown Conservation Lane and several large undeveloped tracts which form part of the 2,123 acre Crane Pond Wildlife Management Area (WMA). This WMA is managed by the Commonwealth of Massachusetts Division of Fisheries & Wildlife.

According to NHESP, the Blanding's Turtle (*Emydoidea blandingii*), a state-listed rare species of threatened status, is associated with this habitat. The Blanding's Turtle is primarily an aquatic species that prefers vegetated areas of sluggish backwaters and shallow water bodies. Conversely, the turtles select dry, sandy or grassy upland areas as nesting habitats. The Blanding's, like most turtles, require multiple habitat types to fulfill all of their survival needs.

Proper mitigation measures may need to be incorporated into the path project design depending upon the population distribution and movement patterns of the turtles relative to the rail corridor. Such measures could include the installation of wildlife crossing structures or mitigation nesting areas, for example. It is also quite possible that the existing culverts along this corridor may function as a migratory pathway for wildlife across the existing embankment. These structures should remain intact as part of path construction thereby allowing wildlife to continue to move between wetland systems on either side of the railbed.

3.3 Cultural & Historic Resources

The Massachusetts Cultural Resource Information System (MACRIS) was reviewed to identify known historic and cultural resources in proximity to the project corridor. MACRIS data includes but is not limited to, the Inventory of Historic Assets of the Commonwealth, National Register of Historic Places nominations, State Register of Historic Places listings, and local historic district study reports.

Based on this review, there are no known historic properties within the project corridor. There are, however, four known historic properties abutting the project corridor as listed below:

Figure 1: Historic Properties Abutting Corridor

MHC Inventory No.	Property Name	Address	Year Built
GEO.54	Chaplin, George House	161 Central Street	1865
GEO.55	Chaplin, Eliphalet House	169 Central Street	1860
GEO.56	Marshall, Hannah B. House	223 Central Street	1819
GEO.29	Lovering, John A. House	237 Central Street	1800

Source: Massachusetts Cultural Resource Information System (MACRIS) Database, March 20, 2007

It is unlikely that any historic or archaeological sites will be affected by the path project given the nature of the proposed work and the fact that the corridor has already been disturbed by the removal of the railroad tracks and ties and installation of the electrical distribution utilities.

In addition, the Town's Historical Commission is in the early formative stage of planning for the "Downtown" National Historical District. The path would fall within this proposed historic district, as shown in Figure 2, and therefore the path design, especially at roadway crossings, should be coordinated with the Commission.

Should the project have the potential to impact cultural or historical resources, a full review will need to be conducted in compliance with the regulations governing Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800) as part of the preliminary design phase. Appropriate avoidance or mitigation measures will need to be implemented, if warranted, to protect these resources.

The path will also provide an opportunity to highlight the history of the Newburyport Railroad and the important role it played in Georgetown, as discussed in Section 2 of this study. Informational kiosks could be placed along the path alignment to display old photos of the Georgetown Station(s) and South Georgetown Station (Baldpate). Such interpretive railroad exhibits should be coordinated with the Historical Society and Historic Commission's joint effort to create an informative tour guide brochure and site markers for Georgetown's historically significant sites. At present, the Merrimack Valley Planning Commission (MVPC) is preparing the "Town of Georgetown Historical and Cultural Sites" map for the Town. As currently envisioned, digital embedment fiberglass display markers would be placed at each site with historic photos and informational text.

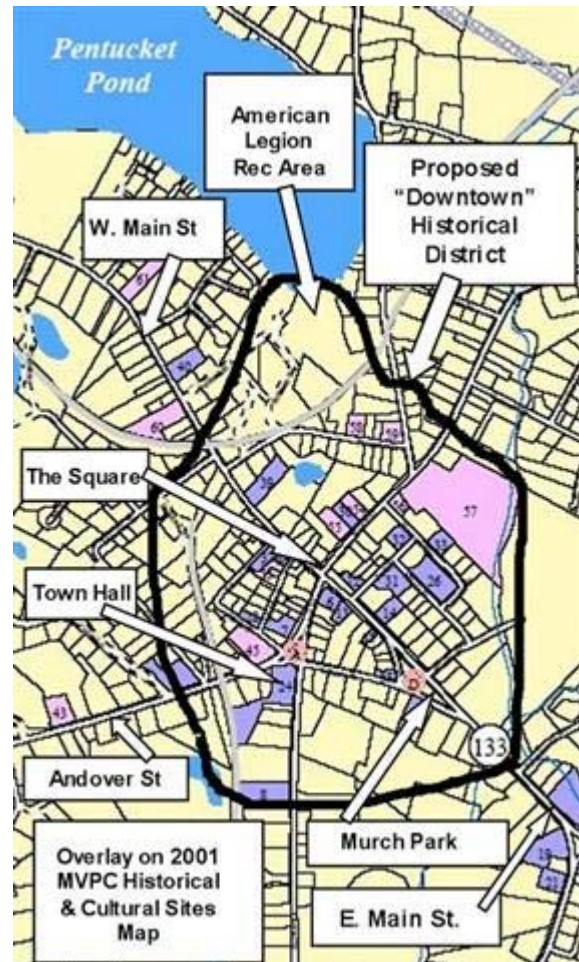


Figure 2: Proposed Downtown Historic District

3.4 Hazardous Materials

Contamination along a former rail corridor is typically the result of either residual contamination from railroad operations or contamination associated with adjacent uses along the corridor.

The most common contamination found along a rail corridor is residual contamination from railroad operations. According to the Rails-to-Trail Conservancy's study on "Understanding Environmental Contaminants" (October 2004), the most commonly reported contaminants along rail corridors include arsenic, which was used as an herbicide to control weeds, metals and constituents of oil or fuel (petroleum products), which likely dripped from the rail cars as they passed over the corridor. Coal ash is also considered residual contamination. In addition, any existing railroad ties along a corridor were likely treated with creosote and therefore need to be removed and transported in accordance with local, state, and federal hazardous waste disposal requirements.

There is also the possibility that use histories of adjacent properties may have resulted in contamination along the corridor. Such histories could include improper disposal actions along the rail corridor or a release of oil or hazardous material on an adjacent site.

A preliminary hazardous waste and contaminated materials screening was conducted for the project corridor. The preliminary screening is a general review to identify properties in close proximity to the project area that could either contain or be a source of hazardous wastes or contaminated materials. The screening was limited to conducting a brief visual inspection along the corridor and reviewing the following searchable databases:

- Massachusetts Department of Environmental Protection (DEP) Bureau of Waste Site Cleanup (BWSC) database for sites where a release of oil or hazardous material (OHM) has been reported to DEP. At the time the search was run, the DEP maintained site/reportable release database was current as of March 12, 2007. This search was supplemented with the DEP Tier Classified Oil or Hazardous Material Sites (MGL c. 21E) datalayer obtainable from MassGIS.
- Comprehensive Environmental Compensation Liability Act (CERCLA) List (Federal Superfund Site List) for sites. The EPA's Superfund Query Form was used to retrieve data from the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database.
- DEP Solid Waste Facility (landfills, transfer stations, and combustion facilities) datalayer obtainable from MassGIS.

Sites abutting the corridor were reviewed and documented as part of this screening. The approximate location of each site was determined using the Town of Georgetown's Parcel datalayer in conjunction with the Town's assessor database. Each site was evaluated for potential project impact based on the information provided in the databases including use histories, the type of site and proximity to the project. This screening aims to evaluate more general issues along the path and does not involve details on any one property. Sites of known contamination are a greater concern than sites with potential contamination.

3.4.1 Screening Results

The following table and accompanying text present sites of concern identified during the preliminary screening.

Figure 3: Preliminary Screening Results

Site Name	Address	Site Status	Phase / Class	Release Tracking #
Coronet Leather Finishing	201 Central Street	RAO RAO	A2 A2	3-0000320 3-0014388
Automatic Connector Inc. Former	11 Moulton Street	REMOPS	V	3-0001503
Richdale Dairy Store	67 West Main Street	RAO	II/A2	3-0002574
Prospect Street	67 West Main Street	RAONR		3-0020101
Townsend Oil Co	75 West Main Street	REMOPS RAO RAO	V A2 A2	3-0004198 3-0012231 3-0017957

Source: Massachusetts DEP Bureau of Waste Site Cleanup Searchable Sites Database

Coronet Leather Finishing: This site is located adjacent to the project corridor, just south of Brook Street. The former industrial site was converted to a 14-unit condominium complex, in 2002. However, prior to this residential conversion, this site underwent a number of cleanup activities. In October 1996, the Environmental Protection Agency (EPA) removed approximately 2,000 tons of contaminated soil and 75 containers of hazardous solvents and waste paints from the property. Following this cleanup, there were two subsequent release reports filed for the site. According to the DEP's database, the site status is listed as Class A2 RAO. This status means that a Response Action Outcome Statement (RAO) was submitted. A RAO Statement asserts that the response actions were sufficient to achieve a level of "no significant risk" or at least ensure that all substantial hazards have been eliminated. A Class A RAO means that a permanent solution has been achieved with Class A1, A2, and A3 indicating the subsequent level of contamination. A Class A2 RAO indicates that contamination levels are above background but below cleanup standards. It is unknown at this time where on the property these releases occurred. No status updates have been reported since 1999. As this former industrial site was converted to residential use in 2002, it is unlikely that this site will present a concern to path development. However, as a proactive measure, it is recommended that DEP's files be reviewed to determine the limits of contamination and site cleanup.

Automatic Connector Inc: This site is located across Moulton Street from Railroad Avenue, adjacent to the Georgetown Water Department building. According to the DEP's database, this site is currently classified as REMOPS status, Phase V. REMOPS (Remedy Operation Status) means that a remedial system which relies upon Active Operation and Maintenance is being operated for the purpose of achieving a Permanent Solution. Phase V indicates that long-term treatment processes have been implemented and monitored to track cleanup progress. The remedial activities are ongoing to reduce contamination present in shallow bedrock groundwater at the site. The contamination level has not yet been reduced to background. If groundwater is the only issue at this site, then the parcel could potentially be redeveloped for the purposes of a parking lot or trailhead once contamination levels have been reduced to background levels suitable for public exposure. Special precautions would need to be taken during construction. Also, the Town would need to consider the liability associated with the purchase of this property for the purpose of path parking.

Richdale Dairy Store: This convenience store is located at the intersection of West Main Street and Prospect Street. It currently is classified as a RAO status, Phase II Class A2 site. Phase II indicates that the site underwent a Comprehensive Site Assessment. Class A2 indicates that remedial actions left contamination levels above background but below cleanup standards. One of the proposed alignment alternatives calls for the path to be routed on-road along West Main Street. West Main Street was recently reconstructed in this area and therefore an on-road connection would not require additional roadway widening. Therefore, there is no indication that this site would affect the project given available information.

Prospect Street: The location of this site matches the address of the Richdale Dairy Store at the intersection of West Main Street and Prospect Street. It is currently classified as RAO status, which indicates that a Response Action Outcome is not required. Therefore, there is no indication that this site would affect the project given available information.

Townsend Oil Co: This 1.5-acre property abuts the corridor to the north of West Main Street. According to the DEP's database, two oil spills were reported to DEP in 1999 and have reached a Class A2 RAO site compliance status. A Class A2 RAO indicates that contamination levels are above background but below cleanup standards. No status updates have been reported since the initial response action. In addition, this site is currently classified as REMOPS status, Phase V. REMOPS (Remedy Operation Status) means that a remedial system which relies upon Active Operation and Maintenance is being operated for the purpose of achieving a Permanent Solution. Phase V indicates that long-term treatment processes have been implemented and monitored to track cleanup progress. Additional research will be required to determine the extent and location of contamination at this site. Based on available information, this site presents a concern due to its proximity to the project corridor.

3.4.2 Recommendations

A review of various database searches did not indicate any overt sources of contamination within the limits of the corridor itself. However, the review did reveal current or past environmental contamination issues on sites located directly adjacent to the project corridor and/or alternative path alignments.

Although it is unlikely that the former Coronet Leather Finishing site will present a concern to path development due to its residential conversion, however, it is still recommended that DEP's files be reviewed to determine the limits of contamination and site cleanup.

Of more concern is the area in the vicinity of Railroad Avenue, Moulton Avenue and West Main Street. This area is characterized by a variety of industrial land uses and former railroad uses. A review of DEP files for the Townsend Oil Company is recommended during the next phase of this project to determine if the design should consider any related contamination issues. In addition, a more detailed investigation will be needed should the Town consider routing the path through the Former Automatic Connector Inc. property. The location of the original Georgetown station and second station, at the junction of the Danvers & Georgetown and Newburyport rail lines, also poses a concern based on the history and operations occurring at this site. According to the DEP's "Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails," these relatively small stretches along a right-of-way would be expected to have contamination elevated over the residual levels, due to more frequent/intense use of pesticides to improve sight lines and greater frequency/intensity of human activities. Again, a more detailed investigation may be needed during the next phase of the project and/or necessary environmental precautions required during reconstruction activities depending upon the type of work and extent of excavation proposed along this section of corridor.

Of recent concern across the state has been the presence of coal ash along former railroad corridors. Coal ash is residual contamination from former railroad operations. This by-product is exempt from the Massachusetts Contingency Plan (MCP). The MCP (310 CMR 40.0000) is the set of regulations that governs the reporting, assessment and cleanup of oil and hazardous material spills in Massachusetts. While, it is acceptable to both leave and re-use soil containing coal ash along a corridor, the DEP's anti-degradation policy restricts off-site reuse to a similar setting. Consequently, leftover materials may need to be transported to an approved landfill at additional costs to the Contractor, which ultimately increases the overall cost of the path project to the Town. It is therefore important for the path design to balance cut and fill volumes to minimize any transportation of material off-site. This policy does not apply to contamination "hot spots" where contamination other than residual contamination is present. For example, if an oil or hazardous material spill has contaminated the soil along a portion of the corridor, this soil cannot be left or place or re-used and must instead be cleaned up under the MCP.

4 Structures Assessment

The purpose of this section is to identify the existing culverts and bridges along the project corridor and discuss the improvements proposed at each structure.

4.1 Culverts

Along the right-of-way alignment, several existing culverts convey natural waterways and drainage to either side of the railbed embankment. Given that the path should not significantly alter the hydrologic characteristics of the watershed area tributary to each crossing, these culverts will remain.

The Boston & Maine Rail Road Valuation Maps were used as a guide for identifying culverts along the corridor. As the maps date back to 1915, it can be expected that adjacent land uses have changed significantly over time. Consequently, some of the culverts may have been replaced or removed since the time the railroad was in operation.

The following list of culverts was developed based on the Valuation Maps:

Figure 4: Culvert Listing

#	Val Map Station	Size / Material	Location Description
1*	1042+66	3'x4' Stone Box replaced with Corrugated Metal Pipe	#163F – At the Boxford/Georgetown Town Line
2	1081+21.5	24" Vitrified Clay Pipe	#163G – North of Nelson Street
3	1083+66.6	5'x5' Stone Box Cattle Pass	#163H – North of Nelson Street
4	1088+12	5'x4' Stone Box	#163I – North of Nelson Street
5	1094+13.5	5'x5' Rail Top	#164A
6	1102+65.3	0.5x1' Wood Box	#164B
7	1117+06.1	2'x2' Stone Box	#164C – South of Andover Street
8	1123+54	10" Vitrified Clay Pipe	#164D – At Andover Street
9	1129+81.4	1'x6' Wood Box	#164E – North of Andover Street
10	1148+42	4'x1' Stone Box	#164F – South of Pond Street
11	1189+02.2	Iron Stringers	#166A
12	1211+89	Stone Box	#166B – South of Thurlow Street
13	1217+75	Stone Box	#166C – South of Thurlow Street

Figure 4: Culvert Listing (cont'd)

#	Val Map Station	Size / Material	Location Description
14	1238+65	2'x2' Stone Box	#164D
15	1252+30.5	2'x2' Stone Box	#164E
16	1260+62	2'x2' Stone Box	#166F
17	1270+25	2'x2' Stone Box	#166G – South of Newbury Town Line

* Culvert #163F is located in Georgetown directly at the Georgetown/Boxford Town Line based on the change in the Town boundary as documented in Appendix A.

A new culvert is needed behind the Parker River Landing development at 192 North Street (Parcel 12-28). Drainage from this multi-unit development is directed to an open swale which was cut into the corridor and poses an obstacle to path users. Consequently, a new culvert will be required at this location. This culvert should have a natural substrate bottom and accommodate wildlife passage in accordance with the Massachusetts River and Stream Crossing Standards.



Figure 5: Location of Proposed Culvert

4.2 Bridges

There are a total of three bridges along the project corridor:

- Bridge No. 164 – North of Nelson Street
- Bridge No. 165 – North of Pond Street (no longer intact)
- Bridge No. 166 – North of Mill Street

A visual assessment of each crossing was conducted. All three of the bridges have short spans and good vertical and horizontal geometry.

◆ STRUCTURES ASSESSMENT

Bridge No. 164: This bridge is located approximately 2,000 feet north of Nelson Street. This timber trestle has a timber railroad tie deck supported on timber pile bents. The length of bridge between abutments is approximately 13.5 feet according to the Valuation Maps. The stone masonry abutments appear to be in good serviceable condition. Preliminary observations suggest that the existing timber pile bents are failing. Therefore, reusing the pile bents is not recommended and they should be removed down to the water level to minimize disturbance to the pond.



**Figure 6: Bridge No. 164
Existing Timber Pile Bents**



**Figure 7: Bridge No. 164 Existing
Bridge Deck**

Bridge No. 165: This bridge is located approximately 750 feet north of Pond Street. The original railroad bridge over Pentucket Pond Brook was removed and no new structure has been installed at this location. The length of bridge between abutments is approximately 10 feet according to the Valuation Maps. The stone masonry abutments appear to be in good serviceable condition.



**Figure 8: Bridge No. 165
10-Foot Bridge Span**



**Figure 9: Bridge No. 165
Existing Granite Abutments**

Bridge No. 166: This bridge is located approximately 1,100 feet north of Mill Street. The existing railroad ties are laid on top of steel deck plate girders. A new timber deck has been constructed over the railroad ties for utility maintenance vehicle access. The length of bridge between abutments is approximately 16 feet according to the Valuation Maps. The stone masonry abutments appear to be in good serviceable condition.



**Figure 10: Bridge No. 166
Existing Bridge Deck**



**Figure 11: Bridge No. 166
Existing Granite Abutments**

The following sections discuss design considerations specific to each of the three crossings. It is recommended that the proposed width, design load, materials and railings be similar for each bridge. Additional design details are typically considered in the Type Study Report prepared as part of the MassHighway 25% Design.

4.2.1 Width

According to the MassHighway Project Development & Design Guide, the minimum clear width between bridge railings should be the same as the path approach plus a minimum 2-foot wide clear shoulder on both sides of the path. For this project, a 10-foot trail with a 2-foot shoulder at each side will result in a minimum clear width of 14 feet. Carrying the clear width area across a structure provides 1) a minimum horizontal shy distance from the railing and 2) maneuvering space to avoid conflicts with users stopped on the bridge. Further, this clear width will permit emergency, patrol and maintenance vehicle access.

4.2.2 Design Load

Bicycle / pedestrian bridges in Massachusetts are typically designed to accommodate an H10 design load. H10 is a light truck, such as a standard maintenance, construction, emergency or patrol vehicle weighing 20,000 pounds. However, based on conversations with National Grid, it is recommended that all three structures be designed for an H20 truck loading in accordance with the Guide Specifications for the *Design of Pedestrian Bridges* and the *Standard Specifications for Highway Bridges*, both are published by the American Association of State Highway and Transportation Officials (AASHTO). An H20 truck loading is consistent a standard truck weighing 40,000 pounds and is consistent with National Grid maintenance vehicles typically used along this corridor. The operating level for this bridge would permit an occasional load over H20. An H20 design

loading is much less than the original railroad loading and should permit reuse of the existing stone abutments.

4.2.3 Materials

Many of the same elements that influence the type of structure also affect the choice of bridge and decking material. Such considerations include, but are not limited to, cost, constructability, future maintenance requirements, environmental impact, and overall aesthetics.

Prefabricated structures are the most common type of pedestrian/bicycle bridge used throughout the United States. These bridges come completely fabricated for easy installation and reduced onsite construction costs.

However, use of prefabricated structures along this corridor is not a cost-effective choice due to the short span of the bridges (13.5 to 16 feet). Rather, it is recommended that each proposed bridge structure be constructed of timber. This structure consists of a 10-inch deep glued laminated timber bridge deck supported on a concrete seat. Use of glued laminated timber minimizes the penetration of water between the laminations. This bridge type should support the applied loads and meet live load deflection requirements for the short spans.

4.2.4 Railing

On a bridge, a wood railing serves to protect users from falling off the structure. The railings should be mounted on both sides of a structure and set at a minimum of 42 inches (3.5 feet) high. The railings should be free of protruding objects to prevent snagging of bicycle handlebars. The railing should tie into a wood rail fence on the approach to the structure. The ends of the wood rail fence should be flared to help direct users onto the structure and so that the blunt ends do not pose a hazard to users.

5 Alternatives Analysis

For the majority of its length, the proposed path will follow the existing rail corridor, now used as a utility corridor. However, there is a gap in the continuity of this corridor near the center of Town. The right-of-way ends at Railroad Avenue at a proposed development.

Therefore numerous alternatives were considered between Andover Street (Route 133) and West Main Street (Route 97) in order to provide a contiguous path through Town. The evaluation was completed utilizing aerial orthophotographic mapping, geographic information system data, field investigation, and information from Town departments and the Recreational Path Committee.

Common to all alternatives is the use of the Town-owned property on the south side of the West Main Street / Moulton Way intersection. This property (Parcel 6C-153) is currently used by the Town of Georgetown Water Department. It is recommended that a portion of this lot be redeveloped into a trailhead to increase the visibility of the path. This trailhead could include directional and/or interpretive signage, a kiosk, and seating area.

Following is a summary of each path alternative considered between Andover Street (Route 133) and West Main Street (Route 97).

A graphic showing each alternative is included in Appendix E.

5.1 Alternatives Considered

5.1.1 Alternative 1-A

Alternative 1A follows the utility corridor from Andover Street (Route 133) to where the corridor becomes private property. National Grid continues its utility lines along utility easements on these private properties to West Main Street. At this point, the path would need to travel through privately owned property in order to connect to Moulton Street.

