Recreational Path Feasibility Study

Prepared by

Dover Rail Trail Committee

Final Report - Spring 2014

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Executive Summary

The following Recreational Path Feasibility Study is the final draft developed by the Dover Rail Trail Committee (the "Committee"), recognizing that the content is not complete due to lack of funds. At the May 2013 Town Meeting a request was denied for $50,000 to contract with professionals to provide identified information that we, as a Town and a group of volunteers, could not provide. At the October 8, 2013 Selectmen's Meeting the Committee was charged with compiling a final report that contained all information gathered to date and a discussion of additional information required through professional paid support. This report details the remaining information required in order to complete a thorough and comprehensive study of the issue, as was our original charge by the Board of Selectman, should funds become available in the future.

The Dover Rail Trail Committee, an ad-hoc committee formed by the Board of Selectmen in 2011, is charged with developing a feasibility study for the conversion of the Dover section of the Bay Colony rail bed into a Recreational Path (the "Path"). In essence, this study seeks to ask and answer two fundamental questions:

1. Is it feasible for Dover to convert the unused rail corridor into a Recreational Path?
2. If yes, then what are the Committee's recommendations for the range of elements involved in creating the Path?

The Committee has been working to answer both questions in parallel. Question #1 considers feasibility from a number of perspectives, including financial, environmental, legal, public safety, citizen interest, community and abutter impact, etc. Question #2 seeks to determine what would be an appropriate Recreational Path for Dover and how it would be constructed, managed, and maintained. With the help of interested Dover citizens, the Committee has identified over 80 items for review and study. This current draft reports on those items for which the Committee has researched and developed preliminary recommendations.

During this process the Committee identified five key items that require more research and professional expertise: 1) right-of-way review; 2) MBTA lease terms; 3) engineering analysis; 4) construction contracting; and 5) environmental review. The Committee is extremely pleased that the process has been successful in identifying issues. However, the work is ongoing. It will be necessary to continue to objectively seek answers to the range of feasibility questions that exist.

We appreciate the input and engagement from the citizens of Dover in the preparation of this report.

Section I: Introduction

The following Recreational Path Feasibility Study provides the town with background information for considering conversion of the existing unused rail corridor to a shared use path. The study addresses the range of considerations associated with this potential project, including benefits to the town, community impact, projected usage, public safety, construction and maintenance, environmental impact, and financial and legal implications. It also provides recommended policies and procedures for how Dover might establish and maintain this path, if it is approved by a vote of citizens at Town Meeting.

The potential Recreational Path follows the right-of-way of the unused rail corridor that extends for 3.7 miles through Dover, beginning at the Needham-Dover town line at the Charles River and terminating at the Dover-Medfield town line, which lies between Hunt Drive and Farm Street. The rail trestle bridge crossing the Charles River at the Needham-Dover town line, is not usable, so the Recreational Path would end before the Charles River. In fact, in 2013 the MBTA notified Dover that it will place barriers at both ends of the bridge to prevent trespass and connection between Dover and Needham. Construction of the barriers should be completed in the spring of 2014. In addition, Dover would NOT lease the bridge from the MBTA. The land adjacent to the right-of-way consists primarily of conservation and recreation open space, with some residential properties abutting the right-of-way and a few commercial properties in the center of town.

During its outreach to abutters and other residents of Dover, alternatives to development of the entire 3.7 mile rail bed were raised. These include stopping the north extension of the Path in Dover Center or at the Centre Street overpass just north of Cross Street. It is the recommendation of the Committee that these alternatives be studied in more detail, including impact on the MBTA lease.

The Feasibility Study was developed by the Rail Trail Committee (RTC), an ad-hoc committee formed by the Dover Board of Selectmen in 2011. The purpose of the Committee is to study the feasibility of converting the Dover section of the Bay Colony rail bed into a Recreational Path by: working with Dover citizens; engaging with all relevant Dover boards, committees and departments; researching best practices from other towns; and coordinating activities with the efforts of Needham and Medfield. The Committee has made every effort to make this study process transparent and inclusive through frequent meetings (open to the public); significant communications to citizens via email distribution lists, web updates, and abutter letters; open discussions; and outreach to various community groups. Additionally, the Committee has actively engaged Town staff, boards, and committees to get appropriate input on all relevant issues (please see Appendix A for more details).

The Feasibility Study seeks to offer useful information and context to guide the town's thoughtful consideration of this potential project. Section II provides a summary of the key recommendations for the proposed Path, including the key elements and characteristics that the town would incorporate, if approved. Section III addresses the anticipated community impact, including projected usage, benefits to the town, public safety, abutter and community input, and environmental impact. Section IV considers the financial and legal implications of the Path, including cost and sources of funds as well as the lease of the trail and insurance considerations. Finally, Section V summarizes the next steps for the project.

Section II: Recommendations for Town Consideration

Guiding Principles

The RTC used the following guiding principles to develop its recommendations:

- Preservation of the natural rural character of Dover's trails and conservation land
- Limited or no incremental cost to the town for design and maintenance
- Citizen engagement to understand and address potential community impacts
- Creation of public-private partnerships to ensure proper management of the Path
- Local control of Path construction timing, characteristics, and rules

Surface

The Committee researched surface options, and has determined that it will not recommend a paved surface, which is incompatible with usage parameters and aesthetics of a rural recreational path. Upon review of trails within the Commonwealth and in keeping with the existing trail system in Dover, the Committee recommends the use of a soft packed non-asphalt surface. Further research would be conducted by professionals with knowledge and experience in the development of rail trail conversions.

Due to environmental requirements, once the rails and ties are removed from the rail corridor the rail bed must be "capped" with 4-6 inches of surfacing material. Materials suitable for capping the rail bed include: asphalt, concrete, crushed stone (limestone, sandstone, crushed rock), stone dust, and recycled asphalt. Details of the pros and cons of these different trail surfaces can be found at Appendix B.

Uses

The Recreational Path is envisioned to be a shared-use path for the enjoyment of all ages, from children on tricycles to elderly looking for a level and smooth walking path. The Path would benefit walkers, joggers, strollers, recreational cyclists, and snowshoe and cross-country ski enthusiasts. It would not allow motorized vehicles, with the exception of authorized safety, emergency, and maintenance vehicles as well as personal mobility devices (per ADA requirements). The recommended surface would not be suitable for the performance cyclists who frequently ride Dover's roads.

Rules

The recommended rules for the Path are largely consistent with Dover's existing laws and policies, with a few exceptions specific to this particular Path. In some cases, existing by-laws define fines for curfew violation, dumping, cars, etc. The table below details specific rules the Committee proposes should apply to the Path.

Recreational Path -- Specific Rules	
Rules	**Relevant By-Law**
• No littering: Carry-in/carry-out trash policy	
• No motorized vehicles, except authorized safety, emergency and maintenance vehicles, and personal mobility devices	
• No fires or smoking	
• No possession or consumption of alcoholic beverages	Chapter 80
• No horses except on Path crossings	
• No dogs (except service animals and those associated with specific Norfolk Hunt activities)	Chapter 83
• No hunting or discharge of any firearm, air rifle, bow & arrow, fireworks, or explosives (See Appendix F)	Chapter 109
• Open during daylight hours only	
• Speed Limit 10 mph	

Recreational Path -- Specific Rules
• Respect private property: no person shall enter private property, except upon authorization of owner
• No dumping
• No camping
• Do not feed, approach, or touch wildlife
• Stay on path
• Be courteous and quiet: Please respect the tranquility of the Path and others' enjoyment
• Stay to the right and do not block Path when stopped
• No removal or vandalizing of signs, signposts, barriers, natural vegetation, and other property

Construction

It is expected that construction will be done by a combination of outside contractor(s) and Town resources (i.e., Highway Department). Contracting options include a) construction companies experienced at rail bed conversions from start to finish at full cost and b) an organization such as Iron Horse Preservation Society (IHP), a non-profit organization that uses the revenue from selling the rails (i.e., salvage value) to cover a portion of the removal and construction expense. The Committee has had several discussions with IHP to better understand their capabilities and experience in the Massachusetts area. (See Appendix I for a list of their projects). All viable options would be explored in detail as the engineering requirements are developed. This process will result in a comparison of cost estimates as well.

Construction will be on the existing rail bed. Access will only be from the road crossings and possibly Town-owned land and not from any private property. Contract terms will include appropriate safeguards for noise, trash, trespassing, etc.

Rail Trestle Bridge

The Charles River railroad trestle bridge connecting Needham and Dover will NOT be used as a connector to Needham, and therefore it is Dover's intent NOT to lease the bridge from the MBTA should this project be implemented. An initial assessment of the bridge conducted by the engineering firm Fay, Spofford and Thorndike (funded by Needham as part of a broader engineering study) in March 2013 revealed issues with the bridge abutments, pilings, and top platform. The firm's professional recommendation is that the bridge not be used and, in fact, that it might need to be replaced at significant expense. Prior to the engineering results, the Committee had already decided to recommend that the Recreational Path not connect to Needham due to concerns expressed about the number of users on the trail, the potential engineering issues, and the cost of retrofitting the bridge for safe crossing. In November 2013 the MBTA In 2013 the MBTA notified Dover that it will place barriers at both ends of the bridge to prevent trespass and connection between Dover and Needham. Construction of the barriers should be completed in the spring of 2014.

Infrastructure

The infrastructure of the trail (e.g., signage, barriers, and amenities) will be compatible with and complementary to the rural nature of Dover and its open space.

- Signage: Signage will be used to inform Path users of the rules and regulations and will be designed to blend with Dover and a natural ambiance (See Appendix C for examples of similar signs currently used in Dover). Signage may include:
    - Mile markers periodically on Path (number of markers per mile TBD) for location identification, for safety and maintenance, and as a distance guide for users
    - Information on speed limits, trash guidance, "share the path" guidance, etc.

  - Identification of private property and no trespassing areas
    - Rules posted at crossings
    - Signs and pavement markers at road crossings on road (similar to current crosswalks)
    - No parking signs may be placed on roads around road crossing areas (Haven, Springdale, Dedham, and Hunt) after discussions with neighborhood. Signs suffice for enforcement, but enforcement is 24/7/365.
- Stop systems on path: A system of signs/bollards/gates on the Path at road crossings will be used to prevent motorized vehicles and to force path users to stop. Considerations will include aesthetics as well as the benefit of rapid emergency access even when keys are available to Police, Fire/EMT and the Highway Dept.
- Lighting: No lighting due to disturbance of abutters and to discourage off-hours use
- Call Boxes: No call boxes as most people have cell phones (911 routing procedure through State Police to Dover Police)
- Public Facilities: There will be no public facilities
- Barriers: Barriers will be built along sections of the rail bed as necessary

Partnership with "Friends" Group

The Committee recommends that Dover partner with a locally formed "Friends of the Dover Greenway" group to accomplish important ongoing trail responsibilities such as fundraising, usage surveys, trail maintenance, and trail clearing (see next section below). As with many volunteer trail "friends" groups around the Commonwealth, a healthy public-private partnership allows vital community services to be performed while also limiting financial burden on the town. The Friends group, organized in 2012, has submitted a document providing an overview of their plans and support commitments (please see Appendix D).

Governance

The current Rail Trail Committee is an ad-hoc committee established by the Board of Selectmen (BOS) in 2011 to develop the Feasibility Study. Should the Town vote to develop a Path, a standing committee, called the Dover Recreational Path Advisory Committee (RPAC), will be established by Town Code to oversee the Path. The Committee will make recommendations to the Board of Selectman for operations and maintenance of the Path, including budgetary needs and policy development; serving as the focal point for citizen outreach and interface; and working with the Friends organization to coordinate maintenance and other activities. The Committee will also serve as liaison to Needham and Medfield's rail trail conversion activities and the MBTA.

The RPAC would have broad representation from the community. It is recommended that its voting membership of seven with three-year terms be composed of: two abutters appointed by the BOS, one member appointed by the Friends, one Selectman, one member appointed by the Conservation Commission, one member appointed by the Open Space Committee, and one member-at-large appointed

by the BOS. The Town Administrator will be an ex-officio non-voting member. The Chief of Police and the Superintendent of Streets will provide support to the Committee as needed.

The Highway Department will be responsible for maintaining communication channels for users to report problems and comments. This will include a web-based "report a problem form" for maintenance and general comments. Any violations of trail rules or immediate safety issues should be reported immediately to the Dover Police Department. It is the intent to respond to all communications within 24 hours. The Highway Department, Police and Friends will keep RPAC informed of Path problems, comments, and activities on a timely basis. The Highway Department, Police, and Friends will maintain data on usage, problems, complaints, and maintenance specifics for use by RPAC in developing recommendations to the Board of Selectmen.

Any recommended changes to rules and regulations will go through a public meeting process for citizen comment.

Maintenance

Maintenance of the Path will be the joint responsibility of the Friends of the Dover Greenway and Dover's Highway Department (HD). The Friends of the Dover Greenway will take the lead on regular clean-up of the Path (vegetation management, pruning, debris removal, and trash clean-up) as well as signage maintenance. All vegetation management will be done in an environmentally acceptable manner. The HD will maintain the four road crossings, as it does with all crosswalks on Dover's streets. This will include ensuring that crossing signage, barriers, and sight lines are maintained. Maintenance and repairs of the Path surface, eroded areas, and any drainage problems will often be a joint project, dependent upon the magnitude and specific situation. The HD will supply trucks and mowers, if needed, using current equipment and personnel, during normal working hours.

While the Path will not be plowed in the winter, the HD will make sure that snow dumping at the crossings does not occur in order to allow continued access for winter passive recreation activities (e.g., skiing and snowshoeing) and to minimize damage to crossing barriers.

As with all town-owned property, the costs of maintenance using fixed assets are included in the relevant department's operating budget. Any additional equipment needed is handled through the capital budget process. The HD has not identified any additional equipment needed to support this project. Their support of the Friends organization is expected to be done with current levels of personnel and equipment (not unlike additional sidewalks requested by citizens).