Prism Realty LLC submitted a definitive subdivision plan (See Appendix D) and was granted approval to create four residential lots along Railroad Avenue and realign the roadway, as shown on the base mapping. This subdivision places the utility easement (0.116 acres) within the rear portion of Lot 1 (0.588 acres). Further, the subdivision plan created two easement areas which separate the realigned Railroad Avenue from the existing utility easement. Under Alternative 1-A, the path would travel along the rear property line of Lot 1 and through the newly created Easement A (drainage) and B (drainage & utility access).

After traversing through this subdivision, Alternative 1-A would travel along the rear of Parcel 6C-116. This alignment may require the demolition of the existing steel shed building that runs parallel to the rear property line depending on how close the building is to the property line. The path would then head west through Parcel 6C-116. After crossing Moulton Street, the path would enter Town-owned Parcel 6C-153. Parcel 6C-117 was originally considered for this alignment but an existing leaching field on the southeast corner of the property precludes its use for a shared use path.

Impacted properties:

- Railroad Avenue Lot 1 (N/F Prism Realty LLC)
- Lot Easement A (N/F Prism Realty LLC / Homeowners Association)
- Lot Easement B (N/F Prism Realty LLC / Homeowners Association)
- Parcel 6C-116 (N/F GE Realty Trust)
- Parcel 6C-153 (Town)

5.1.2 Alternative 1-B

Alternative 1-B differs from Alternative 1-A in that this alternative diverts away from the Prism Realty LLC subdivision along Railroad Avenue.

Just prior to where the right-of-way transitions to an easement, this alternative redirects the path to an undeveloped Town-owned property (Parcel 6C-127) on the east side of the corridor. The path continues on the east side of the Railroad Avenue development and travels through Parcels 6C-120 and 6C-118. Once reaching Parcel 6C-116, the alignment would then re-join the same alignment as Alternative 1-A.

Impacted properties:

- Parcel 6C-127 (Town)
- Parcel 6C-120 (N/F Caroline F. Schroeder)
- Parcel 6C-118 (N/F Michael Gauron)
- Parcel 6C-116 (N/F GE Realty Trust)
- Parcel 6C-153 (Town)

5.1.3 Alternative 2-A

Alternative 2-A utilizes Railroad Avenue to connect to Moulton Street. Similar to Alternative 1-A, this alternative follows the utility corridor and traverses Lot 1 and Easement B within the Prism Realty LLC subdivision.

Under Alternative 2-A, after traversing Lot 1 the path would connect to Railroad Avenue via Easement B. According to the definitive subdivision plan, Easement B is to be used for drainage purposes and as an access point for New England Power Company (now National Grid). A curb cut on Railroad Avenue and paved parking stall will be provided for National Grid.

The path would continue on-road along Railroad Avenue, cross Moulton Street and traverse Parcel 6C-154. This parcel is currently owned by Automatic Connector Inc. c/o ACI Holdings Inc. According to the Massachusetts DEP database, remedial activities are ongoing on this property to reduce contamination present in shallow bedrock groundwater at the site. Therefore, further research is needed to determine the limits

of contamination and precautions that need to be taken prior to the re-use of this property for recreational purposes.

After crossing Parcel 6C-154, the path would connect to the National Grid corridor that runs to Bradford. From here users could continue north along the corridor to connect to the potential trailhead on Town-owned Parcel 6C-153.

Impacted properties:

- Railroad Avenue Lot 1 (N/F Prism Realty LLC)
- Lot Easement B (N/F Prism Realty LLC / Homeowners Association)
- Parcel 6C-154 (N/F Automatic Connector Inc. c/o ACI Holdings Inc.)
- Parcel 6C-153 (Town)

5.1.4 Alternative 2-B

Alternative 2-B differs from Alternative 2-A in that this alternative does not impact Lot 1 in the Prism Realty LLC subdivision along Railroad Avenue. Rather, Alternative 2-B redirects the path to an undeveloped Town-owned property (Parcel 6C-127) on the east side of the corridor.

The path continues on the east side of the Railroad Avenue development through Parcel 6C-120 to connect to Easement B. Once reaching Easement B, the alignment would then re-join the same alignment as Alternative 2-A.

Impacted properties:

- Parcel 6C-127 (Town)
- Parcel 6C-120 (N/F Caroline F. Schroeder)
- Lot Easement B (N/F Prism Realty LLC / Homeowners Association)
- Parcel 6C-154 (N/F Automatic Connector Inc. c/o ACI Holdings Inc.)
- Parcel 6C-153 (Town)

5.1.5 Alternative 3

Unlike Alternatives 1 or 2, Alternative 3 does not follow the existing utility corridor from Andover Street (Route 133). Rather, this alternative travels along Andover Street (Route 133) for about 100 feet to connect to Nelson Avenue. The existing sidewalk on the north side of Andover Street could be widened from 5 feet to 10 feet to meet shared use path requirements and a wood rail fence / guard rail installed to separate path users from Andover Street. Based on MassGIS EOT Road Inventory database, the roadway right-of-way is 40 feet wide and the existing paved surface width is 28 feet. Therefore, the sidewalk widening will likely occur within the existing roadway right-of-way, pending additional survey information. If there were insufficient roadway right-of-way, this widening would need to occur on Parcel 6C-99A (N/F Salvatore & Traci Barbagallo).

Alternative 4 brings path users via an on-road connection along Nelson Avenue and Moulton Street to connect to the potential trailhead on Town-owned Parcel 6C-153.

Impacted properties:

- Parcel 6C-153 (Town)

5.2 Preferred Alternative

Each alternative was evaluated in terms of their consistency with the project goal of creating a safe and continuous path that can be used and enjoyed by the public. Equally important is the availability of right-of-way, which may be the most important factor when evaluating alternatives.

The evaluation matrix on the following page summarizes the advantages and disadvantages of each of the alternatives.

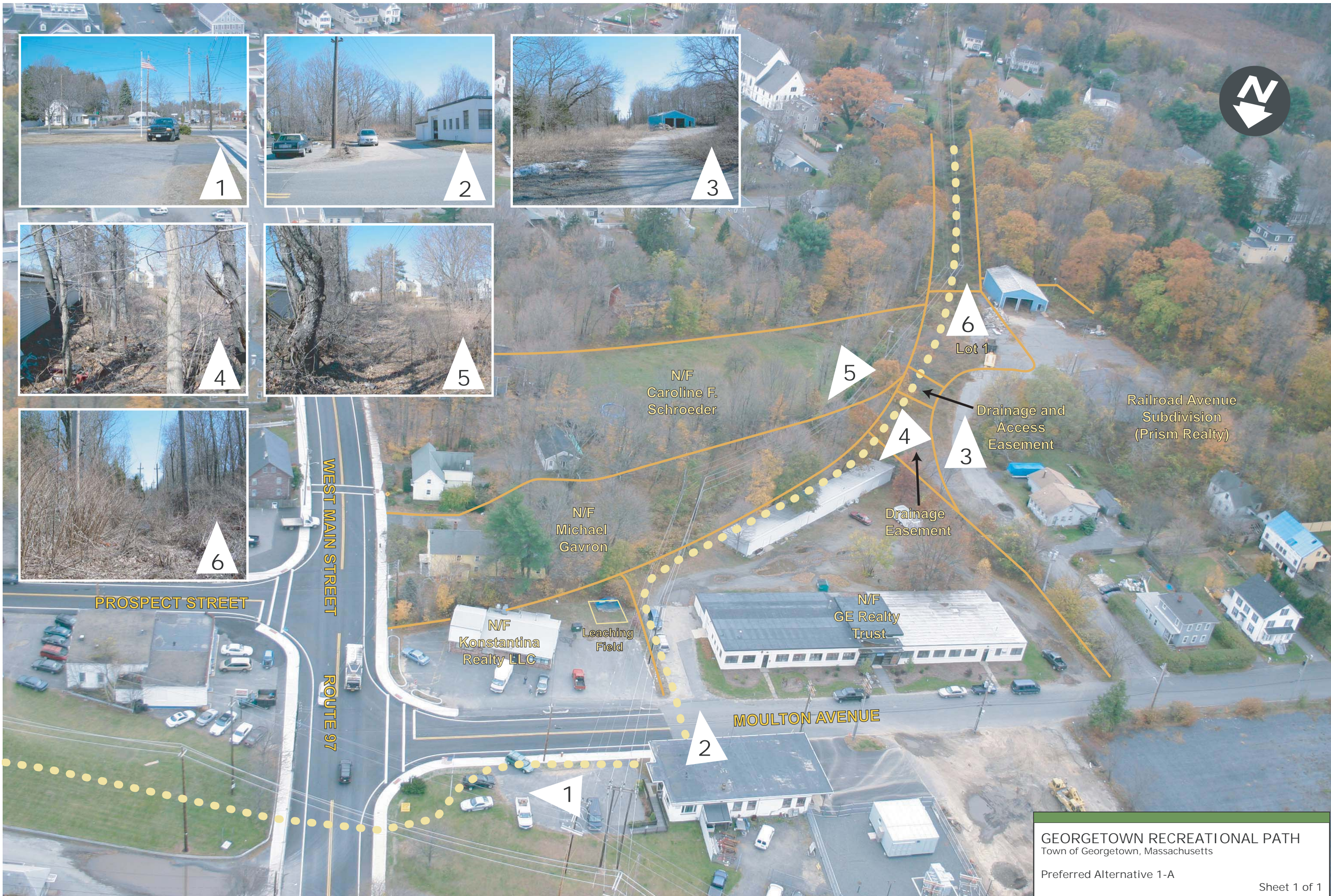
Figure 12: Evaluation Matrix

Alt.	Advantages	Disadvantages	No. Impacted Properties
1-A	<ul style="list-style-type: none"> Prism Realty LLC lots have not been sold Minimizes on-road travel 	<ul style="list-style-type: none"> Requires 4 right-of-way agreements Impacts parking/circulation on Parcel 6C-116 	4 Private 1 Public
1-B	<ul style="list-style-type: none"> Closely follows existing utility easement Diverts away from small Prism Realty LLC lots Minimizes on-road travel 	<ul style="list-style-type: none"> Requires 3 right-of-way agreements Impacts parking/circulation on Parcel 6C-116 	3 Private 2 Public
2-A	<ul style="list-style-type: none"> Does not impact parking or circulation of nearby businesses Remedial activities could allow for reuse as parking lot and trailhead (Parcel 6C-154) 	<ul style="list-style-type: none"> Requires 3 right-of-way agreements Travels through known contaminated site (Parcel 6C-154) 	3 Private 1 Public
2-B	<ul style="list-style-type: none"> Does not impact parking or circulation of nearby businesses Skirts the rear of privately owned parcel Remedial activities could allow for reuse as parking lot and trailhead (Parcel 6C-154) 	<ul style="list-style-type: none"> Requires 3 right-of-way agreements Travels through known contaminated site (Parcel 6C-154) 	3 Private 2 Public
3	<ul style="list-style-type: none"> Requires 1 right-of-way agreement (potential) 	<ul style="list-style-type: none"> Requires construction of retaining wall More circuitous route Steep hill on Nelson Avenue On-road connection along local roadways On-road facility is less desirable to young or inexperienced users 	1 Private 1 Public

◆ ALTERNATIVES ANALYSIS

While Alternative 2-A is the preferred alternative, it is recognized that obtaining use rights for Parcel 6C-154 and addressing the many unknowns of working with a site that is listed with the Massachusetts DEP makes this Alternative less desirable. Therefore, Alternative 1-A is the preferred alternative pending the cooperation of the private property owners to negotiate easement/takings with the Town for purposes of the shared use path. This alternative closely follows the existing utility easement held by National Grid and is the most direct route through this area. Alternative 1-B is also a separated shared use path, which is preferable to an on-road route from a safety and accessibility perspective.

If the necessary property agreements for Alternatives 1 and 2 cannot be acquired, then the Town should consider Alternative 3. While slightly more circuitous than Alternatives 1 and 2, Alternative 3 presents a reasonable assurance of implementation and will still provide a contiguous shared use path route between Andover Street (Route 133) and West Main Street (Route 97). One potential agreement to construct a retaining wall will depend on the Andover Street (Route 133) right-of-way limits.



6 Cross Section

The purpose of this Section is to provide an overview of design elements that need to be considered when selecting a typical shared use path cross-section.

MassHighway and the Federal Highway Administration (FHWA) require that a shared use path designed or constructed with state or federal funds follow the design standards of the American Association of State Highway & Transportation Officials (AASHTO). However, the new MassHighway Design Guide also acknowledges that site-specific conditions often warrant the need to take a more flexible and accommodating design approach. The guidelines set forth in AASHTO constitute the starting point for the design. Deviations from AASHTO can be justified based on site-specific conditions. All projects are looked at by MassHighway on a case-by-case basis.

The conceptual design for this project is based on the following guidelines and regulations:

- MassHighway Project Development & Design Guide (2006)
- AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities (2004)
- AASHTO Guide for the Development of Bicycle Facilities (1999)
- The Rules & Regulations of the Massachusetts Architectural Access Board (521 CMR)
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- Manual on Uniform Traffic Control Devices (MUTCD)

6.1 Design Elements

The cross section of a shared use path is typically governed by the existing corridor right-of-way, "rail bed" width and the location of adjacent environmental resource areas. Another major issue for this project is the location of existing utility poles along the length of the corridor.

Important factors to consider when developing the shared use path typical section include:

- Surface width
- Shoulders
- Side clearance
- Physical barriers
- Vegetation

6.1.1 Surface Width

Under most conditions a surface width of 10 feet is recommended for shared use paths. This recommendation is consistent with AASHTO and MassHighway guidelines. In rare instances, an 8-foot surface can be adequate where the following conditions prevail:

- Low bicycle traffic
- Low ped traffic
- Good horizontal and vertical alignment
- Low use by maintenance vehicles that could potentially cause edge damage

According to the MassHighway Design Guide, a reduced width of 8 feet may also be acceptable where there are severe environmental, historical, and/or structural constraints. MassHighway's Bicycle - Pedestrian Accommodation Engineer noted that a reduction in width is typically considered for a small stretch of corridor where there are such constraints. Such a design decision is usually discussed during the formal review process, at which time the designer is often asked to provide justification for the reduction in width.

Regardless of the width, the path should have a 1.5% cross slope in one direction to aid in drainage. The direction of the cross slope can vary along the corridor depending upon the topography and adjacent land use. A 1.5% cross slope is the same as a typical sidewalk and meets ADA accessibility guidelines.

6.1.2 Shoulders

A minimum 2-foot wide graded clear shoulder should be maintained adjacent to both sides of a shared use path. This shoulder is not considered part of the traveled way. The shoulder is typically graded to a slope of 1 vertical to 12 horizontal (1:12) to enhance proper drainage to prevent erosion as well as provide a recovery zone for path users. It is commonly constructed using soft surface materials such as grass, gravel borrow, stone dust, or other stabilized materials.

6.1.3 Equestrian Path

A 4 to 5 foot widened shoulder is included on some projects for use by equestrians, and also by trail runners, walkers and mountain bikers. National Grid has expressed a concern about having equestrians close to their electrical transmission lines. Based on this fact, combined with the proximity of environmental resource areas in fill sections, it is not recommended that a widened shoulder for equestrians be developed along this project corridor.

6.1.4 Horizontal Clearance

A minimum 3-foot clearance should be maintained from the edge of the path to signs, trees, poles, walls, fences, guardrails, or other obstructions.

The primary obstructions located along this corridor are the parallel set of utility poles that line the proposed path alignment. Based on our site investigation, we have seen three design issues that need to be addressed. These issues include:

- Relocating existing utility poles where there is a retaining wall on both sides of the corridor
- Providing protection for path users with a wood rail fence when the clearance between the poles is less than 16 feet
- Aligning the trail around the existing poles at the northern end of the project

The impact of each of these issues is reflected in the path typical sections included at the end of this section.

6.1.5 Vertical Clearance

A vertical clear zone of at least 12 feet above the finished grade at the proposed path must be maintained. The 12-foot clearance accounts for the size and physical limitations of the construction equipment. Being that the path closely follows the existing utility corridor, vertical clearance to vegetation should not be an issue. Rather it will be important to include the location of overhead wires that cross the path on the design plans and alert contractors to the overhead wires.

6.1.6 Physical Barriers

A wood rail fence needs to be installed along the path to prevent users from traversing the sideslopes. A 5-foot separation from the edge of the path surface to the top of slope is desirable in areas where the path is located adjacent to ditches or slopes steeper than 1 foot vertical to 3 feet horizontal (1:3). If this offset cannot be achieved, then a physical barrier such as a railing, dense shrubbery or a chain link fence, should be installed along the top of slope to protect trail users. In general, the greater the height of the drop-off, the greater the need for protection. According to AASHTO guidelines, the fence should be set at a height of 3.5 feet (42 inches). Rub-rails are recommended at a height of approximately 3-feet from grade to prevent snagging of handlebars. All fences should be smooth and free of protruding objects such as bolts.



Figure 13: Example Wood Rail Fence Installation

6.1.7 Root Barrier

It is recommended that existing low-lying vegetation located within 6 feet of the edge of the paved path be cleared and grubbed. In addition, based on recent shared use path designs, it is recommended that a high-density polyethylene root barrier be installed along sections of the project corridor where future tree root or vegetative growth may threaten the long-term integrity of the paved surface. Due to its price, root barrier should only be installed in areas where root damage can be anticipated. As this corridor is currently used for utility transmission, and is routinely maintained by National Grid, the extent of vegetation is minimal when compared to paths along unused railroad corridors.

6.2 Recommended Cross Sections

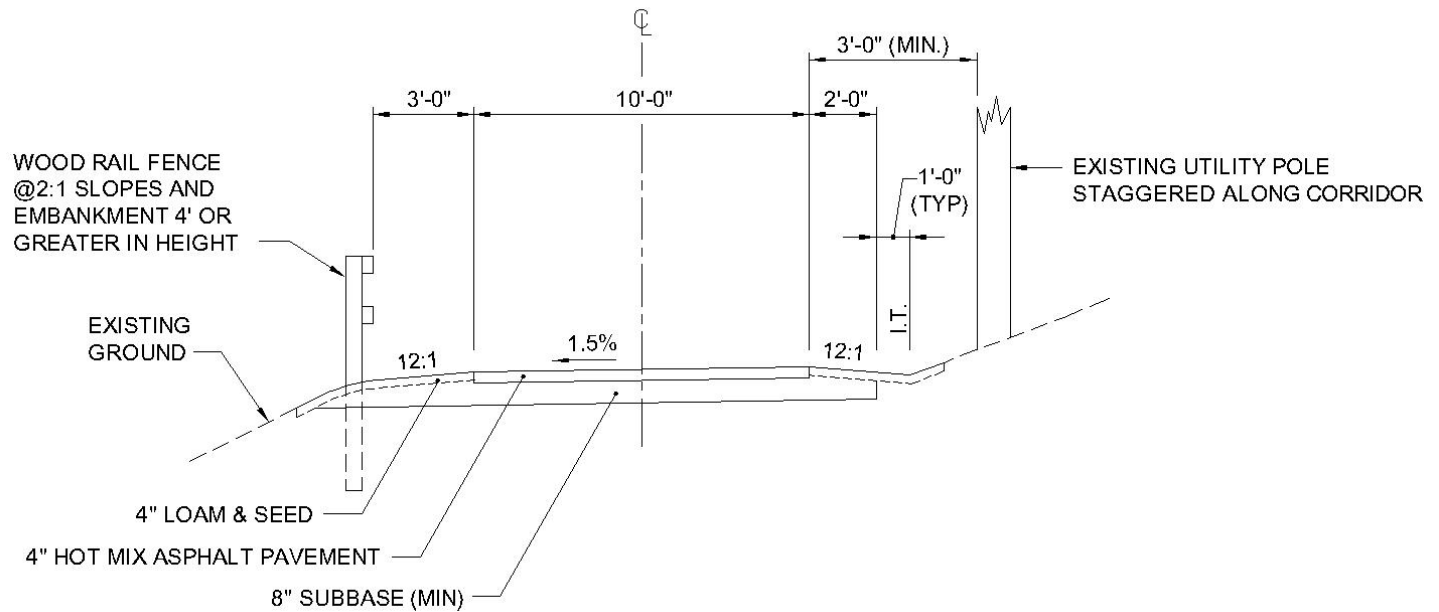
Due to changing conditions along the corridor, the conceptual design plans show four proposed path cross sections, all with asphalt surfaces. The sections are coded by letter to the conceptual design plan location as listed in Figure 14.

Figure 14: Section Descriptions

Section	Description
A - Typical Section	<ul style="list-style-type: none"> 10' trail with 2' shoulders Minimum 3' horizontal offset to existing utility poles
B - Constrained Section	<ul style="list-style-type: none"> 10' trail with varying shoulder width 8' trail minimum where severe constraints Wood rail fence to be installed to remove risk of user hitting a utility pole head on
C - Relocated Pole Section	<ul style="list-style-type: none"> 10' trail with 2' shoulders Minimum 3' horizontal offset to existing stone wall Elevated boardwalk in wetland areas
D - Boardwalk Section at Wetlands	<ul style="list-style-type: none"> Elevated boardwalk in wetland areas Based on site visit, only anticipated to be used in conjunction with Section C

A graphic showing each Recommended Cross Section and its location along the corridor is shown in Appendix F.

6.2.1 Section A – Typical Section



Proposed Path Cross Section

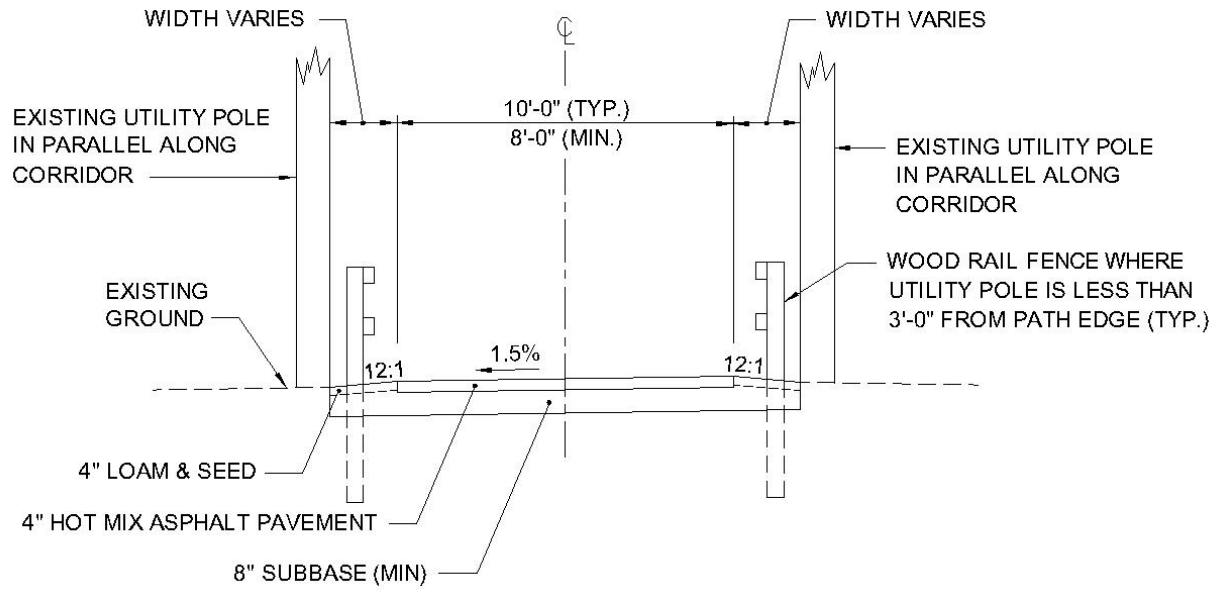


Existing Condition

Figure 15: Section A – Typical Section

Section A will meet MassHighway guidelines for the recommended surface width, shoulder width and offset to obstructions.

6.2.2 Section B – Constrained Section



Proposed Path Cross Section



Existing Condition

Figure 16: Section B – Constrained Section

Based on field observations, the distance between poles in the constrained section ranges from 12'-10" to over 14'. Given this spacing, it is not possible to provide a 10-foot path width with a 3 foot offset to the existing utility poles.

Therefore, three modified cross section options were considered:

1. Reduce the path width from 10 feet to 8 feet and install a wood rail fence off the edge of pavement. Although this fence would not meet recommended offset requirements, it would remove the risk of a path user hitting a utility pole head on.
2. Retain a 10-foot surface and install a wood rail fence at the edge of pavement. The fence should be offset a minimum 1 foot from the edge of pavement where the pole spacing permits. Again this fence would remove the risk of a path user hitting a utility pole head on.
3. Maintain a 10-foot surface but install a pavement marking line to delineate an 8-foot usable width. A wood rail fence should be installed off the edge of pavement. The fence should be offset a minimum of 1 foot from the edge of pavement where the pole spacing permits. Although this fence would not meet recommended offset requirements, it would remove the risk of a path user hitting a utility pole head on.

Under all three options the wood rail fence would serve to remove the risk of a path user hitting a utility pole head on. Both the leading and trailing ends of the wood rail fence should be flared so that the blunt ends do not pose a hazard to oncoming users. This flared end treatment is shown in Figure 17.

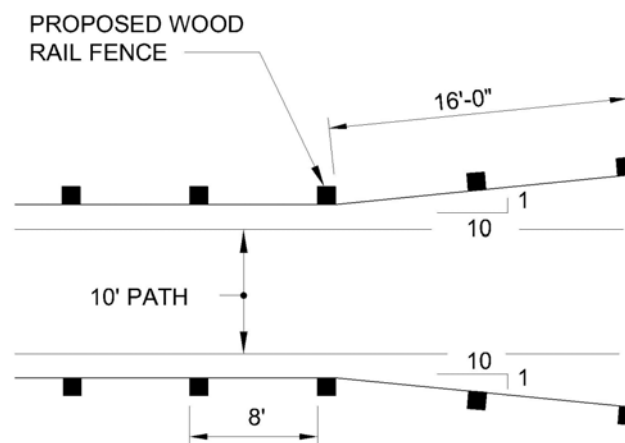
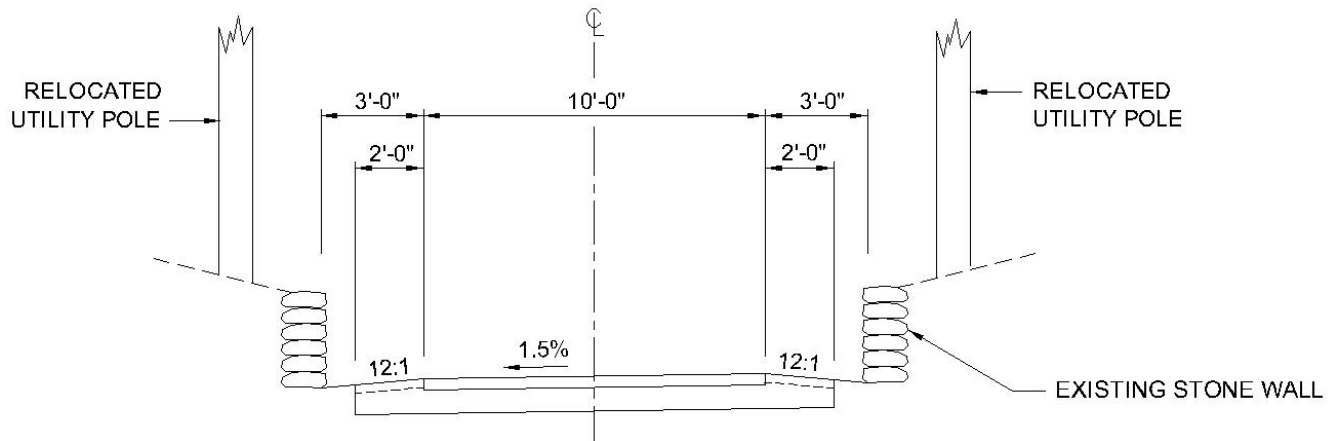


Figure 17: Wood Rail Fence Flared End Treatment

The preferred option is Option 2, which calls for a 10-foot surface with a wood rail fence at the edge of pavement. Maintaining a 10-foot surface width will reduce the potential for edge damage caused by maintenance vehicles. The additional striping included in Option 3 could always be added post-construction if deemed necessary.

6.2.3 Section C – Relocated Pole Section



Proposed Path Cross Section



Existing Condition

Figure 18: Section C – Relocated Pole Section

Section C will require the relocation of existing utility poles behind the existing stone wall in order to provide a minimum 3-foot offset to obstructions. If pole relocation is not possible, then Section B – Option 2, as discussed in Section 6.2.2, should be considered.

6.2.4 Section D – Boardwalk Section at Wetlands

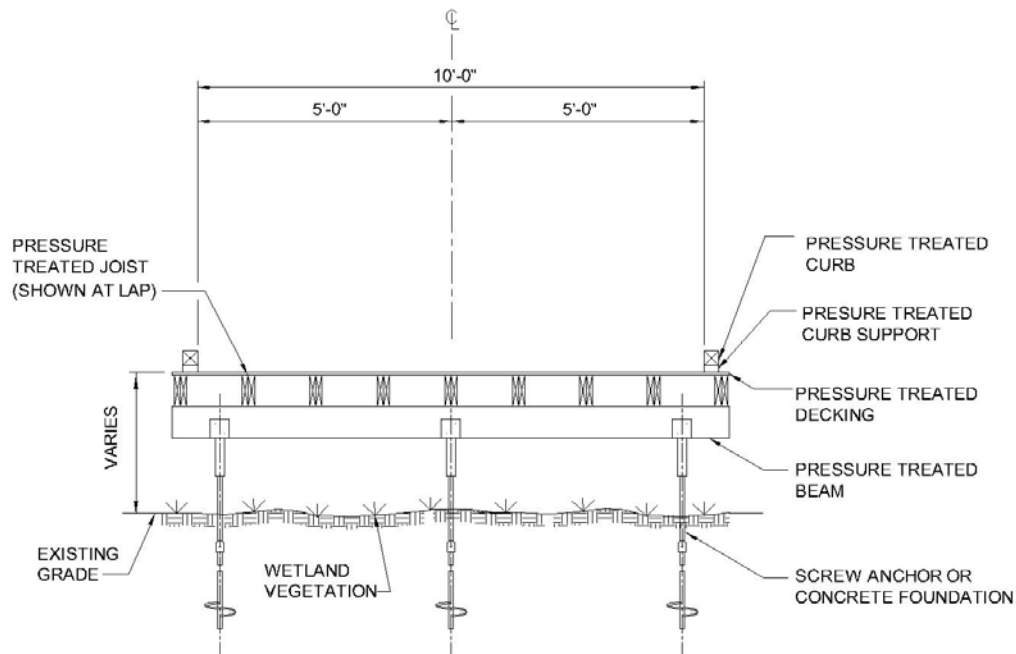


Figure 19: Section D – Boardwalk Section at Wetlands

Based on site visit, it anticipated that a boardwalk section would be used in conjunction with Section C – Relocated Pole Section and possibly at wetland areas between Andover Street and West Main Street depending upon which alternative alignment is implemented. However, all wetland areas along and within the path alignment will be delineated as part of the preliminary design phase, as discussed in Section 3.1.3. The need for additional boardwalk sections will be determined based on the results of the delineation effort.

The boardwalk section should be designed to support an H20 design vehicle, which is consistent with the typical maintenance vehicles used by National Grid. Consequently, the boardwalk will need to be designed as a bridge in accordance with the Guide Specifications for the *Design of Pedestrian Bridges* and the *Standard Specifications for Highway Bridges*, as discussed in Section 4.2.2.

7 At-Grade Intersections

The purpose of this section is to discuss the engineering design issues that need to be taken into consideration where the project corridor crosses roadways at-grade.

Along the project corridor, there are a total of 9 at-grade roadway crossings. These roadways include:

- Nelson Street
- Brook Street
- Andover Street (Route 133)
- Moulton Street
- West Main Street (Route 97)
- Milton Way
- Pond Street
- Mill Street
- Thurlow Street

Introducing a path crossing at each of these locations presents operational and safety issues for both vehicles and path users.

7.1 Design Considerations

The primary design goal will be to develop a consistent strategy to improve intersection safety at each path / roadway intersection. Design elements include alignment, approach, sight distance, access, signage & pavement markings and traffic control.

7.1.1 Alignment & Approach Treatment

The project corridor can be characterized by long, uninterrupted stretches that are straight and relatively flat. Although this alignment creates a path that is easy for users of all ages/abilities to enjoy, it also tends to reduce the awareness of an approaching roadway and encourages some individuals to disregard stop signs.

Considering site constraints and the characteristics of the intersecting roadway, two alternate alignment options have been considered at each path / roadway intersection.

- Type 1: Reverse Curve Alignment
- Type 2: Straight Alignment

Type 1 Alignment: This alignment option introduces short, reverse curves (e.g. 'S' curves) to divert the path from the current alignment and reposition the user at the preferred crossing location. At skewed crossings, it is recommended that a short section of path be realigned in advance of the intersection to create as close to a 90 degree crossing as possible while maintaining minimal disturbance to surrounding areas. Benefits of such a realignment include a shortened crossing and increased awareness by users of a change in conditions (e.g. an approaching intersection). This short alignment change requires bicyclists to reduce speed. Recognizing the benefits of this approach treatment, it is also recommended for consideration at locations where the existing

◆ AT-GRADE INTERSECTIONS

crossing is already at 90 degrees. This option typically requires additional vegetative clearing and grading to realign the path. Therefore, while the Type 1 Alignment is the preferred treatment for safety reasons, it must be weighed against the impact upon abutting properties as well as the existing utility poles. Likewise, specific to this corridor, the reverse curves may impose an access challenge to National Grid maintenance vehicles.

Type 2 Alignment: This alignment option keeps the path along the current track alignment. This option is typically used where realigning the path may not be feasible or necessary. These are primarily locations where either site constraints are too restrictive (e.g. proximity of wetland resource areas, private property or utility poles) or where the cross street is a low volume/speed roadway. At these locations, a Type 2 Alignment is recommended. Again, this option should also be considered where reverse curves may impose an access challenge to National Grid maintenance vehicles.

The alignment options discussed above can be combined with different approach treatments to further define the location of path / roadway crossings to both users and motorists. Two such approach treatments have been considered along this corridor.

- Type A: Widened Approach Treatment
- Type B: Gateway Approach Treatment

Type A Approach: This approach treatment involves the introduction of a flush, 2-foot wide divisional island on the approach to the intersection. The flush island can consist of textured pavement (e.g. Imprint) in a brick pattern, for example, or simply pavement markings. The island in effect splits the shared use path into two, one-way routes, a measure that also tends to reduce the speed of bicyclists approaching the intersection. This treatment requires minimal widening beyond the proposed typical section and is well suited for applications where site constraints restrict the extent to where the path can be realigned.

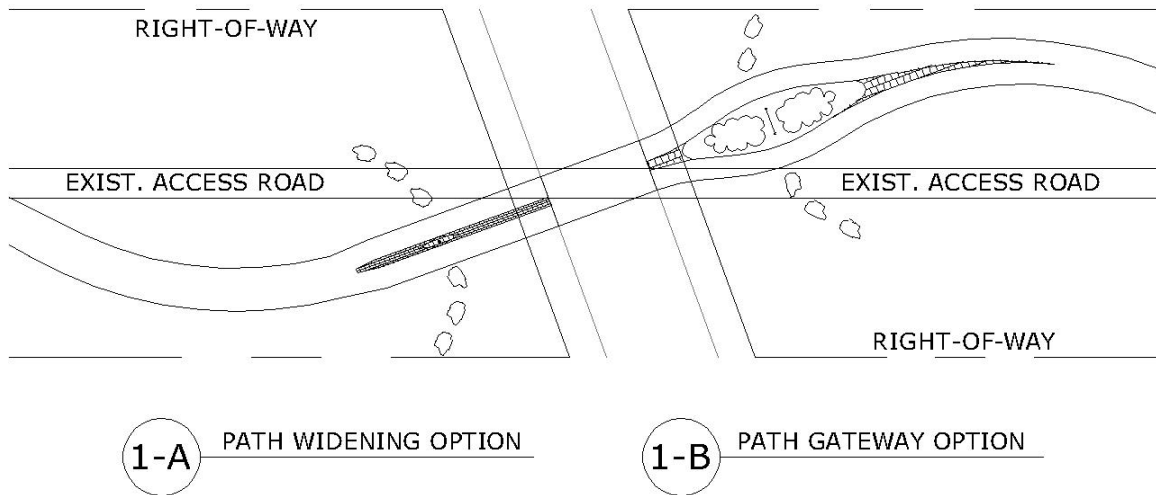
Type B Approach: This approach treatment consists of replacing a narrow flush island with a wider median island and/or gate, where site conditions are less restrictive. Only low-lying vegetation should be planted in the island such that it will not impair sight distance. This “gateway” treatment functions similar to the flush island (Type A) but offers an additional opportunity to further enhance the appearance of the path through pavers or landscaping.

When the alignment options and approach treatments are combined together, there are a total of four intersection designs that can be considered at each at-grade crossing:

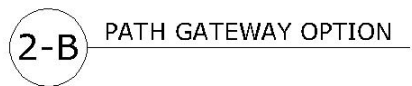
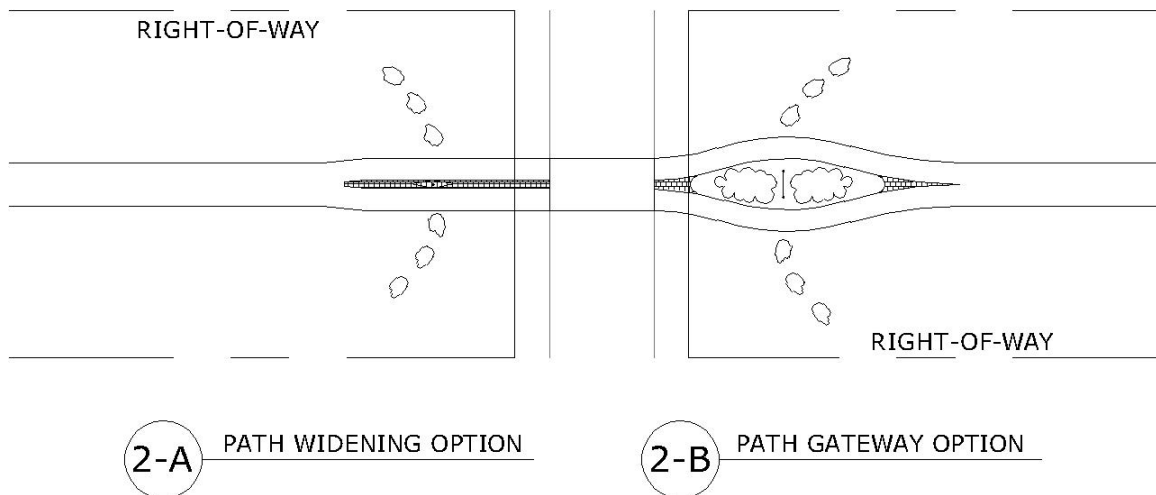
- 1-A: Reverse Curve Alignment - Widened Approach Treatment
- 1-B: Reverse Curve Alignment - Gateway Approach Treatment
- 2-A: Existing Alignment - Widened Approach Treatment
- 2-B: Existing Alignment - Gateway Approach Treatment

A conceptual plan of each design option / treatment is included on the following page.

◆ AT-GRADE INTERSECTIONS



Revised Alignment



Existing Alignment

Figure 20: Path / Roadway Intersection

◆ AT-GRADE INTERSECTIONS

Recommendation: Along the path, it is recommended that each intersection include a Type 2-B design. This design will simply access requirements for the National Grid maintenance vehicles. The type of treatment within the median island will depend on whether the Town desires to enhance the intersection with a textured pavement or low-lying landscaping.

It is recommended that each intersection include an access gate to prevent unauthorized access by motor vehicles. The Town or National Grid can open the gate for maintenance and emergency access. At roadway intersections, the gate should be placed outside of the vehicle clear zone and at an adequate offset to permit a vehicle to pull off the intersecting roadway (25 feet recommended). Boulders are often used to supplemental the physical barrier. In addition to intersections, a similar physical barrier can also be installed at informal crossings where unauthorized access may pose a problem.

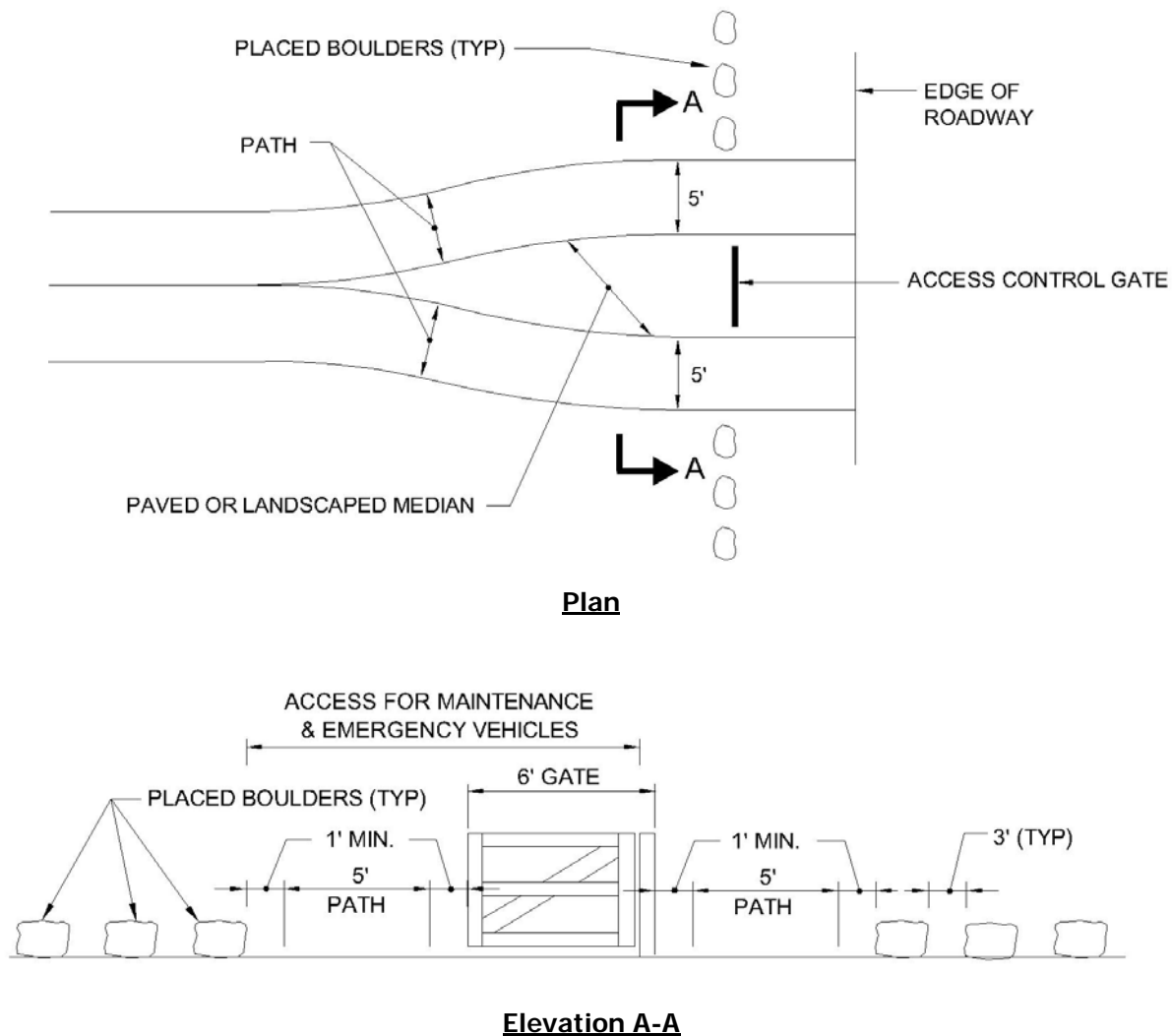


Figure 21: Access Gate

7.1.2 Sight Distance

Sight distance is the length of roadway visible to a motorist and in this case, also a path user. Appropriate sight distance is related to driver and pedestrian safety and smooth traffic operations. Sight distance is affected by road geometry; such as grades and curves; roadside vegetation or other objects (signs, stone walls, fences, and so forth). Sight lines must be kept free of obstructions that might interfere with the ability of a motorist or path user to verify that the roadway is clear.

Vegetative clearing will be required along all roadways to improve sight distance both for users (stopped at the intersection waiting to cross the roadway) and motorists (approaching the crossing). In general, the clearing limits at the crossing will call for the selective clearing and thinning of vegetation approximately 8 feet back along the path in order to provide a 200 foot stopping distance from the center of the travel lane on the intersecting roadway. This distance will vary depending on the curvature of the roadway and speed of the approaching vehicle. A detail of these clearing limits is included on the following page.