Parking

Based on analysis of local parking capacity and anticipated usage, the Committee recommends that no additional parking capacity is required to support the Path's usage. Overall, little weekday demand is expected. Weekend demand will certainly be greater, although many local users are expected to arrive at

the Path by bicycle or walking. The Committee finds that there are approximately 155 available parking spots around the Dover center area for usage, particularly on weekends. In addition, there is additional parking on Dedham Street at Caryl Park and the Chickering Fields, both connected by sidewalks to the Path access on Dedham St. and Springdale Ave. or by a short road ride to the Haven Street access point. Parking also exists at Channing Pond on Springdale Avenue. See Appendix E for the parking capacity details.

Awareness

Consistent with Dover's traditional low-key approach to providing information on open space recreational sites in town, the Committee recommends limited publicity of the Recreational Path. The Dover Open Space Committee has assumed responsibility for the webpage (http://www.doverma.org/town-government/boards-committees/open-space-comm/) on the Town of Dover website that details the open space and recreational opportunities available in Dover. Accordingly, the Recreational Path would be added to this information. In addition, The Friends of the Dover Greenway have established a website promoting volunteer and philanthropic activities. The address of the website is www.dovergreenwaysfriends.com All discussion of the Path will mention that it does not connect to Needham and Medfield (at this time).

Needham and Medfield Coordination

Dover's 3.7 mile stretch of track is part of larger contiguous 7- mile Bay Colony rail corridor starting at the Needham Junction rail station in Needham and culminating near the Kingsbury Club in Medfield. On November 14th, 2013 the Town of Needham approved the development of a recreational path. The Town Meeting presentation and pertinent documents are contained in Apprendix (J). While Dover's feasibility study and decision-making process are independent of the other town's processes, the Committee has coordinated with Needham and Medfield town officials to share knowledge and contacts in order to expedite understanding of issues such as MBTA lease arrangements, liability insurance, construction, etc. Similarly, the Committee has liaised with volunteers from the Bay Colony Rail Trail Association, a nonprofit organization focused on supporting town rail trail efforts in Needham, Dover, and Medfield.

Section III: Community Impact

Benefits to Town and Projected Usage

The Recreational Path will be a four-season shared-use path for the enjoyment of all ages, encouraging the mental and physical health of Dover residents and benefitting walkers, joggers, people with strollers, recreational cyclists, and snowshoe and cross-country ski enthusiasts. While the path is only 3.7 miles of over 60 miles of other paths in Dover, its unique characteristics lend themselves to usage by population

segments not well served by other paths, in particular, seniors, families with strollers, the disabled, and young children on bicycles.

The Committee was quite interested in the special characteristics of this Path after conducting an inventory of the many miles of trails in Dover as well as the current biking options. Short of walking on the roads or on the limited sidewalks in Dover, there is no smooth, straight and level walking path in Dover. Additionally, Dover has sidewalks on only 2% of our road miles and 0% of our roads have either bike lanes/bike accommodations or four-foot shoulders, so this Path represents a unique opportunity to add a safe biking corridor for residents' use. This Path would add a unique recreational opportunity to the town.

- Safe walking for seniors: The level path makes it safer for seniors than walking on uneven terrain.
- Safe area for families with strollers: The lack of extensive sidewalks (less than 2% of roads) in Dover limits the area for families with strollers to walk safely in town.
- Safe place for young children to ride bikes: There are few safe public places in Dover for families with small children to ride bikes.
- Alternate running/walking surface: Because the Path is level and straight with a smooth surface unobstructed by roots and rocks, this will be a Path conducive to joggers who want to run on a softer surface than the road and do not want to risk running on other wooded trails. Additionally, it presents an alternative to current woods options for adults and children who do not want to walk on winding paths and risk getting lost.
- Pet-free and relatively tick-free Path: Encourages recreation for those who fear horses, dogs, and ticks (See Appendix G)
- Bird watching: Parts of the trail are located in line with the forest canopy, thus particularly conducive to bird-watching.

Given that the bridge will not be available for crossing the Charles River into Needham, the Path will only be available for local commuting, i.e., not for riding into Needham for work or commuter rail access.

Also, the path should also not be considered as an alternative for performance cyclists who frequently ride on Dover's roads. Out-of-town performance cyclists represent the vast majority of cyclists on our roads as witnessed by the packs that ride together year-round, weather permitting. They love our winding, scenic and hilly roads with relatively little vehicular traffic. The Committee expects these cyclists to remain on our roads, leaving the Path to casual riders and children, who are rarely seen on our roads. Performance cyclists have little interest in a flat, straight ride with restricted speed and a surface not conducive to speed or thin tires.

In terms of estimated numbers, it is extremely difficult to develop a credible data-based estimate of trail usage. The Path is only 3.7 miles of over 60 miles of other paths in Dover. We know that usage of Wylde Woods, Peters and Chase Reservations is minimal. Noanet Woodlands is the most popular open space in

Dover with about 30,000 visits per year. Usage of the Path is expected to be limited and predominantly local due to several factors: its relatively short distance, its isolation from connecting paths, and the vast network of hundreds of miles of and paths in the metropolitan Boston area that are connected, paved, accessible by public transportation, and highly publicized. The Committee's recommendation not to have a smooth, paved surface will limit certain users while maintaining a rural look. The Metropolitan Planning Organization was unable to project a meaningful usage number due to the characteristics of the proposed Path and Dover demographics.

Equestrians will find that access to the current network of horse trails will not be impacted.

Public Safety

The Committee considered a range of potential public safety risks that may arise from the conversion of the abandoned rail bed into a Recreational Path. This list of potential risks was used as a guideline for meetings with public safety agencies. Members of the Committee met with law enforcement representatives from communities in Massachusetts that have existing trails, and the discussions focused on the impact on the community since the establishment of those trails. Committee members also met with Dover Police Chief Peter McGowan. The discussion with Chief McGowan focused on the Town's experiences with existing trails and anticipated impact of the potential conversion of the rail bed to a Recreational Path.

- Safety of children on abutting properties and on the trail: None of the police departments contacted reported any instances of abduction or molestation of a child in his/her backyard or while traversing the trail. This issue has been taken very seriously by the Committee and indeed is a frightening thought for families. The officers contacted believed events of this nature are highly unlikely, because a Recreational Path with limited public access points would not provide the ease of access and egress that potential offenders would typically seek.
- Trespassing and parking on properties: In area communities with active paths and trails, minimal parking problems have existed. In communities with issues of parking violations, "no parking" signage was installed and regulations enforced. The Committee did not receive reports of path-related trespassing. The use of 'no trespassing signs' may be considered.
- House break-ins: None of the police departments contacted have quantitative information relating a trail/path development to an uptick in house break-ins. While it is an unfortunate reality that area homes have been targeted in the past, the consensus of the police officers interviewed is that criminals/robbers look for ease of access and opportunity.
- Emergency response by police, fire, and ambulance: None of the public safety agencies contacted found there to be a need for specialized equipment or an increase in first responder personnel. When asked about responding to emergency calls on a potential Recreational Path, Chief McGowan stated that access would be made with either a police or other emergency vehicle entering onto the path at one of the road crossings or through crossing adjacent properties.
- Patrols: Many area towns contacted by the Committee stated that they do not have directed

patrols of their recreational paths and trails. In some towns, routine checks are conducted when deemed necessary. With regards to Dover, Chief McGowan suggested that officers may periodically ride bikes along the trail. This would allow for a police presence on the trail. The department has two older mountain bikes and officers interested in riding along the recreational path. Chief McGowan does not anticipate additional staffing requirements and will place the Recreational Path on the list of directed patrol assignments when necessary.

- Mile markers on trails: Chief McGowan recommended to the Committee that mile markers be used at a frequency of quarter- or half-mile intervals. He also indicated that the markers be posted in both directions.
- Emergency call boxes: Call boxes are not used on most trails in other towns. They are used along the paths on the Wellesley College Campus. Chief McGowan informed the Committee that he did not believe call boxes are necessary since most people carry a mobile telephone.
- At grade crossing safety: Chief McGowan suggested signage and street marking for both roads and paths. He suggested that the use of removable bollards would be beneficial.
- Teen drinking and gathering at night: The public safety agencies contacted by the Committee did not report an increase in teen drinking and nighttime gathering after the development of a recreational path.
- Impact: In discussions with Committee representatives, Chief McGowan stated that he sees the Recreational Path as an opportunity for local families to walk and ride bikes. He does not anticipate, especially given the bridge to Needham being blocked off, a significant increase in out-of-town visitors. The Chief expects that initially there will be an increase because of novelty but that will ease with time.

Based on discussions with and consideration by Dover's Public Safety professionals, the Committee recommends that the Path can be covered with existing Public Safety resources and its creation will not create an overall material increase in public safety risk. Logistically, a GPS layer with each mile (or partial mile) marker can be provided to Dover Public Safety to be integrated with its dispatch system. Dover Public Safety will respond to issues in the same way it does for the other existing 60+ miles of trails and paths throughout Dover. Follow up discussions were conducted with representatives of area public safety departments in May 2013 and August 2013.

Community and Abutters' Input

As Dover considers a Recreational Path, the ideas and concerns of residents, especially abutters – people whose properties and/or homes are adjacent to the existing railroad right-of-way – are critical to the consideration of creating a path in Dover. Abutters and others living close to the proposed path are a key constituency with unique questions and concerns about the implications of a public Path in their backyard. Naturally, these Dover residents have heightened concerns about privacy, safety, effect on property values, impact on their enjoyment of their homes, trash, etc. that stem from owning property next to a Recreational Path.

The Committee has made significant efforts to engage abutters as well as the broader community in discussions to hear their concerns and ideas regarding the impact of the Recreational Path on Dover residents. Specifically, five community meetings were held at the Dover Library and a postcard was mailed to abutters inviting them to call committee members, schedule individual meetings, or attend the community meetings so everyone would have the opportunity to contribute. The meetings were scheduled for evenings, weekday mornings, and Saturday mornings to accommodate the various schedules of residents. Additionally, individual conversations were also held with abutters and significant efforts were made to publicize the regular Committee meetings, through on-line and other channels.

The Committee made multiple attempts to specifically meet with Dover senior citizens through the Council on Aging. COA staff reported that the seniors and COA board members did not need a special presentation regarding the Recreational Path as they had received information via the website, emails, and community meetings.

All were asked to share their ideas, issues, and concerns. Key issues citizens raised include the following issues:

- Privacy and property security concerns for abutting properties. These included concerns about trespassing, increased risk of break-ins, vandalism, and damage to property, potential decrease in property values, safety of children in yards, loss of privacy and enjoyment of their home and yard, and noise/property damage during construction.
- Abutters wanted to know if the project would pay for fencing to secure their property and insure privacy.
- Safety concerns including: dogs, street crossings, "stranger" access to children on the Path, night use, and use by skateboarders, ATVs, and snowmobiles.
- Public health issues from potential users of the Path including ticks, poison ivy, weed control chemicals, and exposure to any potential toxic/hazardous materials currently on the Path now as well as when removing the rails.
- Environmental issues including the effect on wet lands and weed-control chemicals.
- Cost concerns including the cost to the town for construction and maintenance and the cost of long-term maintenance.
- Some residents questioned the need for additional trail since Dover already has so many trails.
- Parking concerns included: cars parked in front of their homes, taking important spaces in the center of town, using DPW lot on Sundays displacing church goers who have traditionally use the lots.
- Liability concerns both for the town re: trail use and for abutting property owners
- Questions as to who would use the Path – primarily Dover residents or those from other towns. Many residents didn't believe that the Path should be built if the majority of users would be non-residents or if the Path would be underused or overused.
- Some abutters expressed their support for creating the Path and were pleased that they would be able to access the trail through their yards.

While some of the above issues are specific to converting the rail bed into a Recreational Path, a number of the issues are similar in nature to those already experienced in other parts of town, including homes abutting existing hiking paths in Noanet Woodlands and Wylde Woods.

Following these conversations, some attendees said that they understood that the Committee had not made a decision regarding the creation of a Recreational Path and was undertaking the Feasibility Study from a neutral point of view to assess if creating this Recreational Path would be a benefit for the town of Dover and its residents. Prior to attending these discussions they had believed that the Committee was operating from a point of view that the Path was definitely going to be created.

Environmental Impact

Development of this corridor into a Recreational Path will require measures to avoid and minimize impacts to adjacent environmental resources. Designs aimed at the protection of these resources will be needed to enable a Recreational Path to coexist within this diverse resource base. Four environmental impact issues that have been raised and studied: 1) wetlands impact; 2) contamination issues; 3) vegetation control; and 4) exposure to toxic/hazardous materials during construction.

1. **Wetlands Impact:** Dover's Conservation Commission (ConCom) has jurisdiction over all projects that may impact wetlands.

   A number of Wetland Resource Areas protectable under the Massachusetts Wetlands Protection Act (WPA) and the Dover Wetlands Protection Bylaw are present along the length of the proposed Recreational Path. These Wetland Resource Areas may include Bordering Vegetated Wetlands (BVW) and Isolated Vegetated Wetlands (IVW).

   There are several BVW areas within jurisdictional distance from the Recreational Path. No alteration of these areas will be required. Most of these areas are far enough away from the work that no special measures are necessary to protect them, other than assuring that the work be confined to the rail bed. There is one area that does require special measures. This is an area of several hundred feet about ½ mile north of Hunt Drive. Here the wetland resource is directly adjacent to the rail bed and will likely require the use of "socks" (fabric tubes filled with mulch) to be laid next to the work area in order to protect the wetland from siltation.

   After discussions with the Dover Conservation Commission and a July 23, 2012 site walk accompanied by the ConCom's wetlands specialist, Paul McManus, ConCom issued a report dated July 24, 2012 (see Appendix F). Mr. McManus noted that the Path runs through five zones of WPA and stated that "I am of the opinion that a negative determination [i.e., one that is a positive for the project], with conditions, may be appropriate…" These conditions are expected to revolve around ensuring that during construction appropriate erosion controls, construction methodology, and stabilization efforts are used. This letter will serve as a

guideline when the Committee submits a formal Request for Determination of Applicability (RDA), which cannot be done until contractor and design details have been developed. Once design plans have been created, an RDA will be submitted to ConCom, and they will develop specific requirements for construction. These requirements will be included in the construction contract.

Therefore, ConCom determined that a Notice of Intent would not be required and that a Request for Determination of Applicability would provide sufficient oversight. The ConCom will determine the conditions for the project to go forward. This will include the extent and type of protection(s) required.

Also, the ConCom will determine which chemicals, if any, are permitted in the 100-foot buffer zones.

2. **Contamination Issues:** 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.

   As these contaminants (arsenic in particular) have not been used for decades almost all of the contaminants have been leached from the rail bed. The levels measured in similar situations are lower than those required for private homes. The requirement for capping the rail bed with a minimum of 6" of material is sufficient to contain any remaining contamination.

3. **Vegetation control:** Methods of vegetation control must protect Dover's water supply and be safe for users of the Path. Brush and trees along the Path's perimeter will be controlled by pruning. Growth on the path should be minimal but will be primarily controlled by physical removal. It should be noted that the Committee will recommended a surface that will not be conducive to rapid weed and plant growth. Should spot weed control be necessary, only herbicides approved by the DEP and ConCom would be used.

4. **Exposure to toxic/hazardous materials during construction:** The MBTA lease requires that the state-prescribed "Best Management Practice for Controlling Exposure to Soil During the Development of Rail Trails" (BMPs) be followed during Path construction. This requirement will, of course, be part of any construction contract. We have also contacted the MBTA to ascertain if they are aware of any hazardous sites on the ROW.

Section IV: Financial and Legal Implications

Projected Costs

The following are the various cost elements of the Recreational Path. Without completion of the engineering study it is impossible to develop detailed costs for construction.

1. Construction

- Insurance
  - Liability (current policy covers Path per MIAA at no additional charge)
  - Environmental
- Pre-Construction Support
  - Engineering design and specifications
- Construction (contractor and in-house)
  - Remove rails and ties
  - Prepare rail bed for surface
  - Surface material and installation
  - Barriers (fencing, trees, etc.)
  - Signage on trail (mile markers, rules, private property, etc.)
  - Road Crossings and signage on road (Ch.90 funds)
  - Road crossing barriers and signage on trail

2. Post-Construction

- Police Patrols (fixed costs; no additional resources required)
- Fire/EMT services (fixed costs; no additional resources required)
- Maintenance ("Friends of"/Highway Dept.)
  - Regular maintenance
  - Major maintenance

Projected Sources of Funding

Funding needs will be developed as construction and engineering details are developed. It is expected that any net costs associated with this project would be covered by fundraising by the "Friends" group, in-house support, and town funds approved at Town Meeting. While Grant opportunities are limited, they will be explored.

Legal and Insurance Considerations

The Town of Dover has confirmed with its insurance carrier, Massachusetts Interlocal Insurance Association (MIAA), that there is no additional cost to our policy for having this additional Path in Dover. Additionally, the Committee has identified environmental insurance as one of the five areas to be further studied. Issues include indemnifying the MBTA, whether to obtain liability insurance, and the specifics of applying for state matching funds.

MBTA Plans

The MBTA lease would be a 99-year lease. The MBTA would have the right to cancel the lease on two years notice if it reacquires it for rail or other transportation purposes. It is important to understand the MBTA's future plans as they impact this rail bed. Members of the Committee have met with Bob LaVita of Transit Realty, the MBTA's agency for real estate. Tad Staley, chair of the Bay Colony Rail Trail Association (the non-profit working with the Town of Needham on their rail trail project) stated that he "checked with the CTPS (Central Transportation Planning Staff of the Boston region Metropolitan Planning Organization) in 2009 before embarking on the whole rail trail adventure and was told that [the rail corridor] wasn't on the MBTA's radar screen for the foreseeable future. Specifically, [the corridor] wasn't included in the "Journey to 2035" plan it had just delivered back then." Also, reviewed was the MBTA's 1998 Millis Commuter Rail Extension Feasibility Study. In all cases, it appears that the MBTA has no plans, during at least the next several decades, to extend the commuter line through Dover.

Section V – Next Steps

With the identification of five key items (see Executive Summary, page 1), it is apparent that the Committee's due diligence requires professional involvement to adequately study these items. With the rejection of the request for Town funds at the May 2013 Town Meeting the Committee has developed a list of open items. This list is included in Appendix X. The Committee met with members of town departments to evaluate the remaining areas of research. It remains the opinion of the Committee that the town's professional staff does not possess the knowledge and background to properly address key areas of concern. As presented at the 2013 Town Meeting, the Committee believes professional support in the areas of: legal, environmental, construction, right of way and engineering. Should at some point in the future funds be allocated for the contracting of the above services necessary research would be conducted to provide answers to the remaining questions and areas of concern.

Appendix

Appendix A: Meetings with Town staff, Boards, and Committees

As of February 2013, the Committee met with all relevant Town boards and committees as summarized below.

- **Board of Health (BOH):** the BOH addressed our concerns about the deer hunting program during hunting season (10/15-12/31) and verified that there will be a minimum 150 foot buffer between the Path and authorized hunting stands. Hunters will be reminded when they register to hunt that the Path is now used. Tick risk was also discussed. See letter from BOH dated 2/25/13 (Appendix F).

- **Conservation Commission (ConCom):** a Request for Determination will be required. See letter of 7/24/12 from EcoTec to ConCom (Appendix G).

- **Planning Board:** Although it is not clear that a site plan review is required, the Committee met with the Town Planner and jointly decided that the RTC will go before the Board to review the plans when relevant details are available.

- **Town Staff:** the Committee presented plans at the Inspectors Meeting (all Town inspectors, Town Administrator, Town Engineer, Superintendent of Streets, Chief of Police, Deputy Fire Chief) to identify any additional issues which need to be addressed.

- **Long Range Planning (LRP):** The LRP did not have any specific concerns.

- **Chief of Police:** Several meetings have been held to discuss Dover-specific public safety issues and to obtain information on other towns' experiences.

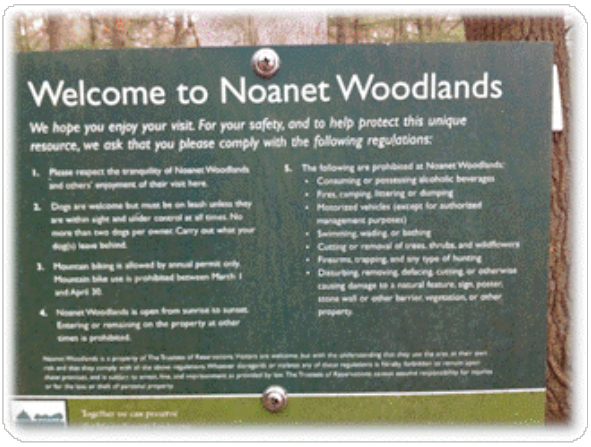
- **Open Space Committee (OSC):** the OSC has received updates at their monthly meetings.

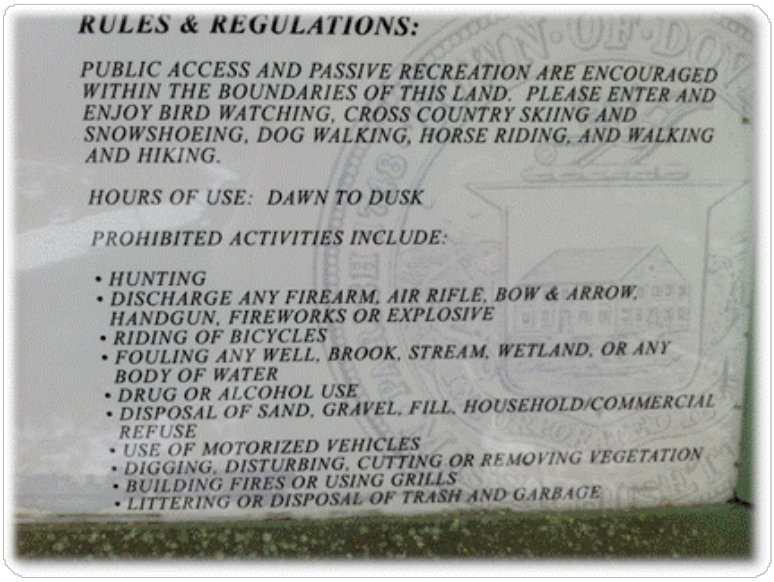
Appendix B: Trail Surface Comparisons

Surface Type	Pros	Cons	Cost / Mile
Asphalt	• Very smooth surface • Requires only minor maintenance such as crack patching	• Requires use to remain pliable and will last longer with heavy use. • Possible environmental contamination during construction. • Very expensive.	$200K-$500K
Concrete	• Hardest, longest lasting. Up to 25 years or more • Most appropriate for urban areas.	• Extremely expensive. • Very hard surface is unfriendly to runners.	$300K- $600K
Crushed/ granular stone (limestone, sandstone, crushed rock)	• Can hold up well under heavy use. • Natural appearance. • Can accommodate most users if crushed and compacted properly	• Requires maintenance. Subject to erosion and runoff	$80K-$100K
Stone Dust	• Relatively inexpensive compared to hard surfaces. • May be upgraded to a "solid" surface through the use of use of polymer binders	• Subject to erosion and runoff making it unsuitable for areas adjacent to wetlands • High maintenance	$30K-$50K
Recycled Asphalt	• Low cost • Durable • Relatively smooth surface	• Appearance • Minor maintenance required	$15K-$25K

Appendix C: Dover Signage Examples

Signage for the Recreational Path would complement the existing signage found in Dover's open space and recreation areas. As examples, below are five different existing signs in Dover.





Appendix D: Friends of the Dover Greenway

Friends of the Dover Greenway
Proposed Services & Responsibilities
As of February 12, 2013

1) Trail maintenance (in collaboration with the Dover Highway Department)
    a) Regular garbage sweeps (excluding winter months)
    b) Removal of fallen trees
    c) Pruning and vegetation control
    d) Shrub and tree planting
    e) Signage maintenance
2) Organize local groups and sponsors to help maintain trail (Girl/Boy scouts, volunteers, Dover PTO, Dover Moms/Dads clubs, etc.)
3) Build and maintain a website to improve communication and post upcoming events
4) Publish a regular newsletter keeping the community informed about Recreational Path news and events
5) Gather trail census information
    a) User home town
    b) Usage (walking, biking, stroller, etc.)
    c) Number of people and ages
    d) How did user access the Path
    e) Did the user use local parking
6) Organize fundraising to support Path maintenance and activities
7) Supplemental policing and environmental monitoring. Report suspected dumping, vandalism or prohibited activity to proper authorities for follow-up.

Appendix E: Parking Estimates

As summarized in the table below, the Committee estimates a total of 155 available parking spaces in Dover on weekends.

Location	Estimated Available Spaces
Springdale Ave	26
Centre Street	4
Town Garage Lot	30
Library	25
Dover Legion	15
Caryl Community Center	25
Town House	30
Total	155

Below are descriptions of the availability and potential limitations of each location.

Springdale Ave: These parking spaces are located on the street between Centre Street and the existing train track. They are heavily used during weekdays with current business traffic, Town House visits, children's day care center, and visitors to the Caryl Community Center. During weekends, usage drops off considerably providing available parking capacity.

Centre Street: Minimal parking spaces located next to the Town House driveway entrance and across from 60 Centre Street (Bank and Deli). These are heavily used with Town House visits and business traffic during the weekdays.

Town Garage Lot: Estimated parking is 30 spaces (no parking lines). These spots are located in the front of the town garage, abutting the current railroad track. These spaces have light use with the exception of Sunday church visits.

Library: The main lot has a Dedham Street entrance and abuts the railroad tracks via a short walk through the woods. This lot is heavily used with library visitors.

Dover Legion: This parking lot is located behind the Dover Legion Building. This lot experiences no use during the day until 3:00 pm and moderate use from the Legion opening (3:00 pm) until closing (9:00 pm).

Caryl Community Center: The Caryl Community Center (CCC) parking lot is located behind the Center and is accessed from Whiting Ave. Availability of this lot is dependent upon specific CCC usage

at a particular time. Overall, it receives light use. This location is somewhat hidden from the town center and would need to be identified for users as a potential parking area.

Town House: The Dover Town House has an additional 30 parking spots available to the public.

Appendix F: Board of Health Guidelines

BOH Guidelines for Rail Path Use

DATE: February 25, 2013
TO: Rail Trail Committee
FROM: Board of Health
SUBJECT: Safety of Rail Path

In order to assure the safety of the planned Dover Rail Path the Board of Health (BOH) recommends the following:

1. During hunting season, all bow hunters approved by the BOH – Lyme Disease Committee have to abide by the Mass Wildlife Rules and Regulations which include hunting at a minimum distance of 150 feet from any road. The Rail Path is included in that definition of a road. In addition, hunters will always face away from the Path. Furthermore, in the absence of written permission, no hunting is allowed within 500 feet of any inhabited dwelling close to the Path.
2. The Path is not a particularly good tick habitat due to the sunny exposure and the surface of the Path itself. Ticks live anywhere it is shaded with lots of leaves and high humidity. Therefore, in the sections where the Path closely abuts wooded areas, ornamental plantings, or densely planted gardens, all shrubs and low branches should be trimmed or removed to a distance of 3 feet of abutting space to assure that ticks cannot survive anywhere near the Path area.

G. Community and Abutters Section for Feasibilty Study

Community and Abutters' Input

As Dover considers a Recreational Path, the ideas and concerns of residents, especially abutters – people whose properties and/or homes are adjacent to the existing railroad right-of-way – are critical to the consideration of creating a path in Dover. Abutters and others living close to the proposed path are a key constituency with unique questions and concerns about the implications of a public Path in their backyard. Naturally, these Dover residents have heightened concerns about privacy, safety, effect on property values, impact on their enjoyment of their homes, trash, etc. that stem from owning property next to a Recreational Path.

The Committee has made significant efforts to engage abutters as well as the broader community in discussions to hear their concerns and ideas regarding the impact of the Recreational Path on Dover residents. Specifically, five community meetings were held at the Dover Library and a postcard was mailed to abutters inviting them to call committee members, schedule individual meetings or attend the community meetings so everyone would have the opportunity to contribute. The meetings were scheduled for evenings, weekday mornings, and Saturday mornings to accommodate the various schedules of residents. Additionally, individual conversations were also held with abutters and significant efforts were made to publicize the regular Committee meetings, through on-line and other channels.