The cutting of living shade trees will be subject to Georgetown Tree Warden approval and the Massachusetts Environmental Policy Act (MEPA). Street trees (within 10' of the roadway) are under the jurisdiction of the Georgetown Tree Warden. Cutting five (5) or more living public shade trees of 14 or more inches in diameter at breast height within the public right-of-way will exceed MEPA thresholds and require the filing of an ENF (see Environmental Permitting section of this study).

The design of each path / roadway intersection should strive to balance maximum sight lines and minimize associated roadside impacts.

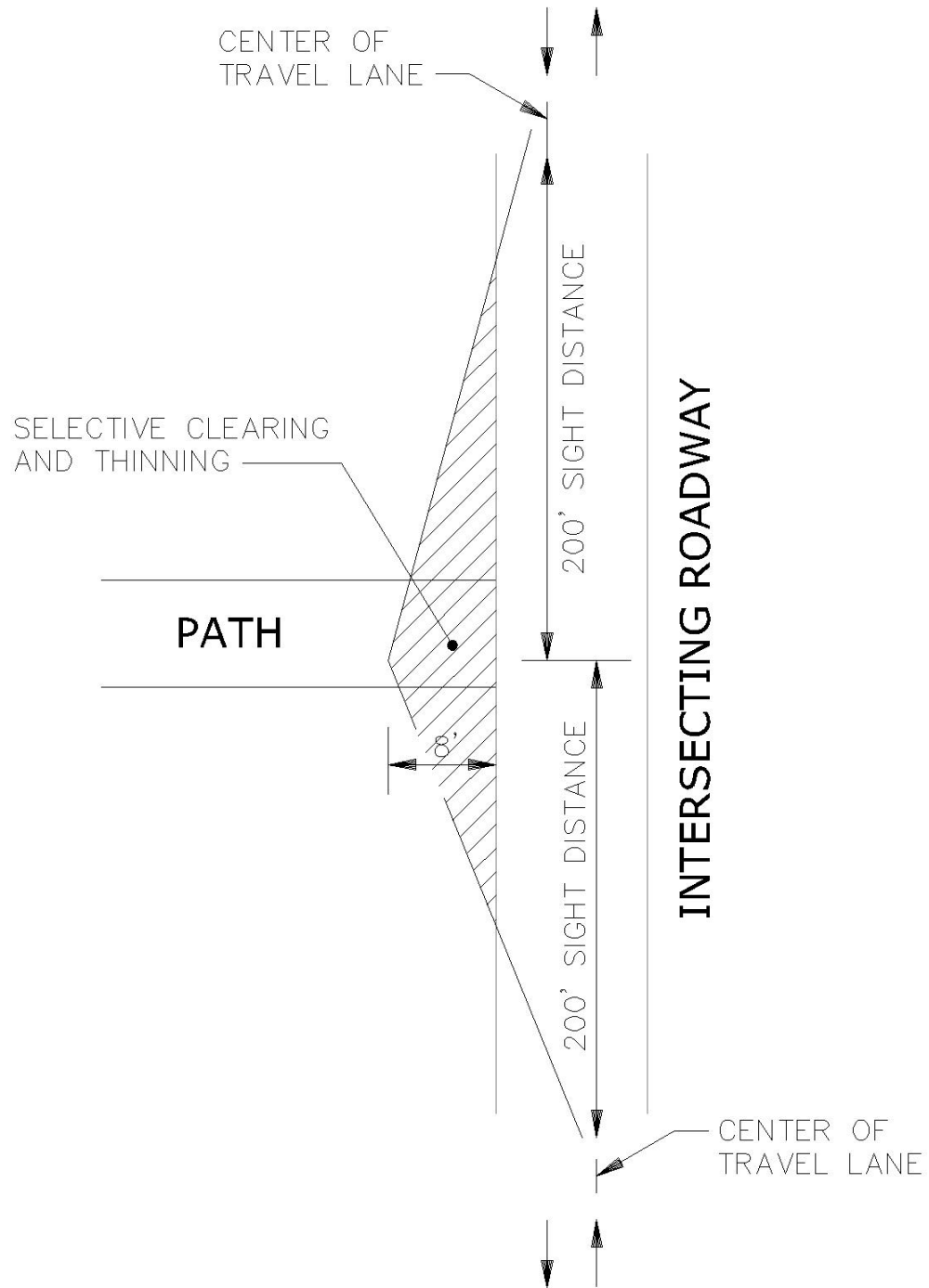


Figure 22: Clearing Limits

7.1.3 Signage & Pavement Markings

Proper warning and regulatory signage and pavement markings will be utilized to improve safety conditions for both path users and drivers as outlined in the MUTCD. It is recommended that path users be required to stop prior to crossing the intersecting roadway at each at-grade intersection along the corridor.

In addition, for user safety and emergency response actions, it is recommended that a mile marker and signage program be developed to assist users in identifying their current location along the path. The program should be implemented for the entire Border to Boston corridor.

This program should include:

- Post mile markers located consistently and correctly along one side of the trail that identifies the town where the marker is located
- One half-mile markers located along the path surface between the mile markers
- Street name signs mounted on top of the stop signs at each path/roadway intersection

7.1.4 Traffic Control

A traffic control system improves the safety of an intersection by providing additional warning of the approaching intersection to both vehicles and path users. As noted in the MassHighway Project Development & Design Guide, traffic signals shall be considered where a shared use path crosses a roadway with volumes greater than 10,000 vehicles per day. Motor vehicle speeds along the crossing corridor are also an important factor in this analysis.

According to the EOT Road Inventory database, only West Main Street (Route 97) approaches or exceeds 10,000 vehicles per day and warrants consideration for a traffic signal. However, due to sight distance deficiencies, a signal was also considered at the Andover Street (Route 133) crossing.

The other project area roadways exhibit lower volumes and speeds and therefore were not considered for signal installation.

The following types of traffic control systems shall be considered at each crossing:

- Intersection control beacon
- Cross Alert system
- Push button actuated traffic signal

These devices supplement the proper warning and regulatory signage and pavement markings along the path and roadway approach.

A typical intersection control beacon consists of a four way, single section traffic signal head supported over the center of a roadway on a mast arm. The signal flashes yellow for the vehicles approaching on the roadway and red for shared use path approaches. One drawback of a flashing beacon is that motorists become desensitized to its constant flashing. Standard installation of beacons requires a continuous power source to

maintain a flashing indication at all times. Installation costs are approximately \$25,000 per location.

A Cross Alert system is an alternative to a traditional beacon installation. This system runs on solar power and flashes roadside signals only when an approaching bicycle/pedestrian is detected. This system offers a benefit in terms of reduced energy costs. However, one drawback is that it does not offer the same visibility for approaching motorists of an overhead mounted signal. Installation costs are approximately \$25,000 per location. This system was recently installed along the Cape Cod Rail Trail and on bike paths in Rhode Island.

A push button actuated traffic signal consists of two signal heads for each roadway approach, typically supported on a mast arm, and pedestrian signals for the shared use path approach. The signal would display green (solid or flashing) for the vehicles approaching on the roadway and red for path approaches. When a path user reached the crossing, s/he would press the pedestrian button to change the signal to green for users and red for vehicular traffic.

In order to install a signal, a traffic signal warrant analysis needs to be conducted and one or more of the warrants satisfied. The justification for a traffic signal will be based on the volumes processed by the intersection (both path users and vehicles) and the number of gaps available in the traffic stream that will allow users to safely cross the roadway. If it is determined that a sufficient number of gaps in vehicle traffic will not be available for path users to cross the roadway, consideration should be given to installing a push button actuated traffic signal at the crossing. As the trail is not yet constructed, user counts could be based on use at a similar facility (e.g. Assabet River Rail Trail).

In the past, MassHighway has recommended that a Town first apply for a crosswalk permit and then revisit the need to install a signal once the shared use path had been constructed. However, recent conversations with MassHighway indicated the agency's recognition of need to develop a standardized approach to addressing traffic control as part of the preliminary design phase.

7.2 Intersection Improvements

The following Section discusses each crossing in more detail and outlines the deficiencies and general characteristics of each intersecting roadway.

Data presented in this section was compiled from the Commonwealth of Massachusetts Office of Transportation Planning Road Inventory Database (2006) and supplemented with field observations.

7.2.1 Nelson Street



Source: Microsoft Windows Live Local

Description: Nelson Street is the first roadway intersection north of the Georgetown / Boxford town line. The street is low volume, low speed local roadway.

<u>Type of Roadway:</u>	Local
<u>Posted Speed:</u>	30 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	200
<u>Surface Width:</u>	22 feet
<u>Sidewalk:</u>	-



Recommendations

- Realign the crossing as close to 90 degrees as possible given location of utility poles.
- Selectively clear and thin existing vegetation to provide sufficient sight distance.
- Install advance signs and pavement markings on Nelson Street.
- Consider using a textured surface treatment (e.g. Imprint) between the crosswalk lines to raise awareness of the crossing and complement the roadway character.

7.2.2 Brook Street



Source: Microsoft Windows Live Local

Description: Brook Street is a low volume roadway that dead-ends at a residential property. At only 16 feet wide, the street essentially functions as a shared driveway under current conditions.

<u>Type of Roadway:</u>	Local
<u>Posted Speed:</u>	-
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	500
<u>Surface Width:</u>	16
<u>Sidewalk:</u>	-



Issues

- A new 26-foot roadway, Whistle Stop Road, and a new sidewalk are planned to cross the proposed shared use path at this location. The plans for this subdivision include a 15-foot wide easement for the proposed path.

Recommendations

- Work with the Whistle Stop Estates developer to ensure that the proposed roadway crossing accommodates the path crossing.
- Install advanced warning signs and pavement markings on both Brook Street and Whistle Stop Road.

7.2.3 Andover Street (Route 133)



Source: Microsoft Windows Live Local

Description: Andover Street (Route 133) is a major east/west thoroughfare connecting North Andover to the west and Gloucester to the east.

<u>Type of Roadway:</u>	Urban minor arterial
<u>Posted Speed:</u>	35 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	5,000
<u>Surface Width:</u>	28
<u>Sidewalk:</u>	One side



Issues

- Crest vertical curve and topography of abutting land impairs sight distance
- Proximity of next signal

Recommendations

- Consider installing a push button actuated traffic signal, or overhead beacon at a minimum.
- Consider painting a bright color or using a textured surface treatment (e.g. Imprint) between the crosswalk lines to raise awareness of the crossing.
- Install advanced warning signs and pavement markings along Andover Street.

7.2.4 Moulton Street



Source: Microsoft Windows Live Local

Description: Moulton Street is a low volume, low speed local roadway. The Moulton Street / West Main Street (Route 97) was recently reconstructed.

<u>Type of Roadway:</u>	Local
<u>Posted Speed:</u>	25 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	500
<u>Surface Width:</u>	16
<u>Sidewalk:</u>	One side



Recommendations

- Install advanced warning signs and pavement markings along Moulton Street.

7.2.5 West Main Street (Route 97)



Source: Microsoft Windows Live Local

Description: West Main Street (Route 97) is a major north/south thoroughfare that connects Haverhill to the north and I-95 / Peabody to the south.

<u>Type of Roadway:</u>	Urban principal arterial
<u>Posted Speed:</u>	25 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	10,600
<u>Surface Width:</u>	32
<u>Sidewalk:</u>	Both sides



Issues

- Relatively high speeds and volumes

Recommendations

- Realign the crossing as close to 90 degrees as possible.
- Consider installing a push button actuated traffic signal, or overhead beacon at a minimum.
- Consider painting a bright color or using a textured surface treatment (e.g. Imprint) between the crosswalk lines to raise awareness of the crossing.
- Install advanced warning signs and pavement markings along West Main Street (Route 97).

7.2.6 Milton Way



Source: Microsoft Windows Live Local

Description: Milton Way is a low volume, low speed unimproved local roadway that connects to American Legion Park, residences and businesses.

<u>Type of Roadway:</u>	Local
<u>Posted Speed:</u>	15 MPH
<u>Jurisdiction:</u>	Private
<u>Est. Volume (ADT):</u>	100
<u>Surface Width:</u>	18
<u>Sidewalk:</u>	-



Issues

- Low visual quality due to industrial concentration
- Poor drainage due to unimproved surface

Recommendations

- Install landscaping and vegetative screening without impacting sight distance
- Better define roadway / path crossing and pave roadway apron to improve drainage
- Install advanced warning signs along Milton Way and Prospect Street.

7.2.7 Pond Street



Source: Microsoft Windows Live Local

Description: Pond Street is a low volume, low speed local roadway.

<u>Type of Roadway:</u>	Urban minor arterial
<u>Posted Speed:</u>	30 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	5,300
<u>Surface Width:</u>	20 feet
<u>Sidewalk:</u>	One side

Issues

- Visibility of the crossing is restricted by roadside vegetation and the sharp roadway / path skew angle.



Recommendations

- Realign the crossing as close to 90 degrees as possible given location of utility poles.
- Selectively clear and thin existing vegetation to provide sufficient sight distance.
- Install advance signs and pavement markings on Pond Street.
- Consider using a textured surface treatment (e.g. Imprint) between the crosswalk lines to raise awareness of the crossing and complement the roadway character.

7.2.8 Mill Street



Source: Microsoft Windows Live Local

Description: Mill Street is a low volume, low speed local roadway.

<u>Type of Roadway:</u>	Urban minor collector
<u>Posted Speed:</u>	30 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	2,900
<u>Surface Width:</u>	18
<u>Sidewalk:</u>	-



Recommendations

- Selectively clear and thin existing vegetation to provide sufficient sight distance.
- Install advance signs and pavement markings on Mill Street.
- Consider using a textured surface treatment (e.g. Imprint) between the crosswalk lines to raise awareness of the crossing and complement the roadway character.

7.2.9 Thurlow Street



Source: Microsoft Windows Live Local

Description: Thurlow Street is a low volume, low speed local roadway. The next path / roadway intersection is River Street in Byfield (Newbury).

<u>Type of Roadway:</u>	Local
<u>Posted Speed:</u>	30 MPH
<u>Jurisdiction:</u>	Town
<u>Est. Volume (ADT):</u>	200
<u>Surface Width:</u>	18
<u>Sidewalk:</u>	-



Recommendations

- Selectively clear and thin existing vegetation to provide sufficient sight distance.
- Install advance signs and pavement markings on Thurlow Street.
- Consider painting a bright color or using a textured surface treatment (e.g. Imprint) between the crosswalk lines to raise awareness of the crossing.

8 Access and Parking

The purpose of this Section is to evaluate locations where users would likely access or park to use the path.

8.1 Access

The primary access points will be located where the path crosses local roadways and abuts Town owned land.

There are a total of 9 at-grade roadway crossings along the project corridor. These roadways include:

- Nelson Street
- Brook Street
- Andover Street (Route 133)
- Moulton Street
- West Main Street (Route 97)
- Milton Way
- Pond Street
- Mill Street
- Thurlow Street

These crossings will provide an access point for the path users from nearby neighborhoods. Each crossing is discussed in further detail in Section 7 of this study.

In addition, there are two public cul-de-sacs that abut the project corridor. These cul-de-sacs include Charles Street and Wells Avenue. It is recommended that path connections to both of these cul-de-sacs be considered for neighborhood and emergency access. It is not recommended that trailheads with public parking be developed at these cul-de-sacs. Allowing on-street parking along these roadways would likely result in complaints from nearby residents.

There are a number of publicly-owned properties that directly abut the project corridor. These properties include:

- Camp Dennison on the Boxford/Georgetown municipal boundary
- Georgetown Park & Recreation property at 103 Central Street
- Police Station and Town Hall off Central and Andover Streets
- Georgetown Water Department at the Moulton Street / West Main Street (Route 97) intersection
- American Legion Park
- Crane Pond Wildlife Management Area at the Georgetown/Newbury municipal boundary

◆ ACCESS & PARKING

There are a number of privately-owned properties that directly abut the project corridor. These properties include:

- Nunan Florist & Greenhouses, Inc.
- CVS Pharmacy (Finer & Company)
- Primrose Circle (Parker River Landing)

Nunan Florist & Greenhouses, Inc. at 269 Central Street (Parcel 9-1) has expressed an interest in having a formal connection to the proposed path. A small food service, HenBorg's, operates on their property that could cater to path users. HenBorg's services ice cream, breakfast and lunch. This access point would be located on private land and would therefore require the approval of the owner.



Figure 23: Nunan Florist & Greenhouses

The Georgetown Recreational Path Committee has contacted Finer & Company property management, the owner of 65 Central Street in which CVS is located (Parcel 10B-4). This property abuts the project corridor near the center of Town and an access point at this location may prove to be a desirable feature for both path users and the businesses. This access point would be located on private land and would therefore require the approval of the owner.



Figure 24: CVS Pharmacy

Primrose Circle is a cul-de-sac that abuts the project corridor. Any path access from Primrose Circle should be limited to Parker River Landing residents (Parcel 12-48). This access point would be located on private land owned by the Homeowner Association. Therefore, any formal connection at this location would also need to be constructed and maintained by the Homeowner Association.

8.2 Parking

Trailhead parking provides points of access for path users. These access points will not only accommodate people from the immediate area, but those who have traveled further to use the path. Although a number of residents will likely walk or bike to the path from their homes, it can be anticipated that many people will also choose to drive.

8.2.1 Existing Parking

Preliminary efforts were focused on evaluating the availability of parking at existing Town facilities to negate the need to construct new parking areas. Consideration was also given to expanding existing parking areas to handle an increase in use. Only if these facilities are unable to handle additional demand is it recommended that new parking areas be developed along the project corridor.

The path will abut existing parking facilities at:

- Public Safety Building (Parcel 11A-58)
- Town Hall (Parcel 11A-58)
- American Legion Park (Parcel 11B-3)

Parking at the Public Safety Building is reserved for police and police business and for fire department personnel and on-call firemen. Based on the intended use of this parking area, it is not recommended that this lot be used for path parking.

Parking at the Town Hall is currently reserved for Town Hall use from Monday through Thursday, daytime and evening. It is recommended that this parking area be considered for path parking on Fridays, Saturdays and Sundays only.

American Legion Park (Parcel 11B-3) abuts the corridor north of Milton Way. The Town has design plans prepared to provide an improved pathway between the parking lot and the tennis courts. Extending this path beyond the tennis courts will provide a direct spur connection to the project corridor.

In some cases, private businesses are willing to negotiate a public access agreement, recreational easement or land gift with restrictions with the Town.



Figure 25: American Legion Park

8.2.2 Proposed Parking

Based on a preliminary assessment, it is recommended that new parking areas be investigated during the preliminary design phase. Three areas to be considered include:

- 103 Central Street (Georgetown Park & Recreation Department)
- 11 Moulton Street (Former Automatic Connector)
- 1 Moulton Street (Georgetown Water Department)

The 1.3-acre parcel at 103 Central Street (Parcel 10B-12) is owned by the Georgetown Park & Recreation Department. Based on a review of available mapping, it appears that a small stream runs through the parcel from a shrub swamp area on the opposite side of the corridor. The Town is considering constructing a gravel driveway and unimproved parking lot for the shared use path.

The parcel at 11 Moulton Street (Parcel 6C-154) is located across from Railroad Avenue, adjacent to the Georgetown Water Department building. This site is the former Automatic Connector property that is undergoing remedial activities to reduce contamination present in shallow bedrock groundwater at the site. If groundwater is the only issue at this site, then the parcel could potentially be redeveloped for the purposes of a parking lot or trailhead as long as contamination levels have been reduced to background levels suitable for public exposure. Special precautions would need to be taken during construction. Also, the Town would need to consider the liability associated with the purchase of this property for the purpose of path parking.

The Georgetown Water Department has their offices at 1 Moulton Street, at the intersection of Moulton Street and West Main Street (Route 97) (Parcel 6C-153). Each of the alternative alignments discussed in Section 5 connects to this property. It is recommended that a portion of this lot be redeveloped into a trailhead to increase the visibility of the path. This trailhead could include directional and/or interpretive signage, a kiosk, and seating area.

Each of these lots will need to be further explored as part of the Preliminary Design Phase when more detailed survey is available in order to further assess lot size, feasibility, practicality, permitability and safety issues.

9 Mitigation Measures

The purpose of this section is to outline potential locations and measures to mitigate the impact of path development on abutting properties and resource areas.

There are three primary mitigation measures that can be used to control and block unwanted informal access. These measures can be used to retain the privacy of abutting properties and discourage users from leaving the path, without sacrificing the overall visual quality of the corridor.

Signage: Signage identifying where the adjacent land is private property is a basic measure that can be used to deter trespassers. Signage used in combination with the other mitigation measures listed below will improve its effectiveness in controlling unwanted access.

Potential locations for signage include:

- Along abutting commercial properties
- At locations requested by abutters

Fencing: The installation of a 3.5-foot high wood rail fence or post and rail fencing along the corridor would serve a number of purposes. Fencing will be required in certain locations for the safety of path users (See Section 9.3). Beyond the requirements, fencing can be installed to discourage users from traversing an adjacent side slope or wandering outside the right-of-way in search of a new vista. Low growing, native plantings could be massed in natural forms along the fencing to further discourage unwanted access. Six (6) foot high chain link fences would provide a physical barrier between the trail and adjacent property but are unattractive in comparison to more natural looking materials. The locations of chain link fence would need to be considered in conjunction with known wildlife corridors.

Potential locations for non-safety related fencing include:

- Along abutting commercial properties
- At sensitive wetland resource areas proximate to the railbed
- At locations requested by private abutters

◆ MITIGATION MEASURES

Vegetation: A path design goal is to maintain the natural vegetative buffer between the railbed and abutting properties. However, in areas where there is limited vegetation, additional landscaping can serve to further retain the privacy of adjacent uses. Enhancing the vegetative buffer with additional trees can help address abutters concerns about maintaining privacy.

Potential locations for vegetative plantings include:

- At sensitive wetland resource areas proximate to the railbed
- At locations requested by abutters



Figure 26: Potential Vegetative Screening Location

The need for and exact location of such mitigation will be determined during the preliminary design phase.

The Town and abutters typically request mitigation measures during the public outreach process which are then shown on the design plans and included as part of the construction cost estimate. MassHighway will pay for the construction of all reasonable mitigation requests. However, the Town will ultimately be responsible for maintaining all such mitigation measures located within the rail corridor. In some instances, MassHighway will consider constructing measures on private property as part of a project, which would then become the maintenance responsibility of the private landowner.