The Committee made multiple attempts to specifically meet with Dover senior citizens through the Council on Aging. COA staff reported that the seniors and COA board members did not need a special presentation regarding the Recreational Path as they had received information via the website, emails and community meetings.

The committee is aware that the following issues are primarily related to abutters. The comments noted are mostly concern the impact on the lives and homes of abutters. These concerns are:

- Privacy and property security concerns for abutting properties. These included concerns about trespassing, increased risk of break-ins, vandalism and damage to property, potential decrease in property values, safety of children in yards, loss of privacy and enjoyment of their home and yard, and noise/property damage during construction
- Safety concerns including: dogs, street crossings, "stranger" access to children on the Path, night use, and use by skateboarders, ATVs, and snowmobiles.
- Public health issues from potential users of the Path including ticks, poison ivy, weed control chemicals, and exposure to any potential toxic/hazardous materials currently on the Path now as well as when removing the rails.
- Environmental issues including the effect on wet lands and weed-control chemicals.
- Some residents questioned the need for additional trail since Dover already has so many trails.
- Parking concerns included: cars parked in front of their homes, taking important spaces in the center of town, using DPW lot on Sundays displacing church goers who have traditionally use the lots.

Community and Abutters Section for Feasibilty Study - cont.

- Questions as to who would use the Path – primarily Dover residents or those from other towns. Many residents didn't believe that the Path should be built if the majority of users would be non-residents or if the Path would be underused or overused.
- Some abutters expressed their support for creating the Path and were pleased that they would be able to access the trail through their yards.

These comments concern project costs to the town or, if the town/project doesn't assume them, to the home owners:

- Abutters wanted to know if the project would pay for fencing to secure their property and insure privacy.
- Cost concerns including the cost to the town for construction and maintenance and the cost of long-term maintenance.
- Liability concerns both for the town re: trail use and for abutting property owners.

While some of the above issues are specific to converting the rail bed into a Recreational Path, a number of the issues are similar in nature to those already experienced in other parts of town, including homes abutting existing hiking paths in Noanet Woodlands and Wilde Woods.

Following these conversations, some attendees said that they understood that the Committee had not made a decision regarding the creation of a Recreational Path and was undertaking the Feasibility Study from a neutral point of view to assess if creating this Recreational Path would be a benefit for the town of Dover and its residents. Prior to attending these discussions they had believed that the Committee was operating from a point of view that the Path was definitely going to be created.

Community and Abutters Section for Feasibilty Study - cont.

Community members expressed the following regarding the rail trail at community meetings or private conversations with committee members. Questions marked with a X have been addressed by the committee as of 4/16/2013 and are addressed in the feasibility study. The remaining questions will be explored as the committee continues work on the study.

- X Would dogs be allowed on the trail and if yes, what would the guidelines be – on leash, under control, how many per walker, professional dog walkers?
- Would the construction and subsequent trail increase exposure to public health issues including-ticks, poison ivy, exposure of toxic/hazardous materials on trail now and could be exposed when removing rails?
- Abutters were greatly concerned about property/privacy concerns including – trespassing, drinking & parties, swimming/hanging out at bridge, cars parked, police access through property, property security, children's safety while in backyard, vandalism.
- Concerned that the rail trail would negatively affect property values.
- Would privacy fencing be paid for by the project/town?
- How would abutters be affected during construction and rail removal – noise, construction vehicles, property damage, construction vehicle/workers access to trail?
- X Many citizens wanted to know why if Dover already has many trails, do we need another one?
- X Would vegetation and poison ivy be controlled with chemicals?
- X Would the trail be open for use by skateboarders, ATVs, snowmobiles?
- There was concern about environmental issues - impacts on wetlands, water tables, flora & fauna.
- X What hours would the trail be open?
- X How could we prevent serious bicyclists from using the trail to get to Dover?
- Parents of young children moved to Dover because it was a safe community and they are concerned about "stranger" access to kids on trails
- X How would we maintain safety where trail crosses streets?
- How much will the trail cost the town for construction and maintenance – surface, clean-up, pruning?
- How long has Iron Horse been doing this? Are there other companies to bid on the project?
- What is the expected number of people to use the trail?
- How many will be Dover residents? Why would we pay for a trail that will be primarily used by non residents?
- X What will the trail be used for?
- X Where will the access points be? Is there a possibility to create additional access points? Will there be signage indicating intersections with streets and other trails?
- X Where will there be parking? How many spots will there be? What parking restrictions will

Community and Abutters Section for Feasibilty Study - cont.

be put in place?

- ~~X~~ Will police be patrolling the trail?
- Citizens are concerned about the impact on the town - change in the culture of Dover.
- ~~X~~ Will the town be promoting the use of the trail and other Dover resources to communities/ groups outside of Dover?
- How will the trail prohibit teen gatherings?
- ~~X~~ Is the bridge included in the trail? Will it be included in the future?
- What ifs: what if project doesn't happen, what if bridge is or isn't repaired, what if trail isn't built in Medfield and Needham? What if the trail is built in Medfield and/or Needham and not in Dover? Will the Dover trail connect to the towns of Medfield and Needham?
- It will be nice to have access directly from our backyard.
- Seniors will have a flat place to walk.
- Children will have a place to ride their bikes.
- Wylde Woods is greatly underused and Noanet is mostly used by non-Dover residents, why do we need another trail?
- If we don't build the trail, what will the MBTA do with the land?
- Residents will have a nice place to walk or bring strollers since there are few sidewalks in town.

Appendix H: Wetlands Permitting & Construction Opinion

EcoTec, Inc.
ENVIRONMENTAL CONSULTING SERVICES
102 Grove Street
Worcester, MA 01605-2629
508-752-9666 – Fax: 508-752-9494

July 24, 2012

Kate Faulkner, Chairperson
Dover Conservation Commission
P.O. Box 250
Dover, MA 02030

Re: Bay Colony Rail Trail

Subject: Wetlands Permitting & Construction Opinion

Dear Commissioners:

I am taking this opportunity to follow-up with comments from the site walk I made with the Commission on July 23, 2012. The purpose of the site walk was to review the Bay Colony railway bed in Dover pursuant to possible conversion into a "rail trail." The following comments pertain to jurisdictional issues regarding Wetland Resource Areas ("WRA"s) under the Massachusetts Wetlands Protection Act (the "Act") and the Dover Wetlands Protection Bylaw (the "Bylaw").

General Observations: The Site walk included the entire potential rail trail route, from the Charles River in the north to the Medfield Town Line in the south. The entire route contains an intact train track system, consisting of a bed of stone ballast, with wood railroad ties supporting a single pair of steel rails. The rail bed, including a number of stone box culvert stream crossings and additional similar culverts that appear to be historic cattle crossings, appeared to be structurally sound, with no obvious areas of undermining or erosion.

Portions of the rail bed have become partially vegetated through the stone ballast, and other areas have vegetation that encroaches over the tracks from adjacent areas. Much of this vegetation consists of listed invasive species, including glossy buckthorn (Rhamnus frangula), oriental bitter-sweet (Celastrus orbiculata), multiflora rose (Rosa multiflora), tartarian honeysuckle (Lonicera tatarica), winged euonymus (Euonymus alatus), and Japanese barberry (Berberis thunbergii).

Wetland Resource Areas: During the site walk I evaluated the rail bed for any areas where vegetated wetland and stream WRAs encroached into the rail bed (i.e., the area occupied by the rails, ties and associated stone ballast) and did not note any such areas. It appears that the rail bed could be converted to a +/- 8 foot wide trail surface without direct alteration of vegetated wetland or stream channel. A number of areas were noted where the rail bed falls within the 100 foot Buffer Zone associated with WRAs and within the Riverfront Area WRA. The Riverfront Areas are associated with the Charles River at the northern extent of the potential trail in Dover

July 24, 2012
Dover Conservation Commission
Re: Bay Colony Rail Trail
Page 2 of 3

and at five (5) additional mapped perennial streams. The rail bed crosses the perennial streams on existing, functional culverts. The work to convert the rail bed to a rail trail can be categorized into five zones of WPA and Bylaw jurisdiction as follows. I provide brief input as to the possible permitting of the rail bed conversion to a trail via the Determination of Applicability (DoA) process:

1. Rail bed outside WRAs and Buffer Zone: No permitting for earthwork under the WPA or Bylaw required. Significant areas in the northern and central segments of the route fall into this category.
2. Rail bed outside WRAs and within outer Buffer Zone with favorable topography (i.e., greater than 50 feet from vegetated wetland and separated from the wetland by a raised berm or wide flat area). Earthwork in these areas is subject to permitting under WPA and Bylaw but a negative determination with minimal conditions may be appropriate.
3. Rail bed outside WRAs and within outer Buffer Zone without favorable topography (i.e., greater than 50 feet from vegetated wetland without a raised berm or wide flat area to separate potential work from the wetland). Earthwork subject to permitting under WPA and Bylaw but a negative determination with conditions requiring erosion controls and stabilization may be appropriate.
4. Rail bed within Riverfront Area (may or may not be within Buffer Zone and may or may not be separated from wetland by a raised berm). Earthwork subject to permitting under WPA and Bylaw but a negative determination with conditions on erosion controls and stabilization may be appropriate.
5. Rail bed outside WRAs and within inner Buffer Zone (i.e., less than 50 feet from jurisdictional wetland which consists of a vegetated and unvegetated drainage swales (jurisdictional streams) running at the edge of rail bed ballast, as well as natural vegetated wetlands). Earthwork subject to permitting under WPA and Bylaw but a negative determination with defined limits of work and detailed conditions on erosion controls, construction methodology and stabilization may be appropriate.

Potential wetlands Permitting Through the Determination of Applicability Process: Use of the DoA process in these areas to approve the project requires a finding by the Commission that any proposed work, including removal of the railroad tracks and ties, followed by the subsequent placement of the trail surface, will not alter the WRAs subject to jurisdiction. In my opinion, this will require, at a minimum, a thorough understanding of the proposed construction methodology, with a work sequence and erosion controls appropriate for the proximity and orientation of WRAs along the route. It may be appropriate to have location-specific construction methodologies for the different project zones identified above.

July 24, 2012
Dover Conservation Commission
Re: Bay Colony Rail Trail
Page 3 of 3

The Commission should note that there is an exemption from jurisdiction in the WPA Regulations for "unpaved pedestrian walkways for private use" at 310 CMR 10.02(2)(b)1.a. This exemption may not strictly apply to this project if the trail will be for "public use". The only possible exemption that might be applicable to this project under the Bylaw is an "exception" in the Regulations at 263-2 B.(4) for "overriding public purpose." That being said, I am of the opinion that a negative determination, with conditions, may be appropriate for this project if the Commission is confident that the project can be constructed without alteration of WRAs. The negative determination would be a written authorization that the Commission could issue after review of a Request for Determination of Applicability ("RDA") filing. The RDA filing would need to be made by the Rail Trail Committee or similar proponent, with proper public notice. In order to qualify for the negative determination, the project proponents would have to demonstrate (through plans, sketches, methods, protocols, etc.) that the project construction would be adequately controlled so as to not cause alteration of WRAs through erosion, sedimentation, filling with soil, lowering or raising of water tables, etc. At a minimum I recommend the following items be completed, and submitted, by the project proponents as part of the anticipated application process with the Commission:

- ✓ The location of a proposed limit of work/erosion barrier be prominently delineated in the field within Zone 3, 4 & 5 areas described above;
- ✓ A sketch plan on available GIS topographic maps be provided depicting the above work zone areas; and
- ✓ A sequence of work construction protocol be prepared and submitted describing the rail bed to rail trail conversion process from start to finish including project access locations for personnel and equipment, placement and maintenance of erosion barriers, required cutting of vegetation, removal and disposal of existing rails and ties, and descriptions of any required grading and filling.

I hope that this information is helpful to the Commission. Please do not hesitate to contact me if you have any questions concerning this or other matters.

Sincerely,

Paul J. McManus, LSP, PWS
President

Via email

Appendix I: Iron Horse Preservation Society Experience

IRON HORSE
PRESERVATION SOCIETY, INC.

Projects Developed in New England

Danvers, MA 4.3 mile
Waiting for stone dust budget to finish.
The town has put together a grant for $50,000 for stone dust.
Surface is a ¾-“ rock (material paid by Danvers Electric for about $25,000);
The town didn’t pay any money.
Completed Summer 2011.

Topsfield, MA 2 miles
Received about $100,000 in grants to do environmental determinations and pay for stone dust.
Surface is stone dust.
The town didn’t pay any money.
Completed Summer of 2011.

Wenham, MA 1.5 miles
Worked with the town to fix a 40’ breach in the ROW from beaver damage.
Surface is stone dust. The town paid about $35,000 for materials (this included ¾”- rock & stone dust).
Completed Summer of 2011.

Everett, MA 1 mile
Surface is recycled asphalt.
(May have had some grant money for signs). The city didn’t pay any money.
Completed Summer of 2011.

Haverhill, MA 1 mile
Surface is recycled asphalt.
The city didn’t pay any money.
Completed Summer 2011.

Rockland, MA 2 miles
Surface is recycled asphalt.
Didn’t pursue grant money.
The city didn’t pay any money.
Completed Summer 2011.

Methuen, MA 2.7 miles
Surface is recycled asphalt.
The city didn’t pay money for any environmental or materials.
The city didn’t seek any grant money.
Completed Summer of 2012.

Saugas, MA 2.6 miles
Surface is recycled asphalt.
The city didn’t pay money for any environmental or materials.
There was grant money for some material and environmental determinations by a non-profit.
There’s approx. 5,000 feet of trail graded only and not surfaced awaiting DCR review.
Completed Fall of 2012.

Current Projects in Progress

Salem, NH 3.5 miles
Surface to be recycled asphalt (donated by the city). All steel removed & 1/3 of the ties have been removed. The city isn't going to pay any money. The city didn't pursue grant money. Completion date to be Late Spring 2013.