10 Enhancements

The purpose of this Section is to discuss opportunities to enhance the corridor through the proper siting of trailside elements.

Overall visual quality and user enjoyment are an important part of the path experience. Clear, appropriate and consistent trailside elements along a shared use path corridor provide some of the strongest visual connections. Trail amenities, furnishings, interpretive graphics, and informational & directional signage can help create an identity for the path.

The design and location of any enhancements should complement the project setting, while maintaining the safety and mobility of users.

10.1 Trailside Amenities

Amenities will enhance the comfort and enjoyment of path users. These amenities could include:

- Benches
- Picnic tables
- Trash receptacles
- Information kiosks
- Directional signage
- Bike racks or lockers
- Restrooms
- Overlooks/rest stops

Primary considerations for recommending amenities and other trailside items should include:

- Appropriateness
- Functionality
- Attractiveness of design
- Desired materials (i.e. natural and/or sustainable materials)
- Durability
- Maintenance requirements
- Cost

These amenities should be strategically placed in areas along the corridor where the Town specifically wants people to gather.

10.2 Scenic Vistas, Rest Areas and Interpretation

There are a number of scenic and historic views along the way which could be highlighted through controlled vista pruning and the careful siting of overlooks and rest areas. These vistas / areas can be as simple as a flat, paved pull off adjacent to the trail in the shade with vista pruning to reveal scenic views or as developed as a special location with interpretative signage, picnic tables, bike racks and other amenities. The placement of ground or rail mounted interpretive signage at these areas can give the trail a unique character and increase users appreciation of the corridor's railroad history and natural resources.

One possible rest stop area is at the spur path entrance to Camp Dennison. Camp Dennison is located near the Boxford/Georgetown Town Line.

Another possible location is at the site of the former Baldpate Railroad Station. This location would be an appropriate location along the trail for an interpretive exhibit on the history of the railroad in Georgetown.

Another location is behind CVS pharmacy (south of Andover Street), where views to the west look out at a beautiful pond and wetland system. There are a number of other locations along the corridor where a scenic overlook would help draw users attention to the natural setting without disturbing the sensitive environmental context.

A good location for a rest area is at the West Main Street (Route 97) and Moulton Street intersection. The Town Water Department owns the parcel on the corner and this location is ideal due to its high visibility and location relative to the Town borders.

During the preliminary design phase, it will be important to solicit input from local Town Boards, Committees and the public to determine where a overlooks and/or rest areas may be appropriate, and which features are chosen for interpretation along the trail.



Figure 27: Former Location of Baldpate Railroad Station



Figure 28: Town Owned Land at West Main/Moulton Street Intersection

10.3 Landscaping

Ornamental native plantings and screening will serve to strengthen visual connections along the railroad corridor. Uniform treatments and proper vegetative management will improve the visibility and overall appearance of the path. Some recommendations include:

- Introduce new plantings to reinforce the path entry points, enhance and support desirable views at scenic vistas and/or areas to rest.
- Strategically locate new plantings to buffer unwanted views and the rear of commercial/industrial buildings.
- Minimize the extent of disturbance to existing vegetation between private properties and the railbed. Install additional plantings, where needed, to retain the privacy of these owners.

◆ ENHANCEMENTS

- Selectively clear vegetation back from both sides of the path at entry points, to increase visibility and sight lines and to cue both drivers and trail users of crossings and trail access points.

The goal of landscape design should be two-fold, to add to and enhance existing vegetation and introduce new, self-sustaining native species where needed along the corridor.

11 Environmental Permitting

As documented in the previous sections, the project corridor includes and parallels several environmentally sensitive areas. Accordingly, design and construction measures will need to be implemented to avoid/minimize and compensate for unavoidable adverse impacts associated with path construction. These measures will constitute integral components of the requisite environmental permit applications, as described below.

The following is a list of the anticipated environmental permits.

11.1 National Environmental Policy Act (NEPA)

As most shared use path projects involve Federal funds (TEA-21), compliance with NEPA will be required. However, since bikeway construction infrequently results in significant environmental impacts, it automatically is classified as a Categorical Exclusion (CE). Therefore, except in unusual circumstances, path projects do not require Federal Highway Administration (FHWA) approval. With specific respect to this project, FHWA approval is not anticipated to be required.

11.2 Massachusetts Environmental Policy Act (MEPA)

The MEPA office is part of the Executive Office of Environmental Affairs (EOEA). The purpose of MEPA is to evaluate environmental impacts of a proposed project. An Environmental Notification Form (ENF) or Environmental Impact Report (EIR) is required to be submitted to MEPA if:

1. The project is subject to MEPA review (e.g. the project is undertaken by an Agency [of the Commonwealth], involves State Agency Financial Assistance or requires an Agency Action/Permit); and
2. Environmental impacts or review thresholds as referenced in the MEPA regulations are exceeded.

Although there are many review thresholds for all types of projects from airports to electric generating facilities, the two most common thresholds to trigger an ENF for shared use paths are as follows:

- Creation of 5 or more acres of impervious area. This translates to 4.2 miles for a 10-foot wide trail. The surface area quantity will vary depending upon the selected trail width and whether the Town decides to pave or expand parking areas as part of the project.
- Alteration of 5,000 or more square feet of bordering or isolated wetlands.
- The cutting of five (5) or more living public shade trees of 14 or more inches in diameter at breast height within the public right-of-way

Path construction is not expected to impact greater than 5,000 square feet of vegetated wetlands. Accordingly, the need to file an ENF primarily will depend upon the presences/absence of financial assistance from an agency of the Commonwealth, the

need for State agency permits, potential width of the proposed path surface along the 4.5-mile corridor, and inclusion of impervious parking areas as part of the project.

11.3 Wetlands/Rivers Protection Acts

The WPA/regulations, which also incorporate regulations promulgated pursuant to the Rivers Protection Act, govern activities affecting wetlands and is administered through the local Conservation Commission, with DEP oversight. In general, any activity which will remove, fill, dredge or alter an area subject to regulation (i.e. wetlands, rivers and floodplains) requires the filing of a Notice of Intent (NOI). Also, any activity within 100 feet of an area subject to regulation (i.e. the Buffer Zone) that, in the judgment of the issuing authority, will alter an area subject to protection also requires the filing of an NOI.

Assuming its applicability to the path project, this NOI filing also is required pursuant to the Georgetown Wetland Protection Regulations. Much of the path occurs within 50 feet of a resource area and will therefore be subject to approval under local Wetland Protection Regulations' 50 foot No-Cut – No-Disturb zone, for example.

Also under the oversight of the Conservation Commission is compliance with the DEP Stormwater Management Policy and associated performance standards, effective November 18, 1996. These standards regulate water quality (pollutants) and water quantity (flood control) through the use of such Best Management Practices (BMPs) as silt fences, haybales, infiltration trenches and vegetative swales.

Early coordination with the Georgetown Conservation Commission is recommended and therefore an NOI should be filed with the Commission once detailed design plans have been prepared for the path.

11.4 Natural Heritage and Endangered Species Program (NHESP)

A primary responsibility of the Natural Heritage and Endangered Species Program (NHESP) is the regulatory protection of rare species and their habitats as codified under the Massachusetts Endangered Species Act (MESA) (M.G.L. c.131A) and Wetlands Protection Act (M.G.L c.131s.40).

As a portion of the project corridor occurs within Priority Habitat of Rare Species/Estimated Habitat of Rare Wildlife for the Blandings Turtle, and does not meet the Massachusetts Endangered Species Act (MESA) filing exemptions, the Town must file with the NHESP for Environmental Review. A streamlined joint MESA/WPA review process is now available. When filing the NOI, the Town may now file concurrently under the MESA on the same NOI form and qualify for a 30-day streamlined joint review.

Based on this information, NHESP will likely require incorporation of appropriate and effective mitigation measures into the preliminary project design and call for special construction methods to protect rare species and rare species habitat. Such measures may include seasonal limitations on construction or the installation of wildlife crossing structures, for example. NHESP may also require the Town to conduct additional habitat assessments as part of the review process. Ultimately, NHESP will determine whether a

probable "take" of rare species would occur as defined within the MESA regulations. Projects resulting in a "take" of state-listed rare species *may* be eligible for a Conservation and Management Permit (321 CMR 10.23).

11.5 NPDES General Permit for Discharges from Construction Activities

Phase II of the National Pollutant Discharge Elimination System (NPDES) Stormwater program was published in the Federal Register on October 8, 1999. As outlined in Phase II, any construction activity that will disturb one or more acres and has the potential to have a discharge of stormwater to a water of the United States must either have a permit or have qualified for a waiver. Construction activity refers to actual earth disturbing construction activities and those activities supporting the construction project such as construction materials or equipment storage, maintenance, measures used to control the quality for stormwater associated with construction activity, or other industrial stormwater directly associated with construction activity.

Construction of the path would exceed the 1-acre disturbance threshold set forth under NPDES and therefore require a permit. In order to apply for permit coverage the operator (Town or contractor) will need to submit an NOI, Stormwater Pollution Prevention Plan (SWPPP), and documentation of eligibility to the Environmental Protection Agency (EPA). The SWPPP details construction activities, erosion control measures, and inspection schedules to be implemented during construction to ensure that the construction activities do not have an adverse impact on wetlands and waterways.

The Town of Georgetown has a partially regulated small municipal separate storm sewer system (MS4). Phase II requires operators of regulated small MS4s to implement and enforce a program that will address stormwater runoff from new development and redevelopment projects that disturb greater than one acre and discharge to the municipal system. As part of this minimum control measure, the Planning Board in consultation with other town boards and departments performs a preconstruction review of proposed stormwater management BMPs. Accordingly, this project will be reviewed to determine if the proposed stormwater BMPs are adequate.

12 Cost Estimates

The purpose of this Section is to provide a budgetary estimate of anticipated construction and project development costs for the 4.5-mile shared use path.

12.1 Construction Costs

The preliminary construction cost estimate is based on:

- Bids received from contractors on other MassHighway advertised rail trail projects across the state (as published in the CIM Construction Journal)
- Current MassHighway Weighted Average Bid Prices
- Similar work recently designed by the Consultant

The construction cost assumes:

- Construction of 2-foot shoulder along each side of the rail trail surface
- Use of three laminated timber bridges (See Section XX of this report)
- Installation of a new concrete box culvert at the stream crossing located behind Parker River Landing
- Implementation of recommended intersection improvements (See Section XX of this report)
- Root barrier is needed along *approximately* 10% of the corridor based on lack of existing vegetation within the "rail bed" itself

A contingency cost has been included to account for specific items of work that will be determined during the preliminary design phase. Also, the estimated cost has been escalated using a flat inflation rate (3%) and compounded annually to estimate for expected increases in the cost of construction before the path may actually be built (a five year timeframe was assumed).

Each construction cost estimate has been broken down by major items of work and presented in tabular form. This estimate is based on 2007 construction costs and does not include design costs. A more accurate estimate would need to be developed during the preliminary design stages of the project in order to program the necessary funding.

Figure 29: Construction Cost Estimate

Item	Work Description	Unit	Unit Price	Quantity	Cost
1	Clearing and Grubbing	Acre	\$15,000	0.5	\$7,500
2	Excavation	CY	\$25	14,500	\$362,500
3	Dense Graded Crushed Stone for Shoulders (8")	CY	\$50	4,500	\$225,000
4	Hot Mix Asphalt Surface (3.5") with dense Graded Crushed Stone Base Material (8")	SF	\$4.00	240,000	\$960,000
5	Bridge No. 164 – Laminated Timber Deck	LS	\$30,000	1	\$30,000
6	Bridge No. 165 – Laminated Timber Deck	LS	\$81,000	1	\$15,000
7	Bridge No. 166 – Laminated Timber Deck	LS	\$30,000	1	\$30,000
8	Wooden Boardwalk	LF	\$1,000	500	\$500,000
9	Concrete Box Culvert at Parker River Landing	LS	\$35,000	1	\$35,000
10	Push Button Activiated Pedestrian Signals	LS	\$50,000	2	\$100,000
11	Roadway Intersection Improvements	EA	\$10,000	9	\$90,000
12	Wood Rail Fence	LF	\$40	14,000	\$560,000
13	Root Barrier	LF	\$5	5,400	\$27,000
14	Loam Borrow for Shoulders (4")	CY	\$40	2,300	\$92,000
15	Drainage	LS	\$25,000	1	\$25,000
16	Landscaping & Amenities	LS	\$100,000	1	\$100,000
17	Wetlands Protection	LS	\$135,000	1	\$135,000
Subtotal					\$3,294,000
Contingencies (~ 15%)					\$495,000
Inflation Adjustment (5 years)					\$600,000
Total					\$4,389,000
SAY					\$4.4 M

12.2 Maintenance Costs

Many publicly owned and managed shared use paths incur trail maintenance costs as part of their annual public works or parks & recreation programs and budgets. These entities typically do not keep a separate cost and activity record of the maintenance and management of the path. Therefore it is difficult to identify the costs related to as-needed, seasonal and long-term maintenance activities

The Rails-to-Trails Conservancy (RTC) Northeast Regional Office recently completed a study of various trail maintenance and operations issues for more than 100 open rail-trails in the northeast region of the United States. Their findings have been compiled in a publication entitled "*Rail-Trail Maintenance & Operation: Ensuring the Future of Your*

Trail - A Survey of 100 Rail-Trails." This publication is available on RTC's website [<http://www.railtrails.org/>]. The Town should consult this publication for valuable information on budgetary issues, staffing, equipment and various other needs related to the operation and maintenance of a shared use path (rail trail).

12.3 Project Development Costs

The engineering design and permitting fee is typically between 10% and 20% of the construction cost, with the variation being attributed to the complexity of design issues along the corridor, number of bridges and extent of required permitting. A ballpark design fee for the entire 4.5-mile shared use path is \$550,000.

Assuming a MassHighway design process is followed, a 25% MassHighway Design (preliminary design) is typically about 40% of the total design fee. Therefore, the 25% Design fee for the Georgetown Recreational Path would be approximately \$220,000. This fee estimate is not based on detailed tasks and related work efforts but rather is a ballpark estimate intended for programming purposes.

The 25% Design phase, according to the MassHighway Project Development & Design Guide, includes a complete topographic survey including delineation of environmental resource areas, and preparation of preliminary alignment plans, profiles and typical cross sections for the path. Based on this information, it is possible to determine the extent of actual impacts, if any, that a path would have upon adjacent resource areas and private properties. During the 25% Design phase, the designer will determine which permits and approvals will be required for the project, and will initiate early coordination with those local and state agencies.

13 Project Implementation Plan

As noted previously, the Georgetown Recreational Path is just one portion of the larger Border to Boston Trail proposed through 8 communities.

Recognizing the difficulties faced by a decentralized approach and the importance of the proposed path network, the Massachusetts Highway Department (MassHighway) formed an official Border to Boston Task Force in 2006. The mission of the Task Force was to help guide the implementation process for designing, permitting, and constructing the entire 30-mile shared use path. Taskforce members include MassHighway, FHWA, Essex National Heritage Corridor Commission, National Park Service, Merrimack Valley Planning Commission, Metropolitan Area Planning Council, and representative from each Border to Boston community.

Since its inception, the Task Force has been meeting regularly to identify effective and efficient ways to focus resources on designing and constructing the path network. The Task Force is currently drafting a Preliminary Design Scope of Work. This Scope of Work will assess existing conditions and outline the proposed work and design/construction issues along the project corridor. This Georgetown Report will likely be incorporated into this Scope of Work. The Preliminary Design will be funded using an \$800,000 congressional earmark and the contract will be administered under the auspices of MassHighway. This funding was earmarked as High Priority Project #843 in the 2005 SAFETEA-LU legislation.

At the current time, the activities and status of the right-of-way negotiations varies across each community. It is the responsibility of each Town to secure rights to their respective section of the corridor.

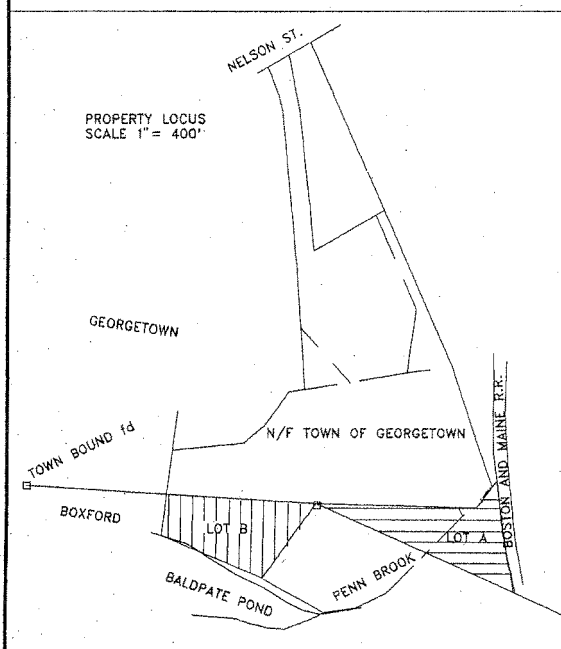
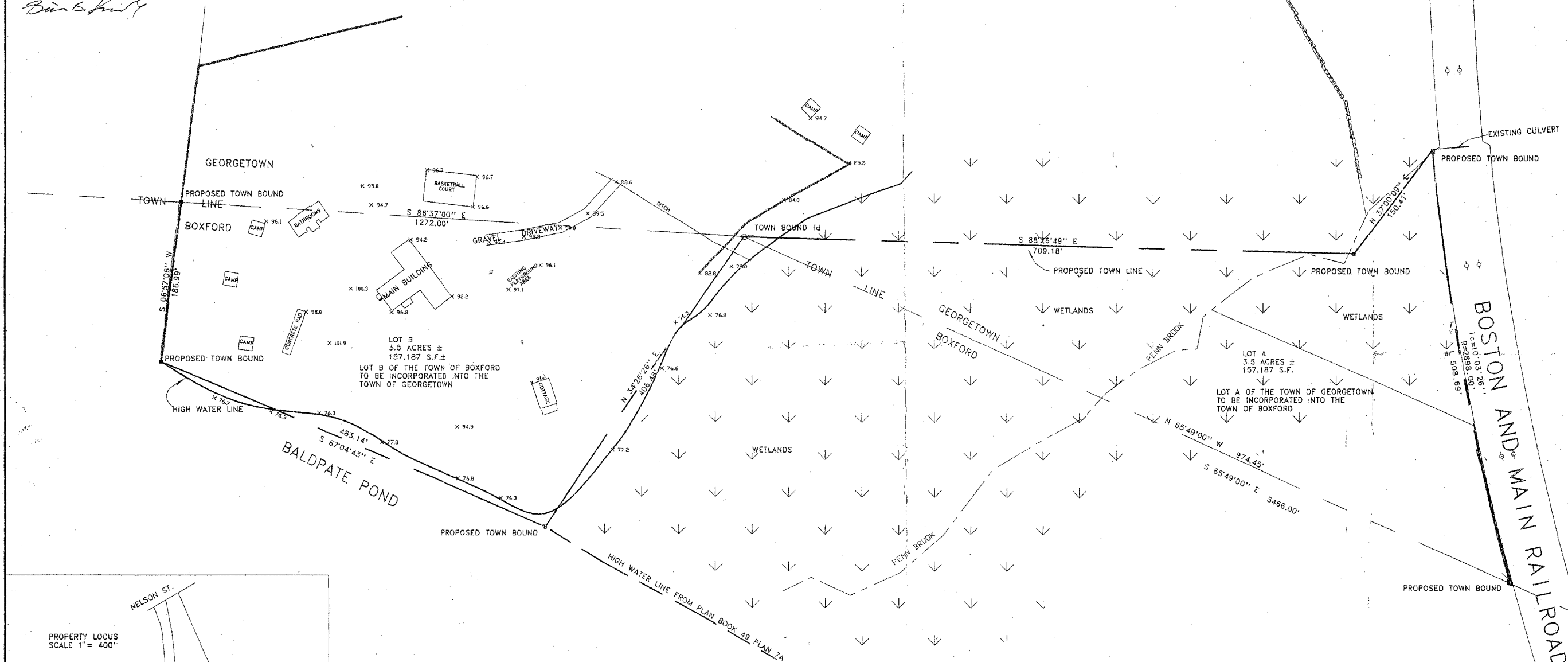
Final design and construction funding will be sought from a variety of federal and state sources. It is unknown at this time if the next phase of the project will need to be phased. Project phasing can occur both from a linear perspective (town by town effort) as well as from a project development perspective (25% design and then proceed to final design at a later time). Certain portions of the corridor in Newburyport and Salisbury are already in the design phase and therefore these path sections will likely proceed independently from the overall project. It is anticipated that the decision to phase this project will primarily depend on estimated construction and project development costs.

Ultimately, each community will be responsible for operating and maintaining their portion of the Border to Boston Trail post-construction.

Appendix A – Revised Town Boundary Plan

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS.