Londonderry, NH 1 mile
No surface to be furnished.
All steel removed & the ties are being removed currently.
The town isn't paying any money for anything.
The town didn't pursue grant money.
Completion date will be Spring 2013.

Newton, MA
(get details from IHP)

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www.ironhorsepreservation.org

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Fax (781)584-6421

J. Dover Rail Trail Construction

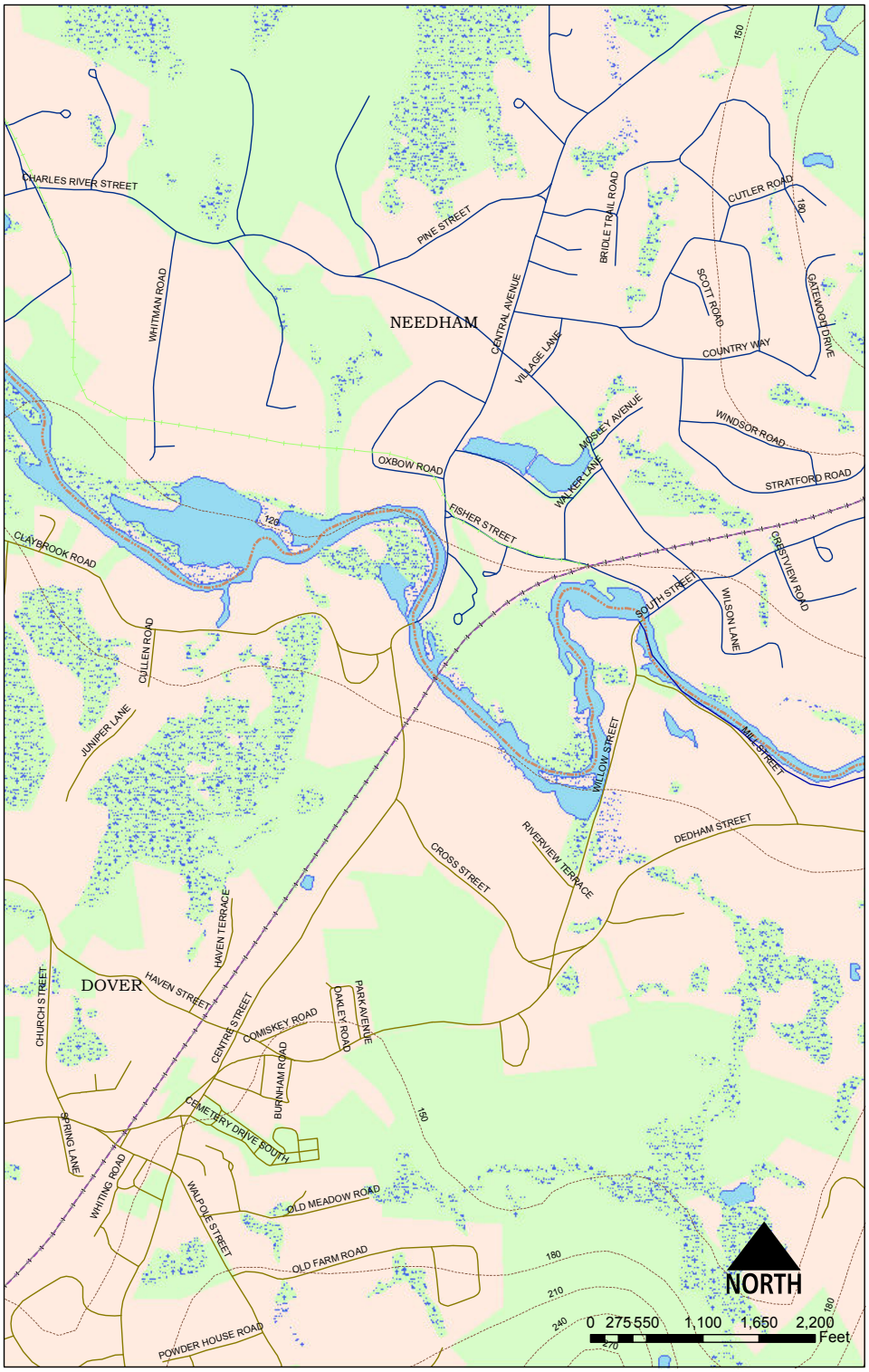
Joe Hattrup, President of Iron Horse Preservation (IHP), has provided a verbal estimate to construct a trail system for the Town of Dover that will cost approximately $15,000 to $20,000 per mile or approximately $65,000. Included in the estimate is the removal of vegetation located within the trail system and removal of the iron rails and ties. IHP would install and compact a stone dust surface. Excluded from the scope of work would include: permanent safety railings and bollards, sign kiosks, environmental insurance, engineering, bridge or culvert repair or replacement (we believe this is not pertinent), erosion control and landscaping.

IHP would provide the required general liability and workers compensation insurance and, if required, provide prevailing wages.

IHP negotiates with individual towns. There are quite a few variables that determine the cost to construct the trail system. Hattrup discussed a few possible scenarios; Newton and IHP are in the process of developing a trail system with the potential of no or a low cost to the City. IHP works on the premise that they will retain the iron with the ability to sell it as a commodity. The quantity, quality, and weight of the iron offsets the cost for IHP to construct a trail and ideally enough of a profit that IHP can complete the project with minimal costs to the City or Town.

Other towns such as Needham will incur much higher costs to construct due to the high density of infrastructure and people. IHP plans to work with the Town of Needham along with fund raising efforts and grant monies provided to the Town.

K. Dover - Medfield - Needham Rail Trail



L. Dover Rail Trail-Comparative Towns Summary

Purpose: To distill and highlight certain information specified in the "Comparative Towns Spreadsheet" for review and discussion. The spreadsheet will be updated over time, as will this Summary

The Towns: Approximately eight towns were selected for their similarities in demographics: size, population, type of trail and status. Although there is no exact duplicate of a Dover-like community we have gleaned information from the various sample towns to aid the Dover Committee in its information gathering efforts.

Towns profiled include: Concord, Danvers, Holliston, Malden, Stow, Sudbury, Wayland, Wellesley and Weston.

Focus of The Study: Each town is profiled by size (population, area), trail length, crossings, surface, source of funding, terrain, current status of development, issues, etc.

Similarities: There are very few specific similarities among the comparative towns. Populations vary, as do just about all of the items mentioned in the "Focus" section of this report. Trail lengths are somewhat similar, ranging from 2-4 miles, most connect with another town's trail system, most are directed or overseen by the town's conservation commission, or committee appointed by the selectmen. Perhaps the most universal similarity is the "Issues" subject. Safety, parking, abutter, environmental provoke the most debate and scrutiny. Key examples:

- **Funding**-Towns are basically divided into two camps, public and private funding. Most towns in the control group have relied on public funding (DCR, bonds, CPA funds, operating budget funds) Only Danvers relied on bartering with IHP and the town's electric company for major funding. The Wachusett Greenway towns have combined government funds with volunteer labor. The caveat here is that government funding delays the construction considerably.
- **Overseeing Entity:** In most towns there is an official committee appointed by the selectmen (Danvers, Dover, Stow), or a town department (Concord, Holliston, Wellesley, Weston), or administrator(Malden). Some towns have public/private partnerships through local trail or bike orgs Medfield, Needham, Wayland)
- **Terrain**-Mostly woodland, though some, in part, pass through commercial and high-density residential zones.
- **Connections**-Most trails connect at the boundary of 2 neighboring towns, either with a forest trail or the continuation of the rail bed.
- **Issues**- All issues pertain to every town, though in varying degrees, based on circumstances, e.g. encroachment, boundaries, wetlands. (See Concord, Danvers)

Differences: Each town appears to have nuanced differences. Population, area, terrain, drainage, rail bed ownership, funding, oversight, crossings, construction, surfaces, and status.

Dover Rail Trail-Comparative Towns Summary - cont.

- **Area**-Ranges vary from 5 to25
- **Population**-Ranges from 6,000 to 29,000
- **Trail Length**- 1.2-4.3. Appears similar, but vary greatly in characteristics
- **Surface**-Unimproved; cinders, stonedust, recycled asphalt, gravel, asphalt. Sometimes multiple surfaces within the town.
- **Crossings**-2 to 12 of varying traffic density, and type:at grade, tunnel and bridge
- **Contractor**-Construction contracting varies from commercial entities (Malden, DCR projects), public/private arrangements(Wachusett), and barter arrangements(Danvers)
- **Status**-Some trails are complete (Danvers,Malden), while most are in varying degrees of development from drawing board (Sudbury, Wayland, Weston) to partial completion (Concord, Holliston, Stow)
- **History**-Varies greatly. Some, like Weston, tried and failed to establish a trail in the early 1990's, only to find support more recently as requirements became less onerous and public sentiment turned to support outdoor recreation. Others were catalyzed by bike groups, trail organizations, town officials and volunteers to pursue development of abandoned rail beds (Concord, Danvers, Stow, Wayland). Some acted out of necessity to curb vandalism and scofflaws encroaching on the trails, dumping trash and creating a public nuisance with ATVs and snowmobiles; need to improve blighted areas (Holliston, Danvers)
- **Maintenance**-Levels of maintenance vary depending on funding and structure. Some are purely volunteer labor (Holliston, Stow, Wayland and Weston). Some are combined public/private efforts (Danvers, Wachusett), some public (Wellesley)

Recommendations: Given that the "Comparative Towns" serve as a benchmark among the many rail beds in various states of development, or consideration thereof, Dover would be wise to study any and all rail trails that can offer support and experience.

"Wachusett Greenways" serves as a prime example. The trail encompasses 21 miles of the 103-mile Mass. Central Rail Trail project. Every issue studied by the Dover RT Committee has been dealt with over the last 17 years of its existence.

Conclusion: The profile of the towns is a work in progress which benefits the current feasiblity study underway in Dover. The lines of communication with the towns have been established and the flow of information is enthusiastically given and received. As each community deals with the issues: e.g. legal, construction, abutter issues, surfaces, rules, "Friends" committees, Dover benefits from published reports, bids, meeting minutes, success stories and failures-all will facilitate the convoluted process of determining goals and priorities, both current and future.

M. Anderson & Kreiger LLP Memorandum

ANDERSON & KREIGER LLP

MEMORANDUM

TO: **Dover Board of Selectmen**
David Ramsay, Town Administrator

FROM: **Kevin Batt**
Stephanie Dubanowitz

C: **William Lahey**

DATE: **September 17, 2012**

RE: **Bay Colony Rail Trail – Summary of Lease Terms and Environmental Issues**

You requested Town Counsel review lease terms between the Massachusetts Bay Transportation Authority ("MBTA") and municipalities for the development of rail trails on rail corridors no longer in use for rail transportation. The MBTA has published a standard form of lease ("lease") to be used in connection with rail trail projects. This form of lease is generally not open to negotiation and revisions, but see the discussion in the third section of this memorandum. In the first section of this memorandum, I provide a summary of the important non-environmental terms and conditions of the lease. Because of their significance, I group environmental terms and other environmental issues in the second section of this memo. Finally, I briefly describe experience of other communities with the standard lease.

Important Lease Terms

- Under the lease, a town must designate a "corridor" within the leased premises that will be developed as a rail trail open to the public without fees. The premises outside the corridor must also be used for purposes ancillary to the rail trail and provide no revenue to the town, unless the MBTA allows a different use upon written request. The MBTA may require that the public be excluded from the premises that are outside the corridor.
- The lease is not intended to subject the leased premises to Article 97 protections.
- The town must use diligent efforts to secure funding to develop the rail trail project, at the risk of losing its statutory exemption from certain environmental liabilities (see below).
- The design plans developed by a town are subject to review by the MBTA, prior to procurement of construction services, for consistency with the intended use of the premises for a rail trail.
- The lease term is 99 years, subject to earlier termination by the MBTA with 2 years prior notice if the MBTA requires the right of way for rail or other transportation purposes. In the event of such early termination, the town would not be reimbursed for its

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Anderson & Kreiger LLP Memorandum - cont.

expenditures on the rail trail. If the MBTA terminates the lease because it plans to use the premises for transportation, the town will be responsible, upon request by the MBTA, to restore the premises to the grade existing at the commencement of the lease.

- The town accepts the premises "as is".
- The town is responsible for maintaining the trail, once constructed.
- The town may not install utilities in the premises without prior MBTA approval.
- The town takes the premises subject to any pre-existing leases, licenses and easements. There is no representation from MBTA that the town's use of the premises is exclusive, but the MBTA will make a list of all leases and licenses along the corridor for the town's information. The town may request the MBTA, upon completion of the 25% design of the rail trail, to modify or terminate such other interests that interfere with the proposed rail trail.
- Any incidental revenues derived from the premises revert to the MBTA.
- The MBTA reserves the right to enter the premises for emergency purposes and to install/repair existing utilities within the premises.
- If the town defaults on its responsibilities, the MBTA has several remedies including stepping into the town's shoes to manage/maintain the rail trail, subject to reimbursement of its costs by the town.
- The construction plan and schedule is subject to MBTA review and approval.
- The town is responsible for coordinating work and activities with any other grantees of funding for the rail trail.
- If there is any encroachment on the premises by a third party, then the MBTA has the sole right to cure or permit the encroachment.
- If the town conducts investigations on the premises, then it must provide the results of the investigations to the MBTA within ten days of receipt. Prior to execution of the lease, the town may not conduct soil sampling.
- All contracts for work on the premises must contain insurance coverage satisfactory to the MBTA and require performance bonds. In addition, the town must provide commercial general liability insurance with a minimum liability coverage for personal injury, bodily injury and property damage of not less than $1,000,000 per occurrence and $3,000,000 in the aggregate and umbrella liability coverage with limits of not less than $2,000,000 covering all work performed.
- The town cannot assign the lease without the prior written consent of the MBTA.

Environmental Terms and Related Issues

Statutory Background

Chapter 21E generally makes owners of land and the operators of a facility, subject to certain exceptions, liable for any release of hazardous materials at a site. One of the exceptions is for municipalities that lease land from the MBTA for the installation, operation and

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Anderson & Kreiger LLP Memorandum - cont.

maintenance of a rail trail, provided the municipality meets certain requirements. *See* G. L. c. 21E §2(d).