Brian S. Knowles



PLAN REFERENCE:
PLAN BOOK 49 PLAN 7A
PLAN BOOK 66 PLAN 76
BOSTON MAINE R.R. V.7.3/20

LEGEND

- PROPOSED TOWN BOUND
- fd — FOUND
- STONE WALL
- EXISTING TOWN LINE
- W — WETLAND
- N/F — NOW OR FORMERLY
- APPROXIMATE HIGHWATER LINE
- UTILITY POLE
- TOWN MONUMENT
- PENN BROOK
- RECONFIGURED TOWN LINE
- DITCH
- x 88.6 — SPOT GRADE



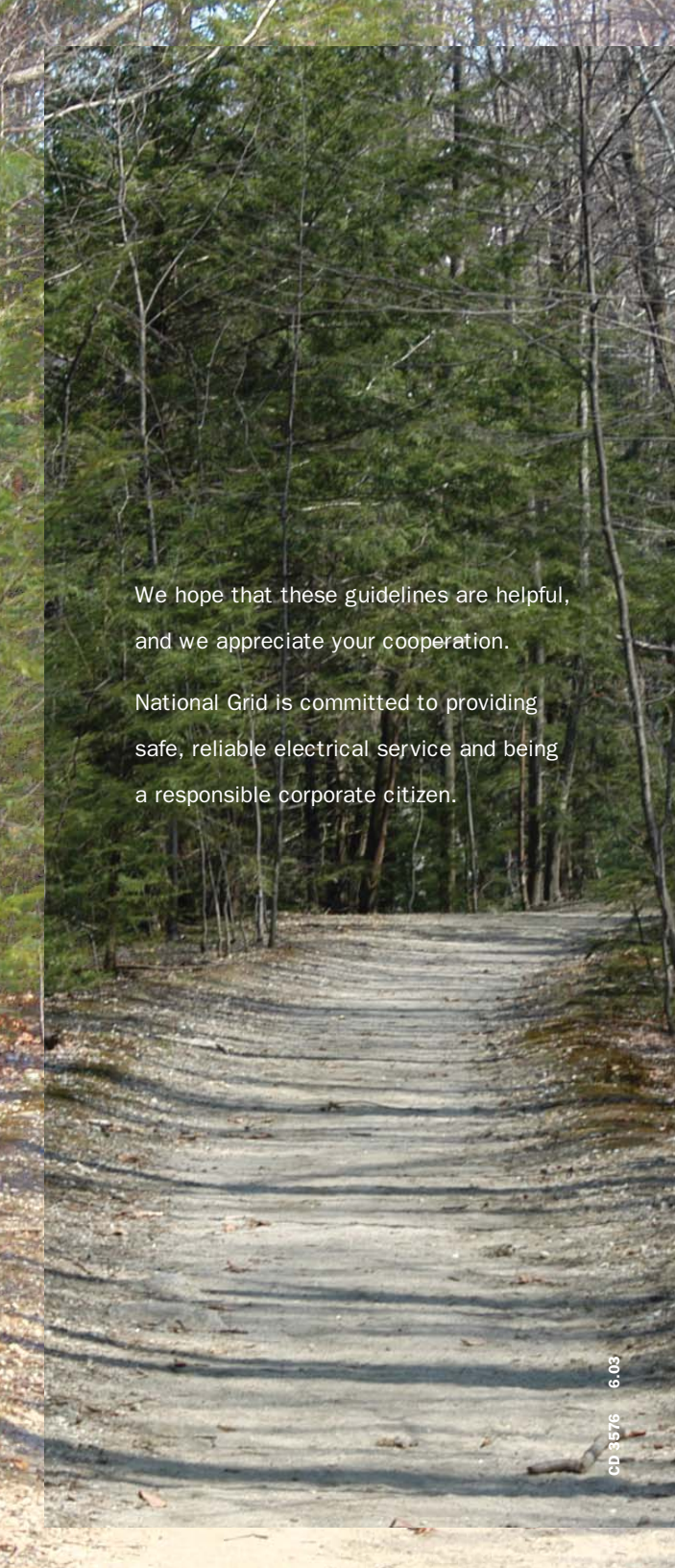
Brian S. Knowles 10/12/99
MASSACHUSETTS PROFESSIONAL LAND SURVEYOR #39689

PLAN OF LAND
SHOWING
THE RECONFIGURATION OF
TOWN BOUNDARY LINES BETWEEN
THE TOWNS OF BOXFORD AND GEORGETOWN
MASSACHUSETTS

PREPARED FOR
CAMP DENISON COMMITTEE
1 LIBRARY STREET
GEORGETOWN, MA 01835

BY
APPIE ASSOCIATES, INC.
74 STOREY AVENUE
NEWBURYPORT, MASSACHUSETTS
(978) 465-0333
DATE: 9/8/99 SCALE: 1"=60'
DRAWN BY: PK CHECKED BY: WGP
DWG No. PL-99-27 REV.: 9/30/99

Appendix B - National Grid Recreational Trail Policy



We hope that these guidelines are helpful,
and we appreciate your cooperation.

National Grid is committed to providing
safe, reliable electrical service and being
a responsible corporate citizen.

CD 3576 6.03

nationalgrid

25 Research Drive
Westborough, MA 01582



Recreational Trails Policy

Information for Towns and Organizations
About Recreational Trails in the
Utility Corridors of National Grid.

nationalgrid

National Grid operates a network of high and low voltage electrical transmission lines, and gas pipelines, throughout New England and New York.

These lines and utility corridors (also commonly referred to as rights-of-way) are a critical part of the region's electrical grid. To operate the grid in a safe and reliable manner, National Grid needs to manage its rights-of-way.

National Grid limits activities within the rights-of-way in order to protect the public and avoid damage to the electrical system.

Although rights-of-way are sometimes viewed as public lands, they are actually the private property of National Grid. National Grid evaluates proposals to use its utility corridors for recreational trails on a case-by-case basis.

The following guidelines will assist you in submitting a proposal for a recreational trail on a National Grid right-of-way.

WHAT'S ALLOWED

Limited activities that do not interfere with the safe operation, maintenance and future use of the right-of-way may be permissible. To the extent that a proposed recreational trail can coexist on the right-of-way, we will consider it.

Typically walking, jogging, bicycling and similar uses may be acceptable. **No motorized vehicles will be allowed**, except for wheelchairs or other devices which allow handicapped people access to the recreational trail.

For safety reasons or to minimize the risk of damage that could cause power outages, we sometimes must decline requests for recreational trails.

HOW DOES NATIONAL GRID EVALUATE A REQUEST FOR A PROPOSED RECREATION TRAIL?

A number of factors are considered when evaluating a proposal for a recreational trail, including:

- ◆ **Safety** - Federal and state law governs how far people and equipment must remain away from utility wires. A proposed activity must meet all safety code requirements and not create a hazard to National Grid workers or the public in order to be considered.
- ◆ **Protection of Utility Structures and Facilities** - Public activities on our rights-of-way cannot create a risk of damage to the utility structures or wires. For example, they cannot destabilize the soil surrounding the structures or be located too close to the structures, including guy wires. The activities also cannot preclude the future construction or reconstruction of our utility lines within the right-of-way.
- ◆ **Access** - Access to and along the right-of-way must be maintained for maintenance work and future construction or reconstruction of the lines.
- ◆ **Environmental Impact** - National Grid is committed to protecting the environment and being a good steward of the lands it owns. Any proposal for a recreational trail must address how the requester plans to safeguard natural resources, collect and dispose of trash, and prevent or mitigate erosion control.

WRITTEN PERMISSION IS REQUIRED

In order to install, maintain, and operate electrical lines safely and reliably, National Grid must restrict activities within rights-of-way. Typically, the actual right-of-way extends a considerable distance beyond the company's actual facilities.

If the company agrees to allow specific activities within a right-of-way, a written agreement detailing the work to be done must be executed by the company and the applicant. The written agreement explains the specific activities that are allowed.

No activities on a right-of-way are allowed without written permission from the company.

APPLICATION AND REVIEW PROCESS

An application is required of anyone requesting permission to conduct activities within the right-of-way. All applications must be in writing and include:

- ◆ **A cover letter with the following:**
 - Name of organization proposing activities within the right-of-way
 - Location (town/city and state) of the proposed activity
 - A list and description of the proposed activities within the right-of-way
- ◆ **Complete project details with specifications including:**
 - Scope of work
 - Project schedule
 - A full set of plans
 - Approved funding commitment for construction and maintenance
 - Applicant contact information
 - Entity that would execute the agreement
- ◆ **Send two copies of the application materials to:**

**Property Assets and Real Estate
National Grid
25 Research Drive
Westborough, MA 01582**

We will carefully evaluate the proposal and provide the applicant with a written answer.

TO CONTACT US

If you have additional questions, please call us at 508.389.9119

Appendix C - Agency Correspondence



Commonwealth of Massachusetts

Division of Fisheries & Wildlife

MassWildlife

Wayne F. MacCallum, Director

March 7, 2007

Jennifer Shemowat
Fay, Spofford & Thorndike
5 Burlington Woods
Burlington, MA 01803

Re: Georgetown Recreational Path, B & M Rail Road Corridor
Georgetown, MA
NHESP Tracking No. 07-21568

RECEIVED, AM.

MAR 15 '07

F.S.&T.

Dear Ms. Shemowat:

Thank you for contacting the Natural Heritage and Endangered Species Program ("NHESP") of the MA Division of Fisheries & Wildlife for information regarding state-listed rare species in the vicinity of the above referenced site. Based off of the information provided, this project site, or a portion thereof, is located **within** *Priority Habitat 1222* (PH 1222) and *Estimated Habitat 819* (EH 819) as indicated in the *Massachusetts Natural Heritage Atlas* (12th Edition). Our database indicates that the following state-listed rare species have been found in the vicinity of the site:

<u>Scientific name</u>	<u>Common Name</u>	<u>Taxonomic Group</u>	<u>State Status</u>
<i>Emydoidea blandingii</i>	Blanding's Turtle	Reptile	Threatened

The species listed above are protected under the Massachusetts Endangered Species Act (MESA) (M.G.L. c. 131A) and its implementing regulations (321 CMR 10.00). State-listed wildlife are also protected under the state's Wetlands Protection Act (WPA) (M.G.L. c. 131, s. 40) and its implementing regulations (310 CMR 10.00). Fact sheets for most state-listed rare species can be found on our website (www.nhesp.org).

Please note that projects and activities located within Priority and/or Estimated Habitat must be reviewed by the NHESP for compliance with the state-listed rare species protection provisions of MESA (321 CMR 10.00) and/or the WPA (310 CMR 10.00). If the project site is within Estimated Habitat and a Notice of Intent (NOI) is required, then a copy of the NOI must be submitted to the NHESP so that it is received at the same time as the local conservation commission. If the proposed project is located within Priority Habitat and is not exempt from review (see 321 CMR 10.14), then project plans, a fee, and other required materials must be sent to NHESP Environmental Review to determine whether a probable "take" under the MA Endangered Species Act would occur (321 CMR 10.18). Please note that all proposed and anticipated development must be disclosed, as MESA does not allow project segmentation (321 CMR 10.16). For a MESA filing checklist and additional information please see our website: www.nhesp.org ("Regulatory Review" tab). On a case by case basis, field surveys and habitat assessments may be required as part of the MESA review process in order to locate rare species on the project site, and to determine their patterns of distribution and habitat use.

A streamlined joint MESA/WPA review process is now available. When filing a Notice of Intent (NOI), the applicant may now file concurrently under the MESA on the same NOI form and qualify for a 30-day streamlined joint review. For a copy of the revised NOI form, please visit the MA Department of Environmental Protection's website: <http://www.mass.gov/dep/water/approvals/wpaform3.doc>.

www.masswildlife.org

Division of Fisheries and Wildlife

Field Headquarters, North Drive, Westborough, MA 01581 (508) 389-6300 Fax (508) 389-7891

An Agency of the Department of Fish and Game

We recommend that rare species habitat concerns be addressed during the project design phase prior to submission of a formal MESA filing, as avoidance and minimization of impacts to rare species and their habitats is likely to expedite endangered species regulatory review.

MA Endangered Species Act (M.G.L. c. 131A)

If NHESP determines that the proposed project would “take” a rare species, then it may be possible to redesign the project to avoid a “take.” If such revisions are not possible, the applicant should note that projects resulting in the “take” of state-protected wildlife may only be permitted if they meet the performance standards for a “Conservation and Management Permit” under MESA (321 CMR 10.23). Please note that projects resulting in a “take” may require submission of an Environmental Notification Form, pursuant to the MA Environmental Policy Act regulations (301 CMR 11.00).

Wetlands Protection Act

If the NHESP determines that the proposed project will adversely affect the actual Resource Area habitat of state-protected wildlife, than the proposed project may not be permitted (310 CMR 10.37, 10.58(4)(b) & 10.59). In such a case, the project proponent may request a consultation with the NHESP to discuss potential project design modifications that would avoid adverse effects to rare wildlife habitat.

This evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. Should your site plans change, or new rare species information become available, this evaluation may be reconsidered. If you have any questions regarding this review please call Rebecca Skowron, Endangered Species Review Assistant, at (508) 839-6343.

Sincerely,

A handwritten signature in black ink, reading "Thomas W. French". The signature is fluid and cursive, with the first name "Thomas" and last name "French" clearly legible.

Thomas W. French, Ph.D.
Assistant Director



United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Field Office
70 Commercial Street, Suite 300
Concord, New Hampshire 03301-5087



March 1, 2007

Reference:	<u>Project</u>	<u>Location</u>
	Shared use path	Georgetown, MA

Jennifer Shemowat
Fay, Spofford & Thorndike
15 Broad St.
Boston, MA 02109

Dear Ms. Shemowat:

This responds to your recent correspondence requesting information on the presence of federally-listed and/or proposed endangered or threatened species in relation to the proposed activity(ies) referenced above.

Based on information currently available to us, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

This concludes our review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your coordination. Please contact us at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Anthony P. Tur
Endangered Species Specialist
New England Field Office

Appendix D – Railroad Avenue Subdivision Plans

Planner's Copy

DEFINITIVE SUBDIVISION PLAN RAILROAD AVENUE (DESIGNED AS A LANE PER SEC. 365-39)

PROJECT DATA:

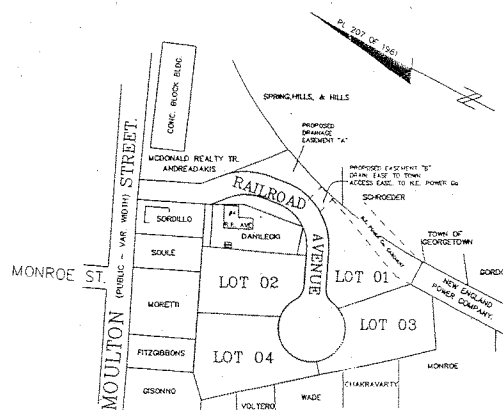
TOTAL AREA: 2.852 ACRES
ROAD LENGTH: 453 L.F.
No. OF LOTS: FOUR (4)
WATER SUPPLY: MUNICIPAL
SEWAGE DISPOSAL: ON SITE SEPTIC
REF. MERIDIAN: PLAN 207 OF 1961
VERTICAL DATUM: U.S.G.S. - NGVD 1929

ZONING DATA

ZONING DISTRICT: RA
MINIMUM LOT SIZE: 15,000 S.F.
MINIMUM FRONTAGE: 125 FEET
MINIMUM DEPTH: 100 FEET
MINIMUM C.B.A.: 15,000 S.F.
FRONT YARD MIN.: 20 FEET
REAR YARD MIN.: 10 FEET
SIDE YARD MIN.: 15 FEET

LOT #	AREA	FRONTAGE	DEPTH	C.B.A.	ACRES
1	25,605 S.F.	381.69'	125'-4"	25,605 S.F.	0.588 AC
2	20,105 S.F.	125.50'	150'-4"	20,105 S.F.	0.461 AC
3	21,367 S.F.	125.50'	140'-4"	21,367 S.F.	0.490 AC
4	23,273 S.F.	125.50'	150'-4"	23,273 S.F.	0.534 AC
EXISTING DAHLECK	10,567 S.F.	165.50'	75'-4"	10,567 S.F.	0.252 AC
PROPOSED DAHLECK	15,253 S.F.	246.98'	100'-4"	15,253 S.F.	0.350 AC

FRONT, REAR AND SIDE YARDS WILL VARY FOR EACH LOT BUT WILL NOT BE LESS THAN THE MINIMUM REQUIRED.



KEY PLAN

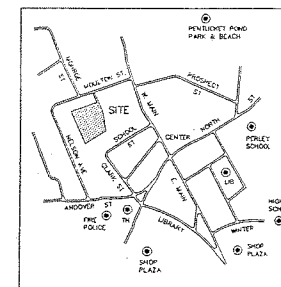
SCALE 1" = 100'

MAP 60
LOTS 113 & 115
TOTAL AREA: 124,215 S.F. ±
2.852 AC ±

DEFINITIVE PLAN FILED: _____
DEF. HEARING HELD: _____
DEF. PLAN APPROVED: _____
DEF. PLAN ENDORSED: _____

INDEX

SHEET 1 COVER SHEET
SHEET 2 PERIMETER PLAN
SHEET 3 EXISTING CONDITIONS
SHEET 4 PLAN OF LOTS 1-4, PARCELS A,B,C
SHEET 5 TOPOGRAPHIC SITE PLAN (PROPOSED)
SHEET 6 ROADWAY PROFILE & DRAIN DATA
SHEET 7 CONSTRUCTION DETAILS/NOTES
SHEET 8 CONSTRUCTION DETAILS



LOCUS MAP
SCALE 1"=600'

I, _____ OF THE TOWN CLERK'S OFFICE, HEREBY CERTIFY THAT AS OF THIS DATE, NO APPEAL HAS BEEN FILED IN THE OFFICE OF THE TOWN CLERK, GEORGETOWN, MASSACHUSETTS, AND THAT THE 20 DAY STATUTORY APPEAL PERIOD HAS ELAPSED.

LOCUS DEED: BK 17368 PG 225

DEFINITIVE SUBDIVISION PLAN OF LAND LOCATED IN GEORGETOWN, MASSACHUSETTS

COVER SHEET

OWNER & APPLICANT PRISM REALTY, L.L.C. P.O. BOX 42 GROVELAND, MA 01834		SHEET No. 1 OF 8	
DRAWN: RMG	DES: RMG/MJC/WGH	SCALE: AS NOTED	REVISION: BY
CHECKED: WGH/MJC	DATE: 18-JAN-05		20-JUNE-05 RMG
PROFESSIONAL LAND SERVICES, L.C. 1148 MAIN STREET HAVERHILL, MA 01830 TEL: (978) 373-9950 FAX: (978) 373-4190		07-AUG-05 WGH	
JOB No. 1270		DWG FILE /RR-DEF/RR-D1	

TOWN OF GEORGETOWN TOWN CLERK _____ DATE _____

CERTIFICATIONS:

I HEREBY CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS.

I FURTHER CERTIFY THAT ALL SURVEYING CONFORMS TO THE TECHNICAL STANDARDS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING.

ROBERT M. GRASSO, P.L.S. 40215

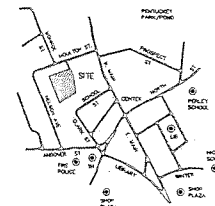
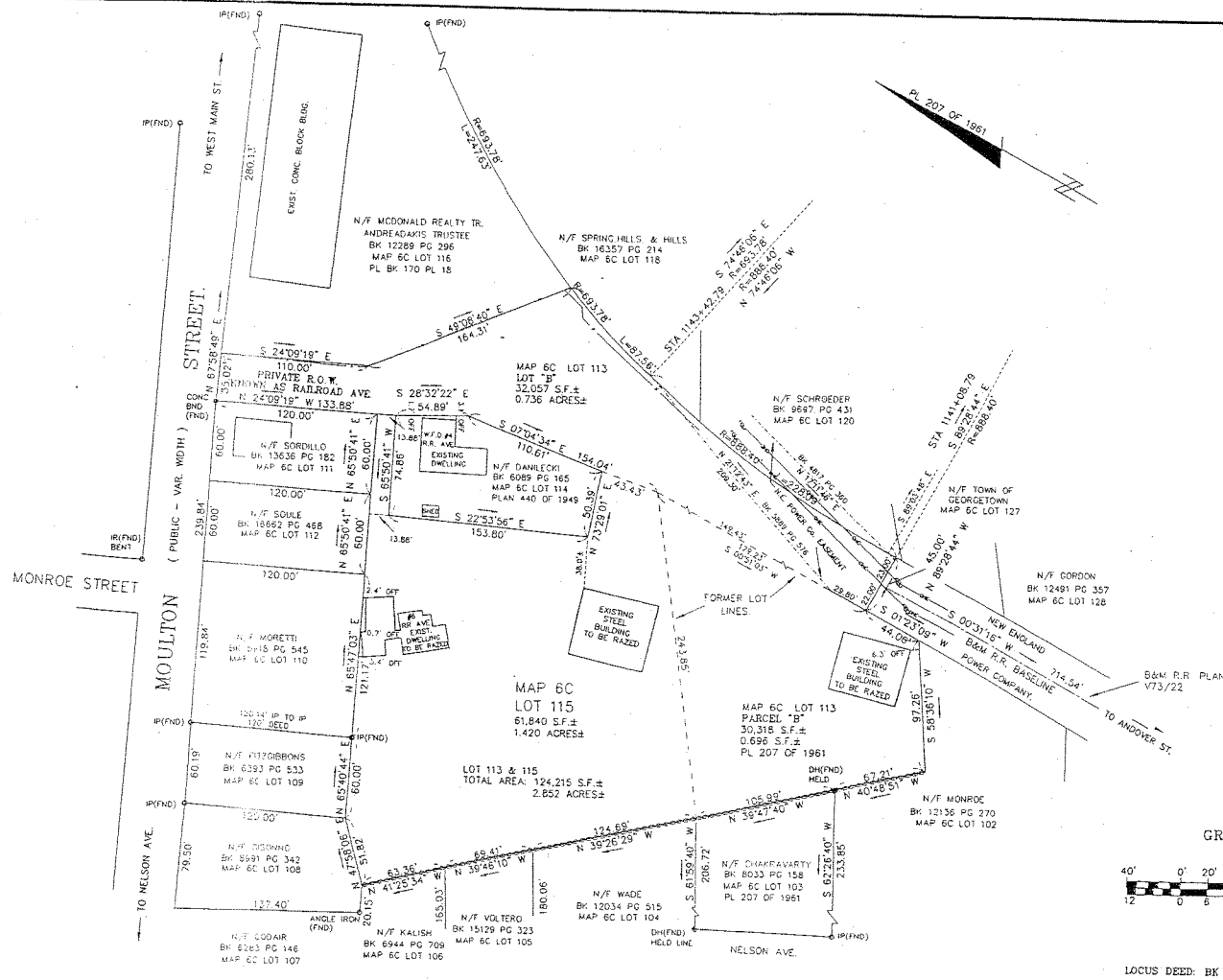
WAIVER REQUESTS:

THE FOLLOWING WAIVERS FROM THE GEORGETOWN SUBDIVISION REGULATIONS ARE HEREBY REQUESTED:

SECTION	REGULATION	REQUESTED	GRANTED
362-35.B	TITLE BLOCK LAYOUT	AS SHOWN HEREON	
365-35.C.3	STREET NAME IN PENDL	STREET NAME IN JNK	
365-35.7	BOUNDS AT OUTER PLAN BOUNDARY	1/2" IRON RODS AT LOT CORNERS	
365-62.B	LOT CORNER MONUMENTS	1/2" IRON RODS 2'-6" LONG AT ALL LOT CORNERS	
365-35.C.9	365-50.K	VERTICAL GRANITE CURB	
365-39.C		MIN. PL RADIUS 6' INT 35' -- EXIST PL INT RADIUS 0' RAILROAD AVE PRE-EXISTS AS PRIVATE ROW SERVING THREE LOTS.	
365-39.C		MIN. ROW WIDTH 40' -- EXIST ROW WIDTH 35' TO STA 1+21' RAILROAD AVE PRE-EXISTS AS PRIVATE ROW SERVING THREE LOTS.	

provide 20' curve

FOR REGISTRY USE ONLY:	PLANNING BOARD USE:
TOWN OF GEORGETOWN PLANNING BOARD APPROVAL REQUIRED:	ASSESSOR'S DATA: GEORGETOWN MAP No. 60 BLOCK No. NA LOT No. 113 & 115 DATE

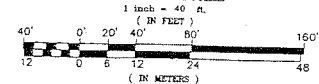


LOCUS MAP
1"=800'±

REFERENCE PLANS:

PLAN 595 OF 1961
PLAN 343 OF 1972
PLAN 472 OF 1950
B&M R.R. BASELINE PLAN V73/22
PLAN 207 OF 1961
PLAN 440 OF 1949
PLAN 056 OF 1952
PLAN BK 258 PL 76
PLAN BK 230 PL 41
PLAN BK 259 PL 56
PLAN BK 252 PL 72
PLAN BK 117 PL 61
PLAN BK 170 PL 18
PLAN BK 265 PL 54 (ECLO #3241)

GRAPHIC SCALE



LOCUS DEED: BK 17368 PG 225

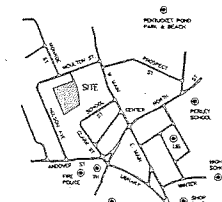
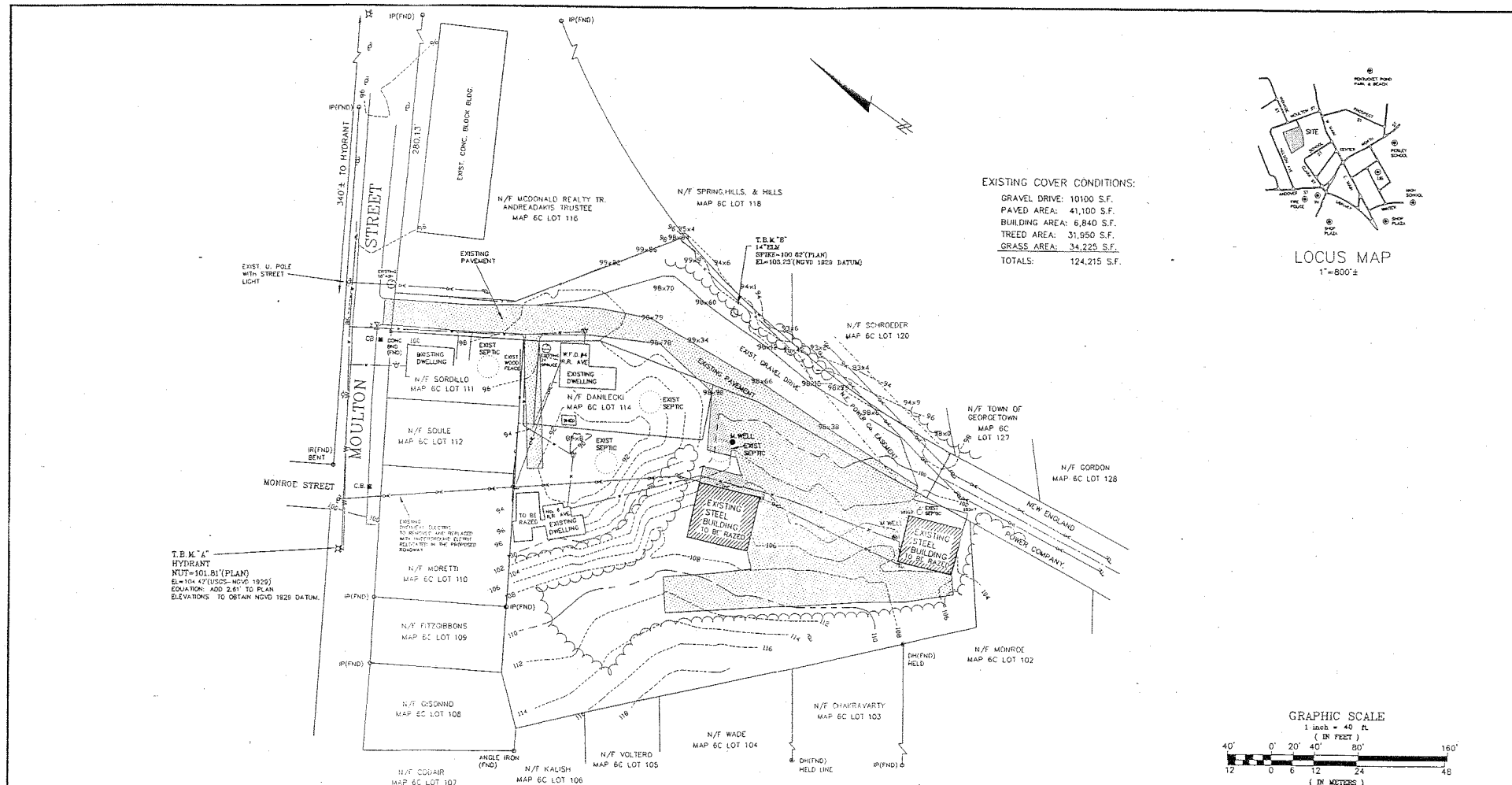
DEFINITIVE SUBDIVISION PLAN
OF LAND LOCATED IN
GEORGETOWN, MASSACHUSETTS

OWNER & APPLICANT PRISM REALTY, L.L.C. P.O. BOX 42 GEORGETOWN, MA 01834		PERIMETER PLAN	
DRAWN: WGH	CALC'D: WGH	SCALE: 1"=40'	SHEET No. 2 OF 8
CHECKED: RMG	DATE: 18-JAN-05	REVISION: BY	20-JUNE-05 RMG
PROFESSIONAL LAND SERVICES, L.C. 1148 MAIN STREET HAVERHILL, MA 01830 TEL (978) 373-9950 FAX (978) 373-4190		7-AUG-05 WGH	



ROBERT M. GRASSO, P.L.S. #40215 DATE

FOR REGISTRY USE ONLY	PLANNING BOARD USE	ZONING DIMENSIONAL DATA	ASSESSOR'S DATA	GENERAL NOTES	CERTIFICATIONS
	TOWN OF GEORGETOWN PLANNING BOARD APPROVAL REQUIRED	ZONING DISTRICT RA MINIMUM AREA REQ'D: 15,000 MINIMUM FRONTAGE REQ'D: 125' MINIMUM DEPTH REQ'D: 100' MINIMUM CBA REQ'D: 15,000 MINIMUM YARD REQ'D: FRONT: 20' SIDE: 15' REAR: 10'	MAP No. 6C PARCEL No. 113 & 115	1: 2:	I HEREBY CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS. I FURTHER CERTIFY THAT ALL SURVEYING CONFORMS TO THE TECHNICAL STANDARDS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING
DATE:					



LOCUS MAP
1"=600'

FOR REGISTRY USE ONLY	PLANNING BOARD USE	ZONING DIMENSIONAL DATA	ASSESSOR'S DATA	GENERAL NOTES	CERTIFICATIONS
TOWN OF GEORGETOWN PLANNING BOARD APPROVAL REQUIRED DATE:	ZONING DISTRICT E2 MINIMUM AREA REQ'D: 15,000 MINIMUM FRONTAGE REQ'D: 125' MINIMUM DEPTH REQ'D: 100' MINIMUM C.B.A. REQ'D: 15,000 MINIMUM YARD REQ'D: FRONT: 20' SIDE: 15' REAR: 10'	MAP No. 6C PARCEL No. 113 & 115	1: ALL EXISTING STRUCTURES LOCATED ON MAP 6C LOTS 113 & 115 SHALL BE RAZED. 2: THE DEVELOPER WILL BE RESPONSIBLE FOR MAINTAINING ALL UTILITY SERVICES AND ACCESS TO THE DANILECKI AND SORDILLO RESIDENCE, DURING CONSTRUCTION.	I HEREBY CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS. I FURTHER CERTIFY THAT ALL SURVEYING CONFORMS TO THE TECHNICAL STANDARDS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING.	OWNER & APPLICANT PRISM REALTY, L.L.C. P.O. BOX 42 GROVELAND, MA 01834 DRAWN: WGH DESIGNED: WGH CHECKED: MJC, WGH DATE: 18-JAN-05 SCALE: 1"=40' SHEET No. 3 OF 8 PROFESSIONAL LAND SERVICES, L.C. 1148 MAIN STREET HAVERHILL, MA 01830 TEL: (978) 373-9850 FAX: (978) 373-4190

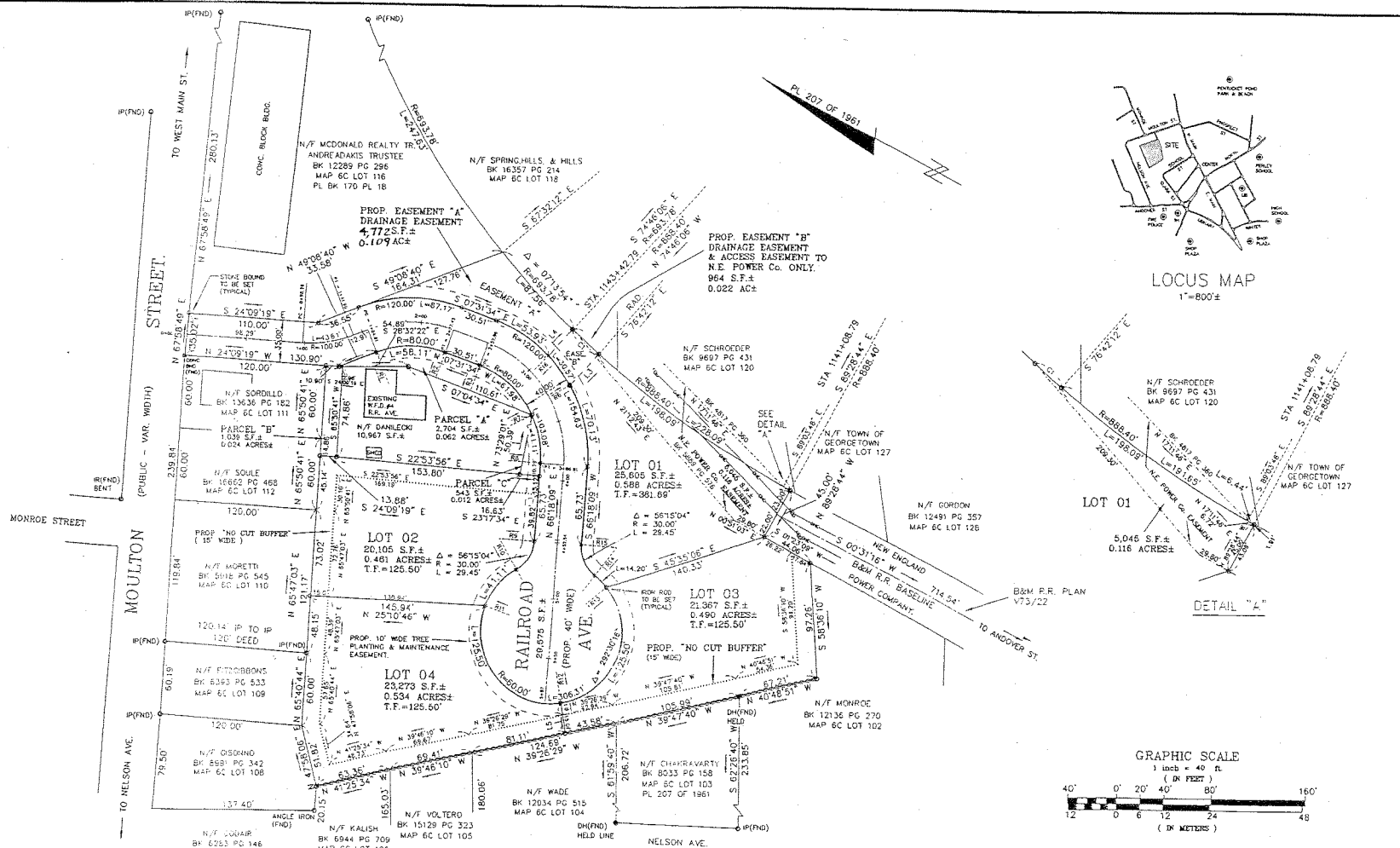
L1	S	74°46'06"	E	29.93'
L2	S	74°46'06"	E	30.25'
L3	S	74°46'06"	E	35.88'
L4	S	74°46'06"	E	29.93'
L5	S	52°49'27"	W	25.25'
L6	S	52°49'27"	W	10.24'

C1 $\Delta = 02^{\circ}28'42''$
 $R = 888.40'$
 $L = 30.01'$

R1 - S 40°51'19" W
R2 - N 82°28'26" E
R3 - S 82°28'26" W
R4 - S 78°56'52" E
R5 - S 71°46'51" E
R6 - S 57°11'01" E
R7 - S 53°08'21" E
R8 - S 23°41'51" E
R9 - N 23°41'51" W
R10 - S 32°33'13" W
R11 - N 06°42'16" W
R12 - S 53°27'07" W
R13 - S 66°23'31" E
R14 - S 79°56'56" E
R15 - N 23°41'51" W
R16 - N 71°46'51" W

T.F. = TOTAL FRONTAGE

PLAN 585 OF 1961
PLAN 343 OF 1972
PLAN 472 OF 1950
B&W R.R. BASELINE PLAN V73/22
PLAN 207 OF 1961
PLAN 440 OF 1949
PLAN 056 OF 1952
PLAN BK 258 PL 76
PLAN BK 230 PL 41
PLAN BK 259 PL 56
PLAN BK 252 PL 72
PLAN BK 117 PL 61
PLAN BK 170 PL 18
PLAN BK 265 PL 94 (ECLO #3241)




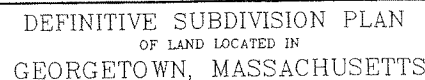
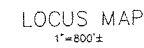
LOCUS DEED: BK 17368 PG 225

DEFINITIVE SUBDIVISION PLAN
OF LAND LOCATED IN
GEORGETOWN, MASSACHUSETTS

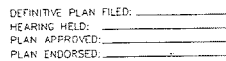
PLAN OF LOTS 1-4
PARCELS A,B,C

SHEET No		4 OF 8
REVISION :		BY
20-JUNE-05		RM
7-AUG-05		WG



FOR REGISTRY USE ONLY:	PLANNING BOARD USE	ZONING DIMENSIONAL DATA	ASSESSOR'S DATA	GENERAL NOTES	CERTIFICATIONS
	TOWN OF GEORGETOWN PLANNING BOARD APPROVAL REQUIRED DATE: _____	ZONING DISTRICT: R-4 MINIMUM AREA REQ'D: 15,000 MINIMUM FRONTAGE REQ'D: 125' MINIMUM DEPTH REQ'D: 100' MINIMUM CBA REQ'D: 15,000 MINIMUM YARD REQ'D: FRONT: 20' SIDE: 15' REAR: 10'	MAP No. _____ 6C PARCEL No. _____ 113 & 115 _____ _____ _____	1. PARCELS "A", "B" AND "C" ARE NOT TO BE CONSIDERED AS SEPARATE BUILDING LOTS AND ARE TO BE CONVEYED TO AND COMBINED WITH OTHER LAND OF DANIELUCHI FOR A TOTAL AREA OF 15,253 S.F. ±. IF = 236.08' IF PARCELS ARE NOT ACCEPTED BY DANIELUCHI THEN PARCEL A WILL BE MADE PART OF R.O.W., PARCEL B & C WILL BE MADE PART OF LOT 2. 2. ALL PROPOSED DRAINAGE EASEMENTS SHALL BE RETAINED BY THE HOMEOWNERS ASSOC. 3. PROPOSED ACCESS EASEMENT "B" SHALL BE GRANTED TO N.E. POWER CO. ONLY.	I HEREBY CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE PLANNING BOARD OF GEORGETOWN. I FURTHER CERTIFY THAT ALL SURVEYING CONFORMS TO THE TECHNICAL STANDARDS OF THE AMERICAN CONGRESS ON SURVEYING.  <i>Rob M. Grasso</i> ROBERT M. GRASSO P.L.S.



OWNER & APPLICANT PRISM REALTY, L.L.C. P.O. BOX 42 GROVELAND, MA 01834		TOPOGRAPHIC SITE PLAN (PROPOSED)	
DRAWN	RMG	DATE	18-JAN-05
CHECKED	MJC RMG	SCALE	1" = 40'
PROFESSIONAL LAND SERVICES, L.C. 1146 MAIN STREET HAVERHILL, MA 01830 TEL. (978) 373-9650 FAX (978) 373-4190		SHEET No 5 OF 8 REVISION: BY 20-JUNE-05 RMG 7-AUG-05 RMG	



I, _____ OF THE TOWN CLERK'S
OFFICE, HEREBY CERTIFY THAT AS OF THIS DATE, NO
APPEAL HAS BEEN FILED IN THE OFFICE OF THE TOWN
CLERK, GEORGETOWN, MASSACHUSETTS, AND THAT THE 20
DAY STATUTORY APPEAL PERIOD HAS ELAPSED.

TOWN OF GEORGETOWN TOWN CLERK		DATE	
FOR REGISTRY USE ONLY	PLANNING BOARD USE	ZONING DIMENSIONAL DATA	ASSESSORS DATA
TOWN OF GEORGETOWN PLANNING BOARD APPROVAL REQUIRED	ZONING DISTRICT: RA MINIMUM AREA REQ'D: 15,000 MINIMUM FRONT YARD REQ'D: 125' MINIMUM DEPTH REQ'D: 100' MINIMUM CBA REQ'D: 15,000 MINIMUM YARD REQ'D: FRONT: 25' SIDE: 15' REAR: 10'	MAP No. 6C PARCEL No. 113 & 115	GENERAL NOTES 1. PARCELS "A", "B" AND "C" ARE NOT TO BE CONSIDERED AS SEPARATE BUILDING LOTS AND ARE TO BE CONVEYED TO AND COMBINED WITH OTHER LAND OF DANIELKO FOR A TOTAL AREA OF 15.233 SF ±. OF 236.00' IF PARCELS ARE NOT TO BE ACCEPTED BY DANIELKO, THEN PARCEL "A" WILL BE MADE PART OF THE R.O.W. AND PARCELS "B" AND "C" WILL BE MADE PART OF LOT 2. 2. ALL PROPOSED DRAINAGE EASEMENTS SHALL BE OBTAINED BY THE HOMEOWNERS ASSOC. 3. THE DEVELOPER WILL BE RESPONSIBLE FOR MAINTAINING ALL UTILITY SERVICES AND ACCESS TO THE DANIELKO AND SORDILLO RESIDENCE, DURING CONSTRUCTION. 4. LOCATION OF STREET LIGHTS TO BE FIELD DETERMINED BY THE GEORGETOWN ELECTRIC COMPANY, TWO LOCATIONS PROPOSED. 5. FIRE ALARM BOX MAY BE REQUIRED BY THE GEORGETOWN FIRE DEPARTMENT, EXACT LOCATION TO BE DETERMINED IN THE FIELD.
DATE: _____			CERTIFICATIONS I HEREBY CERTIFY THAT THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTRY OF DEEDS. I FURTHER CERTIFY THAT ALL SURVEYING CONFORMS TO THE TECHNICAL STANDARDS OF THE AMERICAN CONGRESS ON SURVEYING AND MAPPING. <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Robert M. Grasso, P.L.S. </div> <div style="text-align: center;">  John W. Hargreaves, Jr., P.L.S. </div> </div>

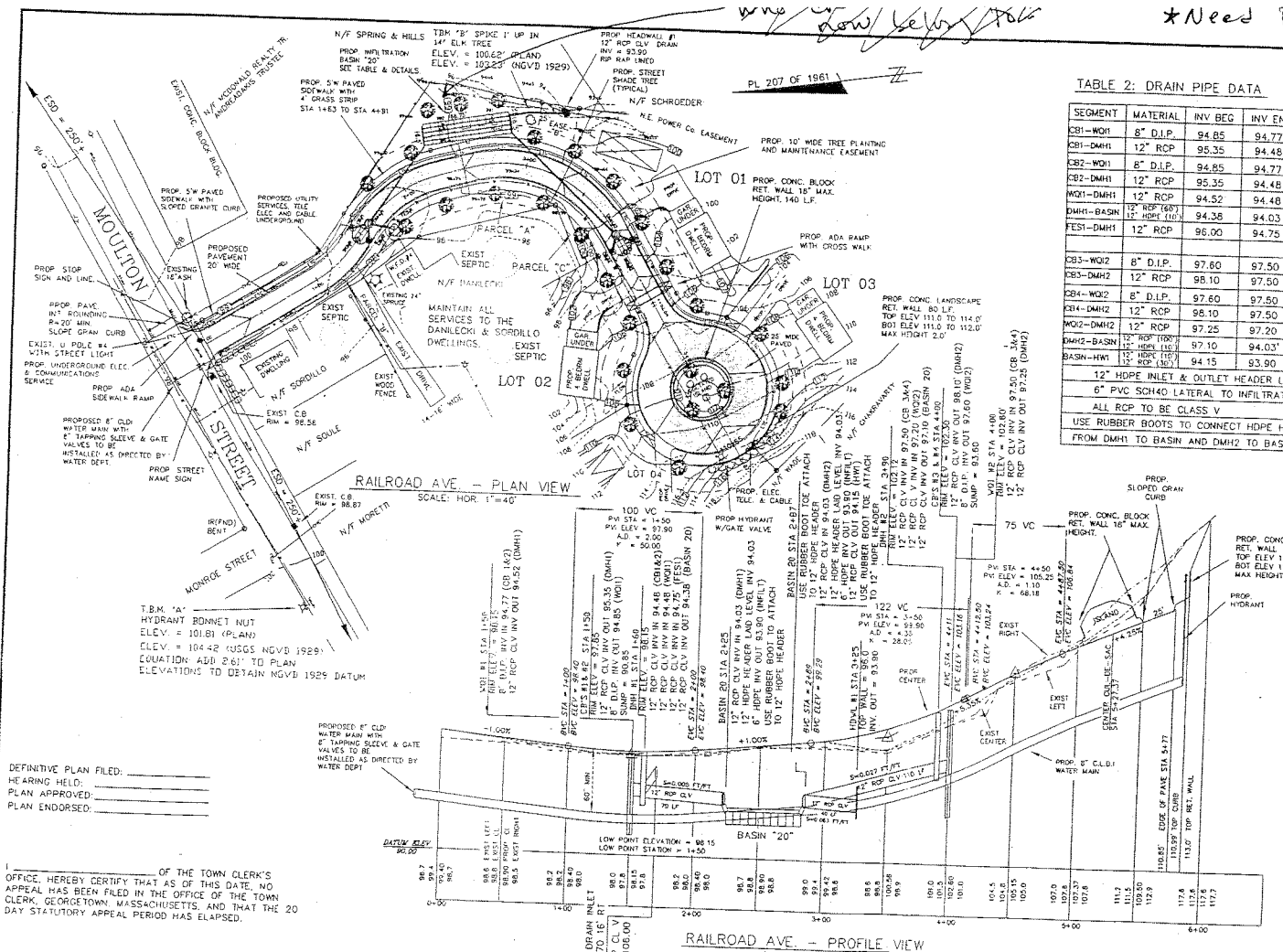


TABLE 2: DRAIN PIPE DATA

SEGMENT	MATERIAL	INV BEG	INV END	LENGTH	SLOPE
CB1-WO1	8" D.I.P.	94.85	94.77	8'	0.010
CB1-DH1	12" RCP	95.35	94.48	8'	0.1088
CB2-WO1	8" D.I.P.	94.85	94.77	8'	0.010
CB2-DH1	12" RCP	95.35	94.48	8'	0.1088
WO1-DH1	12" RCP	94.52	94.48	4'	0.010
DH1-BASIN	12" RCP	94.36	94.03	70'	0.005
FEST-DH1	12" RCP	96.00	94.75	15'	0.0833
CB3-WO2	8" D.I.P.	97.60	97.50	8'	0.0125
CB3-DH2	12" RCP	98.10	97.50	8'	0.0725
CB4-WO2	8" D.I.P.	97.60	97.50	8'	0.0125
CB4-DH2	12" RCP	98.10	97.50	8'	0.0725
WO2-DH2	12" RCP	97.25	97.20	4'	0.0125
DH2-BASIN	12" RCP	97.10	94.03	110'	0.0279
BASIN-HW1	12" RCP	94.15	93.90	40'	0.0063