- No action of the town contributes to or worsens the release;
- DEP is notified by the town upon discovery of a release;
- Reasonable access is provided by the town for response actions taken with respect to the release;
- The town takes reasonable steps to prevent exposure of persons to and contain the release by fencing, paving or other suitable protections;
- The town takes short term measures to protect public health, safety and the environment from imminent hazards;
- Any voluntary response action by the town complies with DEP regulations; and
- The town acts diligently to develop the rail trail.

Indemnification

With this statutory background in mind, the MBTA lease addresses potential environmental hazards of former railway property by requiring the town to elect between providing environmental insurance or broadly indemnifying the MBTA. The indemnity obligation to the MBTA would include:

- all losses, costs and causes of action caused by something occurring on the premises or imposed upon or asserted against the MBTA by reason of:
  - the activities of the town, members of the public or others on the premises,
  - the discovery of pre-existing hazardous materials or the release of any hazardous materials on the premises as a result of the town's activities or the migration from land owned, leased, occupied or operated by the town, and
- any failure of the town to comply with the terms of the lease.

The town must also release the MBTA from any responsibility for the town's losses or damages relating to the condition of the premises and covenant not to bring any claims against the MBTA for response actions or costs in connection with the town's use of the premises. This indemnification and release provision includes claims for any contamination caused by the MBTA. If the MBTA determines that an indemnification by the town is ineffective, the MBTA can terminate the lease.

Environmental Insurance Coverage

If, instead of indemnifying the MBTA, the town elects to purchase environmental insurance, the policy must have minimum coverage limits of $3,000,000 per incident, a maximum deduction of $50,000 per incident and a term of at least 5 years. The premium of approximately $50,000 is due upon commencement of a five year policy, and the town may be eligible for a 50% share of this cost by Massachusetts Business Development Corporation.

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Anderson & Kreiger LLP Memorandum - cont.

Standard policies will cover (i) third party claims for bodily injury and property damage, (ii) limited on-site statutory clean-up costs including mitigation costs and property restoration costs of pre-existing conditions, and (iii) third-party claims for off-site clean-up resulting from pre-existing conditions. The endorsements/exclusions included as part of the standard policies, however, may limit the coverage provided. For example, endorsements in a policy issued to the Town of Acton for the Assabet River Rail Trail,[1] (a) limit coverage to previously unknown clean-up costs in a written demand from a governmental authority (ostensibly excluding coverage for voluntary clean-up activities); (b) exclude from coverage pre-existing conditions involving most of the standard contaminants one would expect to find on a former railroad property including PCBs, PAHs, arsenic, lead, mercury and other heavy metals; and (c) exclude coverage of pollution and disposal costs associated with railroad ties, rail tracks and excavated soil. Some of these exclusions are not contained in an incomplete, sample policy that was provided to the Town of Dover from Brad Niziak of the James L. Miniter Insurance Agency, and more robust coverage may be available. But, a careful assessment of the coverage and exclusions will be important in order to determine the magnitude of risk that the town may face. At best, given deductibles and exclusions of insurance policies, the town may anticipate that there will be limitations on coverage of any potential liability.

Another dilemma involves the timing of acquisition of the environmental insurance. Obtaining state and/or federal funding for rail trail projects may take a number of years. By the time funding is received to begin construction, five years of environmental insurance coverage may have expired. Sharing of costs of renewal premiums beyond five years is not available. The lease seems to contemplate that environmental insurance will be in place prior to execution, if the town is to avoid indemnification obligations. The town may want to explore whether the effective date of the insurance coverage can be postponed or to postpone, to the extent feasible, execution of the lease to a time that would better coincide with funding commitments.

Enviromental Due Diligence

Given these limitations in environmental insurance coverage, the town would benefit from conducting environmental due diligence on the property to better understand what, if any, contamination may exist on the site in order to assess its risk with respect to possible clean-up costs. Because of a prohibition in the lease on soil sampling before the lease is signed, investigation would necessarily be limited. Due diligence might consist of an on-site walk of the trail to identify obvious signs of contamination and a review of available track maps to identify any railroad related facilities on the site that might have generated excessive contamination (*e.g.* turnarounds, coal yards, etc.). Additionally, the town should also review historic records of abutting properties up to ¼ of a mile from the rail trail site to determine whether any adjacent

[1] The Town of Acton acquired a fee interest in the Assabet River Rail Trail parcel, and is not leasing this corridor from the MBTA.

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Anderson & Kreiger LLP Memorandum - cont.

properties would have been likely sources of contamination that could have migrated to the proposed rail trail site. A Licensed Site Professional should assist with this due diligence.

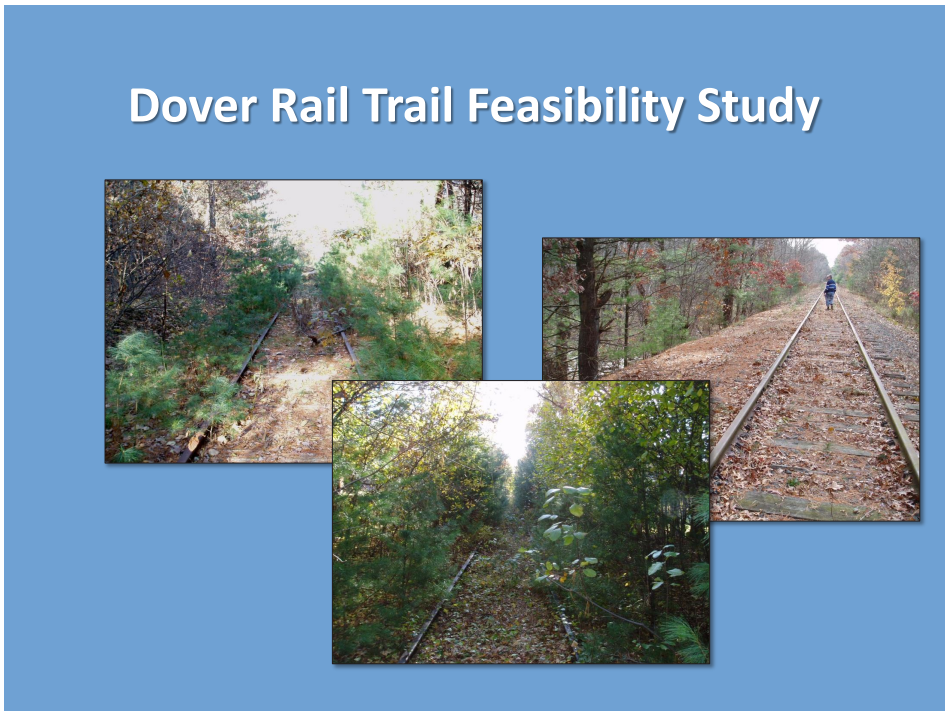
In developing the rail trail, the lease requires the town to follow the state-prescribed *Best Management Practices for Controlling Exposure to Soil During the Development of Rail Trails* ("BMPs). While complete protection from environmental liability may not be possible, the BMPs help mitigate the potential costs of remediation. For example, the BMPs do not require expensive excavation, removal and disposal of residual contaminated materials from historic railway operations. Capping, isolating and managing such contaminants in place may suffice. The costs to implement such measures may be available as part of funding for overall trail development. Locations of potentially higher concentrations of hazardous materials, such as stations and crossings, industrial corridors, and switching and repair yards, may entail more comprehensive and more costly responses.

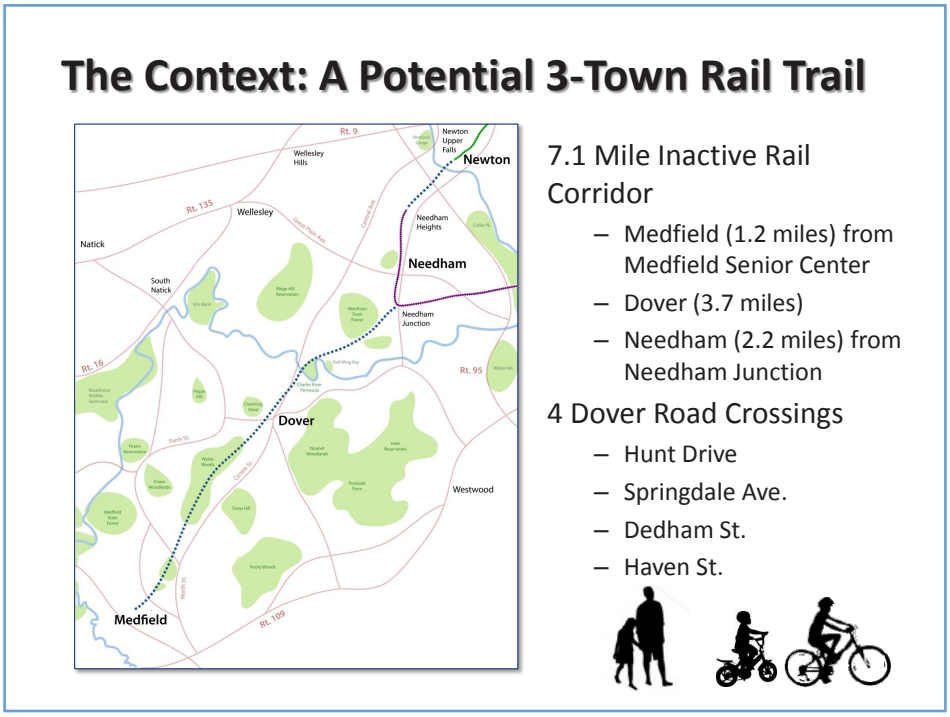
Experience of Other Communities

The leasing agent for the MBTA reports that the following Massachusetts communities have entered into leases with the MBTA for rail trails: Danvers, Everett, Malden, Methuen, Peabody, Revere, Salisbury, Somerville and Saugus. We understand that the city of Lynn declined to sign the lease after the MBTA declined to modify terms as requested by Lynn. Special conditions were included in Exhibit D to the leases with Malden and Everett that exclude the municipalities' liability for known, pre-existing contaminated sites with Release Tracking Numbers. As part of the special condition, the municipality and the MBTA commit to seeking funding to remediate such sites. Other than these special conditions, the experience of most communities has been that the MBTA generally declines to modify terms of the standard lease.

If you have any additional questions or concerns, please contact us.

N. Dover Rail Trail Feasibility Study



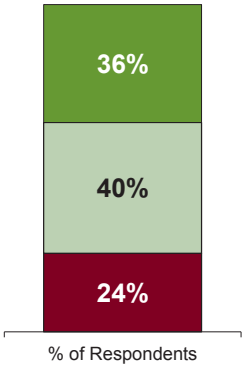


Dover Rail Trail Feasibility Study - cont.

Why Now? Over ¾ of Dover Residents Expressed Support in a 2011 Town Survey

Dover Master Plan Survey Results - 2011

*Q: "Would you **favor converting the unused rail line** passing through Needham, Dover, and Medfield into a "rail trail" for walking and biking across the three towns?"*



- Yes, if funded privately and/or by grant
- Yes, if private property can be protected
- No

n = 681 (19 left the answer blank)

Project Overview

Proposed Surface

Appropriate for walking, running, casual bike riding, and skiing

- Not paved
- Not designed for performance biking
- No motorized vehicles
- Will not be plowed

Recently completed rail trail in Danvers

Nonprofit Support

Bay Colony Rail Trail Association

- Local nonprofit organization
- Offers volunteers, research, fundraising, and coordination
- List of ~100 interested Dover residents

Dover Rail Trail Feasibility Study - cont.

Dover Rail Trail Committee Charge

- **What:** Ad-hoc committee formed by the Dover Board of Selectmen in 2011
- **Role:** Develop a **recommendation** for the conversion of the Dover section of the Bay Colony rail bed into a recreational trail by working with all relevant **Dover** boards, committees and departments and coordinating activities with the efforts of **Needham** and **Medfield**
- **Product:** A thorough **report** presenting a balanced discussion of the pros/cons of the conversion and **suggested policies** for all issues which must be addressed

Project Progress to Date

November 2009
- BCRT **presentation** to Dover BOS and abutters
- **Feasibility Study** request to Boston Region MPO from BOS

June 2011
- BOS creates **Dover Rail Trail Committee (RTC)**

January 2012
- Letter to MBTA regarding **lease possibility**

2009 2010 2011 2012

Fall 2011
- **Tri-town RTC** formed to address common issues, maximize research, and identify shared financial /volunteer opportunities
- Dover-specific issues to be addressed by **Dover RTC**

Dover Rail Trail Feasibility Study - cont.

Working Assumptions

Natural Rural Character

- Preserve natural rural character of Dover's trails and conservation land
- Crushed stone path (no paving)

Limited Cost to Town

- Salvage value of rails and ties could cover conversion costs
- Public-private partnership, donations, and volunteering

Local Control

- Dover maintains control of Dover segment

Future Plans

- **Rail Trail Study:** Full study of pros/cons will be available with input from citizens and all relevant Dover boards and committees
  - Over 40 areas of study: legal, public safety, maintenance, rules and regulations, financial, design and construction, and environmental factors
  - Will include information and experiences from other MA communities with rail trails
- **May 2013 Town Meeting:** Present study results and recommendations

O. Recreational Path Feasibility Study

Context

Opportunity to Convert the 3.7-Mile Unused Rail Corridor in Dover to a Recreational Path

Working Assumptions:

- Appropriate for walking, running, casual bike riding, and skiing
- Not paved
- Preserve Town's rural character
- Local control
- Limited cost to the Town

Dover Rail Trail Committee Working on a Feasibility Study to Understand Pros/Cons of the Path

- Ad-hoc committee formed in 2011
- At May 2012 Town Meeting, voters approved up to $5,000 for miscellaneous expenses related to the Feasibility Study

Recreational Path Feasibility Study - cont.

Feasibility Study – Key Questions

1. ***Is it feasible for Dover to convert the unused rail corridor into a Recreational Path?***
   - Includes financial, environmental, legal, public safety, citizen interest, and community / abutter impact
2. ***If yes, then what are the Committee's recommendations for the range of elements involved in creating the Path?***
   - *Considers what would be an appropriate Recreational Path for Dover and how it would be constructed, managed, and maintained*

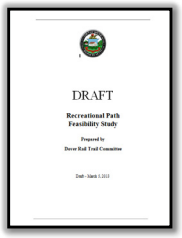
With the help of interested Dover citizens, the Committee identified over 80 items for review and study

Status Update

Rail Trail Committee Activities

- Regular meetings with public attendance
- Community engagement (web page, email list, abutter mailings, open meetings)
- Engagement of Town officials (ConCom, Public Safety, etc.)
- Research of other town activities and best practices
- Knowledge sharing with Needham and Medfield on similar issues

Status as of March 2013



- Draft Feasibility Study, with some remaining questions and issues to explore

Recreational Path Feasibility Study - cont.

Draft Feasibility Study Contents

Recommendations for Town Consideration

A. Guiding Principles
B. Surface
C. Uses
D. Rules
E. Construction
F. Rail Trestle Bridge
G. Infrastructure
H. Partnership with "Friends" Group
I. Governance
J. Maintenance
K. Parking
L. Public Safety
M. Awareness
N. Needham and Medfield Coordination

Community Impact

A. Benefits to Town and Projected Usage
B. Public Safety
C. Community and Abutters' Input
D. Environmental Impact

Financial and Legal Implications

A. Projected Costs
B. Projected Sources of Funding
C. Legal and Insurance Considerations

Warrant Article Request

The Committee Has Identified Five Key Items That Require Additional Research and Professional Expertise

1. Right-of-Way Review
2. MBTA Lease Terms
3. Engineering Analysis
4. Construction Contracting
5. Environmental Review

- Warrant Article request to fund sufficient due diligence on key items, i.e., hiring external professional expertise
- If approved, the Committee will work toward completion of the Feasibility Study in time for the May 2014 Town Meeting, as appropriate

P. Needham BCRT Study Construction Cost Estimate Areas

Areas

1.) Charles/Fisher Parking Area

Description	Area (SF)
Total Site Area	70000
Fisher Street Parking Area	3562
Charles River Street Parking Area	4990
Private Access Drive	3470
Path	8200
"Lollipop" Area	623
"Undisturbed" Area Due to Slope	13330

Calculations

Description	Area (SF)
Total Parking/Driveway Area	12022
Lawn Area including undisturbed slope area	49155
Lawn Area not including undisturbed slope area	35825

2.) Town Forest

Description	Area (SF)
Town Forest Parking Area	6876
Clearing Limits	11379

Q. Needham BCRT Study Construction Cost Estimate Areas

Phase 1 - Construct 10' multi-use BCRT between Charles River and Town Forest

Item	Description	Quantity	Unit	Unit Price	Amount
Clearing and Grubbing	Assumed 3' on each side of trail	1.10	Acre	$ 12,000.00	$ 13,200
Compost Filter Tubes	Areas within 100' of wetland resources	6225	FT	$ 5.00	$ 31,125
Wood Rail Fence	Trail sections with 2:1 slope or greater	1700	FT	$ 25.00	$ 42,500
Intersection Approach Treatments	See intersection approach figure in study for details	2	EA	$ 12,500.00	$ 25,000
10' Path - Charles River to Town Forest Connection	2" compacted stone dust surface over 4" dense graded crushed stone	80000	SF	$ 2.50	$ 200,000
				Subtotal	$ 311,825
				Contingencies (25%)	$ 77,956
				Total	$ 389,781
				Say	$ 400,000

Phase 2 - Construct trailhead parking areas at Fisher Street and Charles River Street

Item	Description	Quantity	Unit	Unit Price	Amount
Kiosk	Located at trailhead parking area	2	EA	$ 2,000.00	$ 4,000
Landscaping	Trees - species to be determined	6	EA	$ 500.00	$ 3,000
Clearing and grubbing	Assumed 10% of site	0.02	Acre	$ 12,000.00	$ 240
Loam Borrow	4" depth	35850	SF	$ 0.60	$ 21,510
Parking Areas/Driveway - Charles/Fisher Street	8" dense graded crushed stone	12000	SF	$ 2.25	$ 27,000
Wood Rail Fence/Guardrail	Separates path and parking area	285	FT	$ 35.00	$ 9,975
Walkway areas	2" compacted stone dust surface over 4" dense graded crushed stone	625	SF	$ 2.50	$ 1,563
Granite Curb Type VA4	For railroad station footprint	120	FT	$ 36.00	$ 4,320
				Subtotal	$ 71,608
				Contingencies (25%)	$ 17,902
				Total	$ 89,509
				Say	$ 100,000

* Additional Cost Due to Potential Contamination

Item	Description	Quantity	Unit	Unit Price	Amount
Unclassified Excavation	Assumed "lawn" area due to potential contamination. 6" depth	35850	SF	$ 0.50	$ 17,925
Removal and disposal of soil	Assumed "lawn" area due to potential contamination. 6" depth	35850	SF	$ 1.00	$ 35,850
Gravel Borrow	Assumed "lawn" area due to potential contamination. 8" depth	35850	SF	$ 0.65	$ 23,303
				Subtotal	$ 77,078
				Contingencies (25%)	$ 19,269
				Total	$ 96,347
				Say	$ 100,000

Needham BCRT Study Construction Cost Estimate Areas - cont.

Phase 3 - Construct trailhead parking area at Town Forest

Item	Description	Quantity	Unit	Unit Price	Amount
Kiosk	Located at trailhead parking area	1	EA	$ 2,000.00	$ 2,000.00
Clearing and Grubbing	Includes trail and 5' on each side of trail	0.25	Acre	$ 12,000.00	$ 3,000.00
Parking Area - Town Forest	8" dense graded crushed stone	6900	SF	$ 2.25	$ 15,525.00
10' Path - Town Forest Parking to Trail	2" compacted stone dust surface over 4" dense graded crushed stone	5700	SF	$ 2.50	$ 14,250.00
Culvert	Proposed culvert crossing of stream channel	1	LS	$ 30,000.00	$ 30,000.00
				Subtotal	$ 64,775.00
				Contingencies (25%)	$ 16,194
				Total	$ 80,969
				Say	$ 85,000

Phase 4A - Create on-road bike route, directional signage and pavement markings from Town Forest to High Rock School

Item	Description	Quantity	Unit	Unit Price	Amount
Bike Route Signs	Bike route sign on steel post	10	EA	$ 250.00	$ 2,500.00
Sharrow Pavement Markings	Located every 200' on each side of roadway	20	EA	$ 30.00	$ 600.00
				Subtotal	$ 3,100.00
				Contingencies (25%)	$ 775
				Total	$ 3,875
				Say	$ 5,000

Phase 4B - Create on-road bike route, directional signage and pavement markings from Town Forest to Needham Junction

Item	Description	Quantity	Units	Unit Price	Amount
Bike Route Signs	Bike route sign on steel post	10	EA	$ 250.00	$ 2,500.00
Sharrow Pavement Markings	Located every 200' on each side of roadway	40	EA	$ 30.00	$ 1,200.00
Pavement Marking Removal	Assumed existing line is 4"	685	SF	$ 1.10	$ 753.50
4" Reflectorized White Line (Thermoplastic)	Re-stripe Chestnut Street with 11' Lanes and 4' bike lane	2050	FT	$ 0.75	$ 1,537.50
				Subtotal	$ 5,991.00
				Contingencies (25%)	$ 1,498
				Total	$ 7,489
				Say	$ 8,000

R. Needham BCRT Study Construction Cost Estimate Intersection Approach

Intersection Approach

Signs and Posts	$	3,400.00
Bollards	$	2,600.00
Boulders	$	600.00
4" Yellow Thermo	$	91.00
Crosswalks and Stop Lines	$	475.00
Approach xing and bike symbol paint	$	200.00
Paved Path	$	4,860.00
Total	$	12,226.00
Say	$	12,500.00

S. Needham BCRT Study Construction Cost Estimate Summary

Phase		Amount
Phase 1	$	400,000.00
Phase 2	$	100,000.00
Phase 3	$	85,000.00
Phase 4A	$	5,000.00
Phase 4B	$	8,000.00
Total	$	598,000.00
* Potential contamination at Charles/Fisher	$	100,000.00

T. Needham BCRT Additional Alternatives Analysis Cost Estimate For Town

9/17/2013

MBTA OPTION

Phase 5 - Create multi-use trail from High Rock Street to Needham Junction Entirely Within MBTA ROW

Item	Description	Quantity	Units	Unit Price	Amount
Clearing and Grubbing	Assumed 10' along trail length	0.60	Acre	$ 12,000.00	$ 7,200
Rock Excavation	For section East of High Rock Street Bridge	1200	CY	$ 75.00	$ 90,000
Compost Filter Tubes	For areas within 100' of wetland resources	900	FT	$ 5.00	$ 4,500
Borrow / Fill Material	For path construction / grading	500	CY	$ 30.00	$ 15,000
Culvert Structure	At drainage swale	1	EA	$ 30,000.00	$ 30,000
6' Chain Link Fence	To separate trail from tracks	1600	FT	$ 30.00	$ 48,000
Wood Rail Fence	Trail sections with retaining wall and/or 2:1 slope or greater	1200	FT	$ 25.00	$ 30,000
Modular Block Retaining Wall	To avoid ROW, utility and environmental impacts	8500	SF	$ 45.00	$ 382,500
Intersection Approach Treatment	See intersection approach figure in study for details	0.5	EA	$ 12,500.00	$ 6,250
10' Trail - Town Forest Connection to Chestnut St	2" compacted stone dust surface over 4" dense graded crushed stone	24750	SF	$ 2.50	$ 61,875
Sidewalk Extension At Chestnut Street	To connect to existing sidewalk	70	SY	$ 50.00	$ 3,500
				Subtotal	$ 678,825
				Contingencies (25%)	$ 169,706
				Total	$ 848,531
				Say	$ 850,000

NSTAR OPTION

Phase 5 - Create multi-use trail from High Rock Street to Needham Junction Entirely Within NSTAR Property

Item	Description	Quantity	Units	Unit Price	Amount
Clearing and Grubbing	Assumed 10' along 1,300 foot section of trail	0.40	Acre	$ 12,000.00	$ 4,800
Compost Filter Tubes	For areas within 100' of wetland resources	900	FT	$ 5.00	$ 4,500
Borrow / Fill Material	For path construction / grading	3600	CY	$ 30.00	$ 108,000
Culvert Structure	At drainage swale / wetland crossing	2	EA	$ 30,000.00	$ 60,000
6' Chain Link Fence	To separate trail from tracks	1600	FT	$ 30.00	$ 48,000
Wood Rail Fence	At trail sections with retaining wall and/or 2:1 slope or greater	400	FT	$ 25.00	$ 10,000
Modular Block Retaining Wall	To avoid ROW, utility and environmental impacts	4000	SF	$ 45.00	$ 180,000
Intersection Approach Treatment	See intersection approach figure in study for details	1	EA	$ 12,500.00	$ 12,500
10' Trail - Town Forest Connection to Chestnut St	2" compacted stone dust surface over 4" dense graded crushed stone	15700	SF	$ 2.50	$ 39,250
Sidewalk Extension At High Rock Street	To connect to NSTAR access drive	70	SY	$ 50.00	$ 3,500
				Subtotal	$ 470,550
				Contingencies (25%)	$ 117,638
				Total	$ 588,188
				Say	$ 600,000

U. Bay Colony Trail Memo Annotated

BOSTON REGION METROPOLITAN PLANNING ORGANIZATION
Richard A. Davey, MassDOT Secretary and CEO and MPO Chairman
Karl H. Quackenbush, Executive Director, MPO Staff

DRAFT
MEMORANDUM

DATE **January 16, 2012**
TO **Towns of Medfield, Dover, and Needham**
FROM **Christine Bettin and Sean Pfalzer**
MPO Staff
RE **Bay Colony Rail Trail Feasibility Study**

Background

The towns of Medfield, Dover, and Needham requested that the Boston Region Metropolitan Planning Organization (MPO) staff conduct a study to determine the feasibility of a rail trail along the inactive rail line, between Needham Junction in Needham and Medfield Junction in Medfield, which is owned by the Massachusetts Bay Transit Authority (MBTA). This proposed rail trail is referred to as the Bay Colony Rail Trail (BCRT), since the last railroad company to run service on this rail line was the Bay Colony Railroad Company. In spring and summer of 2011, MPO staff began developing the BCRT Feasibility Study, which provides information on existing conditions, physical right-of-way, environmental issues, potential trail usage, and design considerations.

Due to changes in MPO staff, the BCRT study was put on hold in draft form. During that time, the Metropolitan Area Planning Council (MAPC) began a study for the portion of the inactive rail line north of Needham Junction in Newton that will evaluate potential uses of the right-of-way. Additionally, in November 2012 Needham approved the appropriation of $35,000 for the BCRT Association to conduct a conceptual planning and design study for the portion of the inactive rail line between Needham Junction and Dover. The Needham study proposes to analyze access and ADA compliance issues, and to conduct public workshops to gain input from various stakeholders.

In anticipation of these studies, the MPO staff is making the draft memo for the MPO's BCRT study available to interested parties in order to provide useful information for the development of the MAPC and Needham studies. Upon completion of the MAPC and Needham studies, the MPO's BCRT study could be finalized by including information, conclusions, and recommendations from the above-mentioned studies.

Introduction

The MPO's draft BCRT study provides an examination of the issues associated with converting seven miles of a railroad corridor owned by the MBTA to a shared-use path for nonmotorized transportation. The term "shared-use path" denotes a path used by bicyclists, pedestrians, joggers, skaters, wheelchair users, and other nonmotorized users. A "rail trail" is a category of shared-use path. It denotes a path that is built on a

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Bay Colony Trail Memo Annotated - cont.

railroad right-of-way. As this is a study of such a facility, the more specific term “rail trail” will be used.