12" HDPE INLET & OUTLET HEADER (AND LEVEL @ 94.03)
6" PVC SCH40 LATERAL TO INFILTRATOR UNITS INV 93.90'
ALL RCP TO BE CLASS V
USE RUBBER BOOTS TO CONNECT HDPE HEADER TO RCP LEADER
FROM DMH1 TO BASIN AND DMH2 TO BASIN

SOIL LOG

DATE: 12-2-05
BY: J. ROSS (RHS)

TEST #1 & 2
ELEV. = 94.4

TEST #3 & 4
ELEV. = 94.4

TEST #5 & 6
ELEV. = 94.4

TEST #7 & 8
ELEV. = 94.4

TEST #9 & 10
ELEV. = 94.4

TEST #11 & 12
ELEV. = 94.4

TEST #13 & 14
ELEV. = 94.4

TEST #15 & 16
ELEV. = 94.4

TEST #17 & 18
ELEV. = 94.4

TEST #19 & 20
ELEV. = 94.4

TEST #21 & 22
ELEV. = 94.4

TEST #23 & 24
ELEV. = 94.4

TEST #25 & 26
ELEV. = 94.4

TEST #27 & 28
ELEV. = 94.4

TEST #29 & 30
ELEV. = 94.4

TEST #31 & 32
ELEV. = 94.4

TEST #33 & 34
ELEV. = 94.4

TEST #35 & 36
ELEV. = 94.4

TEST #37 & 38
ELEV. = 94.4

TEST #39 & 40
ELEV. = 94.4

TEST #41 & 42
ELEV. = 94.4

TEST #43 & 44
ELEV. = 94.4

TEST #45 & 46
ELEV. = 94.4

TEST #47 & 48
ELEV. = 94.4

TEST #49 & 50
ELEV. = 94.4

TEST #51 & 52
ELEV. = 94.4

TEST #53 & 54
ELEV. = 94.4

TEST #55 & 56
ELEV. = 94.4

TEST #57 & 58
ELEV. = 94.4

TEST #59 & 60
ELEV. = 94.4

TEST #61 & 62
ELEV. = 94.4

TEST #63 & 64
ELEV. = 94.4

TEST #65 & 66
ELEV. = 94.4

TEST #67 & 68
ELEV. = 94.4

TEST #69 & 70
ELEV. = 94.4

TEST #71 & 72
ELEV. = 94.4

TEST #73 & 74
ELEV. = 94.4

TEST #75 & 76
ELEV. = 94.4

TEST #77 & 78
ELEV. = 94.4

TEST #79 & 80
ELEV. = 94.4

TEST #81 & 82
ELEV. = 94.4

TEST #83 & 84
ELEV. = 94.4

TEST #85 & 86
ELEV. = 94.4

TEST #87 & 88
ELEV. = 94.4

TEST #89 & 90
ELEV. = 94.4

TEST #91 & 92
ELEV. = 94.4

TEST #93 & 94
ELEV. = 94.4

TEST #95 & 96
ELEV. = 94.4

TEST #97 & 98
ELEV. = 94.4

TEST #99 & 100
ELEV. = 94.4

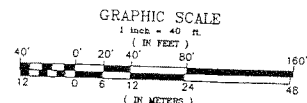
TABLE 1: DRAINAGE STRUCTURES

CB'S #1 & #2 STA 1+50 (10' LT & RT)
RIM ELEV = 97.85
12" RCP CLV INV IN = 95.35 (DMH1)
8" D.I.P. INV OUT = 94.85 (WO1)
SUMP = 91.85
STA 1+50
RIM = 98.15
8" D.I.P. INV IN = 94.77 (CB 1&2)
12" RCP CLV INV IN = 94.52 (DMH 1)
STA 1+60
RIM = 98.15
12" RCP CLV INV IN = 94.48 (CB 1&2)
12" RCP CLV INV IN = 94.36 (WO1 1)
12" RCP CLV INV IN = 94.36 (BASIN 20)

CB'S #3 & #4 STA 4+00 (10' LT & RT)
RIM ELEV = 102.30
12" RCP CLV INV IN = 98.10 (DMH 2)
8" D.I.P. INV OUT = 97.60 (WO 2)
SUMP = 93.60
STA 4+00
RIM = 102.60
8" D.I.P. INV IN = 97.50 (CB 3&4)
12" RCP CLV INV IN = 97.25 (DMH 2)
STA 3+90
RIM = 102.12
12" RCP CLV INV IN = 97.50 (CB 3&4)
12" RCP CLV INV IN = 97.20 (WO 2)
12" RCP CLV INV IN = 97.10 (BASIN 20)

BASIN "20" STA 2+25 - 2+87
EXIST GRADE 98.6 FIN. GRADE 99.5±
12" HDPE HEADER INV = 94.03 (DMH 1 & 2)
6" HDPE LATERAL INV = 93.90 (INFILTRATORS)
12" HDPE OUTLET INV = 94.15 (HDW #1)
INFILTRATOR UNIT INV IN = 93.85
BOTTOM INFILTRATOR BED = 93.30
E.S.W.T. = 91.2

HEADWALL #1 STA 3+25
TOP WALL ELEV = 96.0
12" HDPE INV IN = 93.90 (BASIN 20)



DEFINITIVE PLAN FILED: _____
HEARING HELD: _____
PLAN APPROVED: _____
PLAN ENDORSED: _____

I, _____ OF THE TOWN CLERK'S OFFICE, HEREBY CERTIFY THAT AS OF THIS DATE, NO APPEAL HAS BEEN FILED IN THE OFFICE OF THE TOWN CLERK, GEORGETOWN, MASSACHUSETTS, AND THAT THE 20 DAY STATUTORY APPEAL PERIOD HAS ELAPSED.

TOWN OF GEORGETOWN TOWN CLERK	DATE
FOR REGISTRY USE ONLY:	
PLANNING BOARD USE:	
ZONING DIMENSIONAL DATA:	
ASSESSOR'S DATA:	
GENERAL NOTES:	
CERTIFICATIONS:	

1. PARCELS "A", "B", AND "C" ARE NOT TO BE CONSIDERED AS SEPARATE BUILDING LOTS AND ARE TO BE CONVEYED TO AND COMBINED WITH OTHER LAND OF DANIELLECKI FOR A TOTAL AREA OF 15.253 S.F., T.F. OF 236.08'. IF PARCELS ARE NOT ACCEPTED BY DANIELLECKI, THEN PARCELS "A", "B", AND "C" WILL BE MADE PART OF LOT 2.

2. ALL PROPOSED DRAINAGE EASEMENTS SHALL BE OBTAINED BY THE HOMEOWNERS ASSOC.

3. THE DEVELOPER WILL BE RESPONSIBLE FOR MAINTAINING ALL UTILITY SERVICES AND ACCESS TO THE DANIELLECKI AND SORIBOLLO RESIDENCE, DURING CONSTRUCTION.

4. LOCATION OF STREET LIGHTS TO BE FIELD DETERMINED BY THE GEORGETOWN ELECTRIC COMPANY. TWO LOCATIONS PROPOSED.

5. FIRE ALARM BOX MAY BE REQUIRED BY THE GEORGETOWN FIRE DEPARTMENT, EXACT LOCATION TO BE DETERMINED IN THE FIELD.

ROBERT M. GRASSO, P.L.S. JOHN W. HARGREAVES, JR., P.E.

DEFINITIVE SUBDIVISION PLAN
OF LAND LOCATED IN
GEORGETOWN, MASSACHUSETTS

OWNER & APPLICANT
PRISM REALTY, L.L.C.
P.O. BOX 42
GROVELAND, MA 01834

ROADWAY PROFILE
AND DRAIN DATA

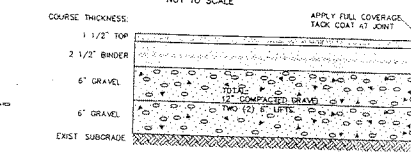
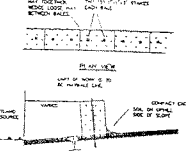
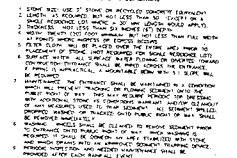
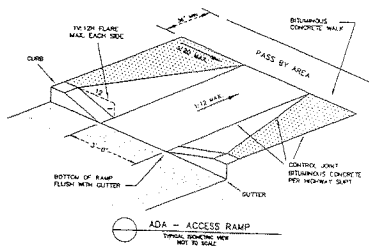
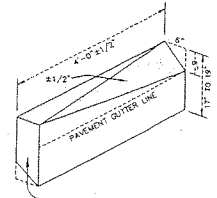
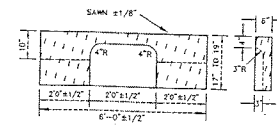
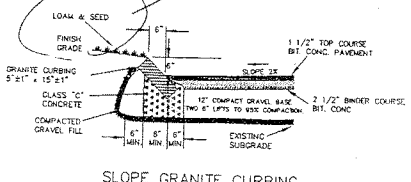
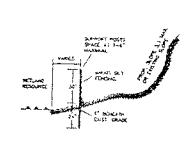
DRAWN: RMG DES: RMG, WML, JMC
CHECKED: MJC, RMG DATE: 18-JAN-05

PROFESSIONAL LAND SERVICES, L.C.
1148 MAIN STREET
HAVERHILL, MA 01830
TEL (978) 373-9850 FAX (978) 373-4180

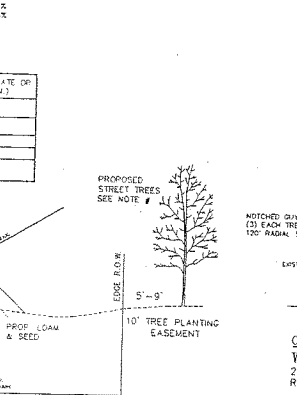
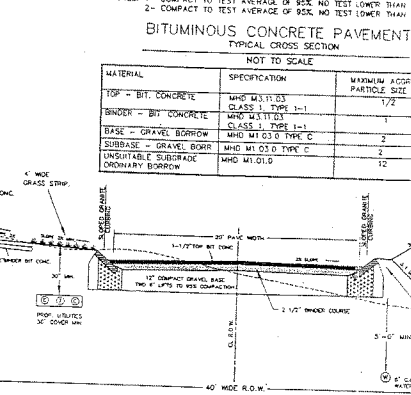
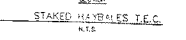
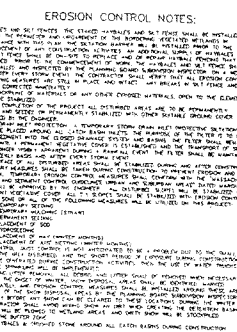
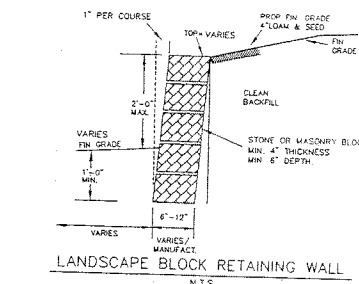
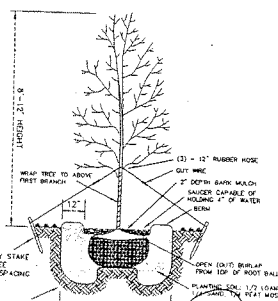
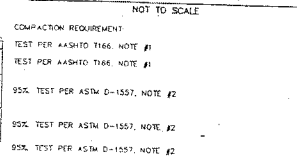
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SHEET No. **6 OF 8**

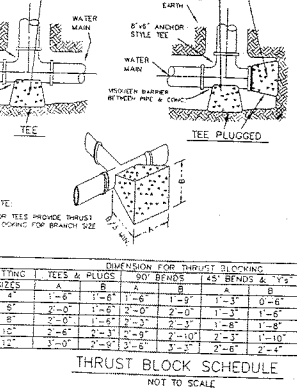
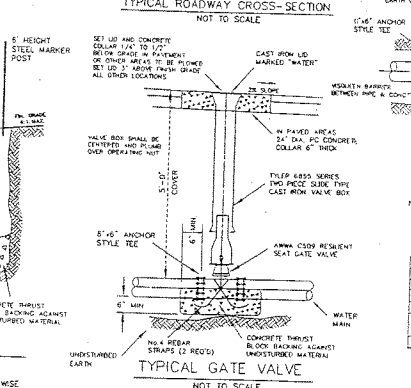
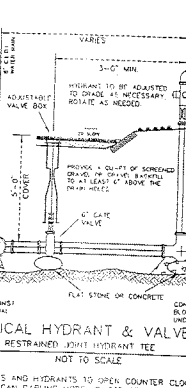
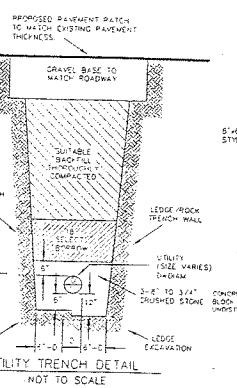
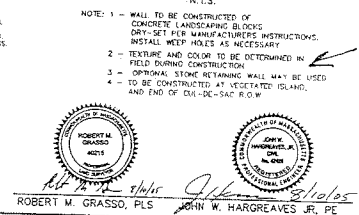
REVISION: BY
20-JUNE-05 RMG
7-AUG-05



NOT TO SCALE		
MATERIAL	SPECIFICATION	MAXIMUM AGGREGATE OR PARTICLE SIZE (mm)
TOP - BIT. CONCRETE	MHD M3.1.03 CLASS : TYPE 1-1	1/2
SENDER - BIT CONCRETE	MHD M3.1.03 CLASS : TYPE 1-1	1
BASE - GRAVEL BORROW	MHD M1.03.0 TYPE C	2
SUBBASE - GRAVEL BORR	MHD M1.03.0 TYPE C	2
UNSTABLE SUBGRADE ORDINARY BORROW	MHD M1.01.0	12



OWNER:
WILLIAM HAWKESWORTH
208 CENTRAL STREET
ROWLEY, MASS. 01969
LOCUS DEED: BK 5228 PG 343
LOCUS PLAN: PL BK 207 PL 87



DIMENSION FOR THRUST BLOCKING									
FITTING SIZES	TEES & PLUGS		90° BENDS		45° BENDS		Ys	22 1/2° BENDS	
	A	B	A	B	A	B		A	B
4"	1-6"	1-6"	1-6"	1-3"	1-3"	0-6"		1-0"	0-6"
5"	2-0"	1-6"	2-0"	2-0"	1-3"	1-6"		1-0"	1-0"
6"	2-0"	1-6"	2-3"	2-3"	1-8"	1-8"		1-0"	1-3"
10"	2-6"	2-3"	2-9"	2-10"	2-3"	1-10"		1-3"	1-6"
12"	3-0"	2-9"	3-3"	3-3"	2-6"	2-4"		2-0"	2-0"

NOTES: 1 - THIS TABLE IS BASED ON 200 PSI WASH PRESSURE AND 2000 P.S.F. SOIL BEARING PRESSURE. ADJUST BEARING AREAS IN ACCORDANCE WITH SOIL CONDITIONS AND PRESSURES ENCOUNTERED.

2 - USE VISCOUS BARRIER BETWEEN PIPE AND CONCRETE AS SHOWN IN DETAIL ABOVE.

3 - CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3500 PSI \pm 7% ABOVE.

4 - BLOCKING SIZE/FREQUENCY SHALL BE INCREASED IF REQUIRED BY ENGINEER.

DEFINITIVE SUBDIVISION PLAN
OF LAND LOCATED IN
GEORGETOWN, MASSACHUSETTS

APPLICANT: PRISM REALTY, LLC P.O. BOX 42 GROVELAND, MA 01834		CONSTRUCTION DETAILS/NOTES	
DRAWN: WGH CHECKED: JMM WGH	DESIGNED: JMM WGH DATE: 18-JAN-05	SCALE: AS NOTED	SHEET No. 8 of 8
Professional Land Services, L.C. 1148 MAIN STREET HAVERHILL, MASS. 01832 TEL: (978)373-9950 FAX: (978)373-4190		REVISION: 1 BY JMM 20-JUNE-05 7-AUG-05	MJC WGH

Appendix E – Alternatives Analysis





Data Source: GIS data obtained from Merrimack Valley Planning Commission and MA Office of Geographic and Environmental Information (MassGIS)



GEORGETOWN RECREATIONAL PATH
Town of Georgetown, Massachusetts

Alternative Alignment Study
Alternative 1-B







Data Source: GIS data obtained from Merrimack Valley Planning Commission and MA Office of Geographic and Environmental Information (MassGIS)



GEORGETOWN RECREATIONAL PATH
Town of Georgetown, Massachusetts

Alternative Alignment Study
Alternative 3

Appendix F - Conceptual Design Plans

The following is a description key that briefly describes each photo included as an insert on the conceptual design plans:

Photo No.	Description
1	New Town bound marker
2	Entrance to Camp Dennison from corridor
3	Corridor at Nelson Street - Looking North
4	Nelson Street at Corridor - Looking West
5	Location of former Newburyport Railroad Baltpate Station
6	Collapsed cow pass just north of Brook Street
7	Brook Street abutter to corridor
8	Pond/wetland system west of corridor
9	Section of corridor in cut with retaining walls
10	Town-owned parcel for possible parking area
11	Drainage swale / wetland system located west of corridor
12	Andover Street (Route 133) at corridor - Looking West
13,14	65 Central Street – possible parking / rest area
15	Corridor at Andover Street (Route 133) – Looking South
16	Corridor at Andover Street (Route 133) – Looking North
17	Corridor connection at American Legion Park
18	Corridor at Pond Street – Looking South
19	Pond Street at corridor – Looking West
20	Bridge abutments at Pentucket Pond Brook
21	Mill Street at Corridor – Looking East
22,23	Existing access road bridge over the Parker River
24	Parker River Landing housing development
25	Blandings Turtle placard
26	Existing corridor in cut / ledge section
27	Existing pole offset – north of Thurlow Street
28,29	Stream tributary to Parker River
30	Existing access road bridge in Byfield (Newbury)
31	View of Parker River from corridor in Byfield (Newbury)

Appendix G – List of Acronyms

The following is a list of acronyms used throughout the text:

AASHTO	American Association of State Highway and Transportation Officials
ACOE	Army Core of Engineers
ADA	American with Disabilities Act
ADAAG	American with Disabilities Act Accessibility Guidelines
ADT	Average Daily Traffic
BLSF	Bordering Land Subject to Flooding
BMPs	Best Management Practices
BWSC	Massachusetts Department of Environmental Protection Bureau of Waste Site Cleanup
BVW	Bordering Vegetative Wetland
CE	Categorical Exclusion Checklist
CERCLA	Comprehensive Environmental Compensation Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CMR	Code of Massachusetts Regulations
CTPS	Central Transportation Planning Staff
CY	Cubic Yard
DCR	Commonwealth of Massachusetts Department of Conservation and Recreation
DEP	Department of Environmental Protection
DPS	Downgradient Property Status
EA	Each
EH	Estimated Habitats for Rare Wildlife
EIR	Environmental Impact Report
ENF	Environmental Notification Form
EOEA	Massachusetts Executive Office of Environmental Affairs
EOT	Commonwealth of Massachusetts Executive Office of Transportation
EPA	Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FST	Fay, Spofford & Thorndike (Consultants)
LB	Pound
LF	Linear Foot
LS	Lump Sum

List of Acronyms (Cont'd):

LSP	Licensed Site Professional
LUWB	Land Under Water Body
LUWW	Land Under Waterway
MA	Massachusetts
MA DEP	Massachusetts Department of Environmental Protection
MassGIS	Massachusetts Geographic Information Systems
MCP	Massachusetts Contingency Plan
MEPA	Massachusetts Environmental Policy Act
MGL	Massachusetts General Laws
MHC	Massachusetts Historical Commission
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MS4s	Municipal Separate Storm Sewer Systems
MUTCD	Manual on Uniform Traffic Control Devices
MVPC	Merrimack Valley Planning Commission
NEPA	National Environmental Policy Act
NHESP	Natural Heritage & Endangered Species Program
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OHM	Oil or hazardous material
PH	Priority Habitat for Rare Species
RAO	Response Action Outcome Statement
REMOPS	Remedy Operation Status
RFA	Riverfront Area
SAFETEA	Safe, Accountable, Flexible, and Efficient Transportation Equity Act of 2003
SF	Square Foot
SWPPP	Stormwater Pollution Prevention Plan
USGS	United States Geological Survey
UST	Underground Storage Tank
WPA	Wetlands Protection Act