The section of the railroad proposed for the conversion traverses the towns of Needham, Dover, and Medfield. The proposed northern terminus of the rail trail would be MBTA’s Needham Junction Station, and the proposed southern terminus would be Ice House Road in Medfield. Adjacent land uses range from residential, retail, and commercial to forests and open spaces. Sections of the trail may attract pedestrians, bicyclists, joggers, skaters, and other nonmotorized users. The proposed rail trail would connect with the equestrian trails located along the right-of-way in Medfield and Dover. It would also connect with the MBTA commuter rail station at Needham Junction, which is also the terminus for an MBTA bus route, as well as with other bus stops within its vicinity.

Section 1 of this study presents background information on the study area, including demographics, travel patterns, public transportation services, and bicycle and pedestrian crash data.

Section 2 provides information regarding the inactive rail line, including the history of rail service, and a description of the right-of-way, street crossings, environmental issues, and current uses.

Section 3 discusses the proposed trail, including the types of users, estimated demand, possible Newton connections, parking, and next steps.

Information on existing conditions was gathered during site visits of the right-of-way conducted by MPO staff with local officials, local planning staff, and interested residents. There were three site visits:

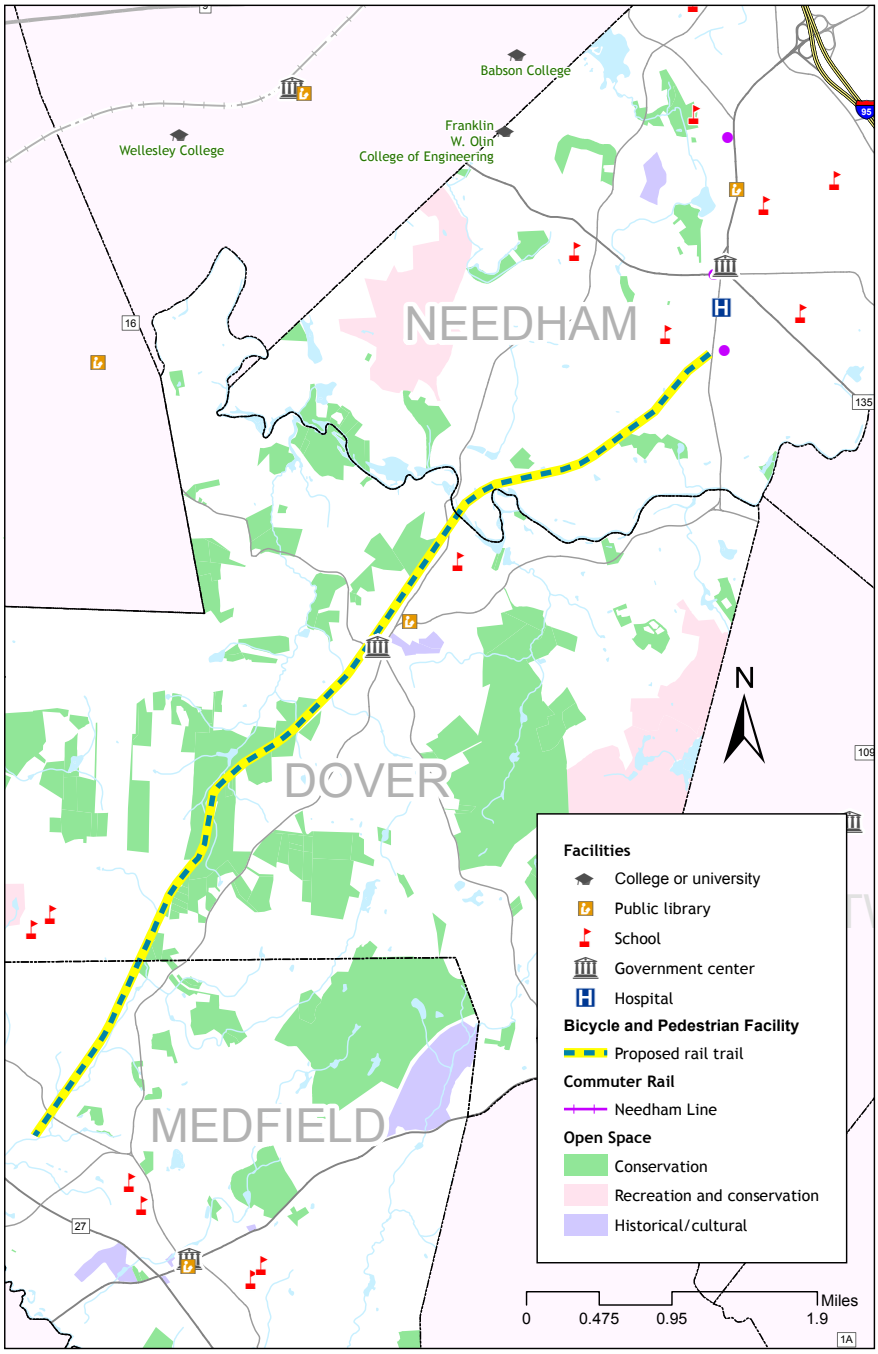
- Needham Junction to Dover Center, Sunday, April 10, 2011
- Dover Center to Hunt Drive, Dover, Monday, June 6, 2011
- Hunt Drive to Icehouse Road, Medfield, Tuesday, June 21, 2011

The information provided in this draft BCRT study is intended to help guide future planning of the Bay Colony rail corridor by the adjacent communities. Each community would be responsible for and independently proceed with future planning of the corridor within their respective town boundaries.

1. Existing Conditions

This section of the study presents background information on the study area communities of Needham, Dover, and Medfield. Discussed here are demographics, the transportation modes used by area residents and workers, transportation infrastructure and services, and bicyclist and pedestrian crash data. The study area is indicated in Figure 1.

Bay Colony Trail Memo Annotated - cont.



Boston Region MPO

FIGURE 1
Study Area

Bay Colony Rail Trail Feasibility Study

Bay Colony Trail Memo Annotated - cont.

Boston Region MPO 4 January 16, 2013

Demographics

Table 1 contains the population of the three study-area communities in 2010. Table 1 also includes the land area of each community, its population density, and the number of people who are employed in each town, some of whom may live elsewhere.

Table 1
Population, Land Area, Population Density, and Employment, by Community, 2009 and 2010

Community	2010 Population	Land Area (sq. mi.)	Population per Sq. Mi.	# Working in Each Community
Needham	28,886	12.61	2,291	20,456
Dover	5,589	15.33	365	744
Medfield	12,024	14.51	829	2,788
Total	**46,499**	**42.45**	**1,095**	**23,988**

Source: 2010 U.S. Census (population); 2009 CTPS Transportation Systems Analysis Group estimates (employment).

The study area ranges from suburban to rural, with the highest population densities in the northeast near Boston in Needham and the lowest at the southwestern end of the study area, in Medfield. Similarly, a high concentration of employment exists in Needham, while the remainder of the study area has low levels of employment. All of the communities have more residents than workers; however, the proportion of the number of people working in Needham to its respective population is higher than the proportion of those working in Dover and Medfield.

Table 2 displays the modes of transportation that residents of the study area use for commuting. Of the more than 21,100 workers, an overwhelming majority of residents drive alone. Less than 5 percent carpool. About 11 percent use some type of transit. Almost 3 percent are walking or bicycling. Less than 1 percent use other modes of transportation and about 7 percent report working at home.

Bay Colony Trail Memo Annotated - cont.

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Table 2
Transportation Modes Used to Get to Work
by Employed Residents, by Community, 2010 Estimates

Community	All Workers: 16+	Drive Alone	Carpool	Transit	Bicycle/ Walk	Other	Worked at Home
Needham	13,096	9,625	594	1,440	483	25	929
Dover	2,326	1,703	174	232	49*	21	119
Medfield	5,687	4,349	182	569	72*	0	472
Total	**21,109**	**15,677**	**950**	**2,312**	**604**	**46**	**1,520**
Percentage	100%	74.3%	4.5%	11.0%	2.8%	0.2%	7.2%

Source: 2000 and 2010 U.S. Census, and 2005–09 American Community Survey.
Note: The mode split distribution from the 2005–09 ACS was applied to estimate the percentages of various transportation modes used for getting to work.
* The Dover and Medfield bicycling estimates may not be considered valid due to their low sample size.

Table 3 indicates that both the number and percentage of resident workers over the age of 16 who bicycle and walk to work are 0.6 percent and 2.2 percent, respectively.

Table 3
Number and Percentage of Residents Bicycling and Walking to Work,
by Community, 2010 Estimates

	Bicycling		Walking	
Community	**#**	**%**	**#**	**%**
Needham	121	0.9%	362	2.7%
Dover*	9	0.4%*	40	1.7%
Medfield*	0	0.0%*	72	1.3%
Total	**130**	**0.6%**	**474**	**2.2%**

Source: 2000 and 2010 U.S. Census, and 2005–09 ACS.
Note: The mode split distribution from the 2005–09 ACS was applied to estimate the number of residents bicycling and walking to work.
* The Dover and Medfield bicycling estimates may not be considered valid due to their small sample size.

It should be noted that these numbers are estimates based on a U.S. census questionnaire. Only workers 16 years of age and older were included. All students, including those 16 and older, were excluded. Inclusion of students would increase the overall bicycle share. These are U.S. census data, which are collected in early spring,

Bay Colony Trail Memo Annotated - cont.

when, according to metropolitan Boston counts, bicycle volumes are about one-quarter of the peak volumes. It is not known what the seasonal variations are for pedestrians, but pedestrian volumes are assumed to be less variable than bicycle volumes. Also, the census questionnaire asks for the mode used for the longest part of the trip to work. A trip involving a two-mile bicycle trip to a rail station, a five-mile train trip, and a half-mile walk to the office would be classified as a rail trip.

Public Transportation

The proposed BCRT would provide direct access to the MBTA's Needham commuter rail line if the bridge crossing the Charles River were to be renovated and used for the trail. The distance from the southern end of the trail to Needham Junction is almost seven miles and to Walpole Station is about six miles. For those traveling to Boston, however, the train ride from Needham Junction is shorter. The on-train time from Needham Junction to Boston's South Station, according to the MBTA, ranges from 28 to 37 minutes. The times vary because some trains do not stop at all stations, layover times at stations vary throughout the day, and the time spent picking up and discharging passengers is dependent on passenger loads. There are 16 weekday inbound trains from Needham Junction, providing service between 6:18 AM and 10:18 PM. The five AM-peak-period inbound trains have travel times of 32 to 36 minutes. The MBTA terminated weekend service as of July 2012.

Residents of Needham, Dover, and Medfield account for nearly all of the daily boardings at Needham Junction, with Needham residents accounting for approximately two-thirds of the passengers. Driving and walking are the main modes of getting to the station. The MBTA parking lot typically hovers around full capacity, and 40 percent of passengers report accessing the station by foot.[1] Few passengers currently access the station by bicycle, as indicated by the low utilization of bicycle racks at the station.

The on-train time from Walpole Station on the Franklin Line varies between 33 and 54 minutes on the 17 inbound trains. Five of the six AM-peak-period inbound trains serving Walpole have travel times of 44 to 50 minutes; a semi-express train arrives in 38 minutes.

Approximately a quarter of passengers boarding at Walpole Station are Medfield residents. A majority of passengers access the station by automobile, and approximately 15 percent report walking to the station. There is also a growing number of passengers bicycling to the station; all bicycle racks are usually utilized.

The MBTA permits the transport of nonfolding bicycles on all commuter rail lines during off-peak hours; folding bicycles are allowed on all trains. This allows bicycle access on all inbound commuter rail trains after the morning peak period and on all outbound

[1] Boston Region Metropolitan Planning Organization, *MBTA Systemwide Passenger Survey,* prepared by the Central Transportation Planning Staff, May 19, 2010.

Bay Colony Trail Memo Annotated - cont.

trains except during the evening peak period. There is one Franklin Line train that leaves Walpole before the peak period, at 5:45 AM, that allows nonfolding bicycles on board.

Crash Data

The crash data discussed here include crashes that have occurred between motor vehicles and either bicyclists or pedestrians. These crashes occurred on the road system, on sidewalks, or in parking lots. There are two primary reasons for including these data in this study. The first reason is to determine whether there are high-crash locations that would be affected by the construction of the BCRT. The second is to provide an overview of crashes in the community for elected officials, municipal staff, and members of the public.

The crash data discussed in this study were obtained from the MassDOT Highway Division, which in turn obtained the data from the MassDOT Registry of Motor Vehicles Division. The data are limited in two important ways. First, many incidents are not reported, especially bicyclists' falls that do not involve impact with a motor vehicle. Second, for many of the reported crashes, information is incomplete and/or imprecise, especially regarding the location of the crash.

Table 4 shows the number of bicycle and pedestrian crashes by community and the rates per thousand residents. The years 2002 through 2009 are used. The seven-year span allows a broad view of what has occurred. The largest number of bicycle crashes occurred in Needham, whereas Dover has the highest crash rate, of 2.5 bicyclists per 1,000 residents, nearly double the rate of Needham and Medfield.

With regard to pedestrian crashes, the largest number occurs in Needham. Needham also has the highest crash rate, of 1.3 pedestrians per 1,000 residents.

Also included in the table are corresponding data for the Boston Region MPO area (101 communities). The regional bicyclist crash rate per 1,000 residents is higher than Needham's and Medfield's rates and lower than Dover's; however, it is higher than the average of all three communities combined. The regional pedestrian crash rate per 1,000 residents is higher than each individual community's rates and approximately twice as high as Needham's rate. It is almost three times as high as the average of all three communities combined.

Bay Colony Trail Memo Annotated - cont.

Table 4
Number of Bicycle and Pedestrian Crashes,
by Community, Boston Region MPO, and per 1,000 Residents,
2002–09 Inclusive

Community	2010 Population	# Bicycle Crashes	Bicycle Crashes per 1,000	# Pedestrian Crashes	Pedestrian Crashes per 1,000	Fatalities	
						Bicyclists	Peds
Needham	28,886	38	1.3	37	1.3	0	1
Dover	5,589	14	2.5	1	0.2	0	0
Medfield	12,024	15	1.2	5	0.4	1	0
Total	**46,499**	**67**	**1.4**	**43**	**0.9**	**1**	**1**
Boston Region	3,161,712	5,394	1.7	8,570	2.7	30	241
% of Region	1.5%	1.2%		.5%		3.3%	.4%

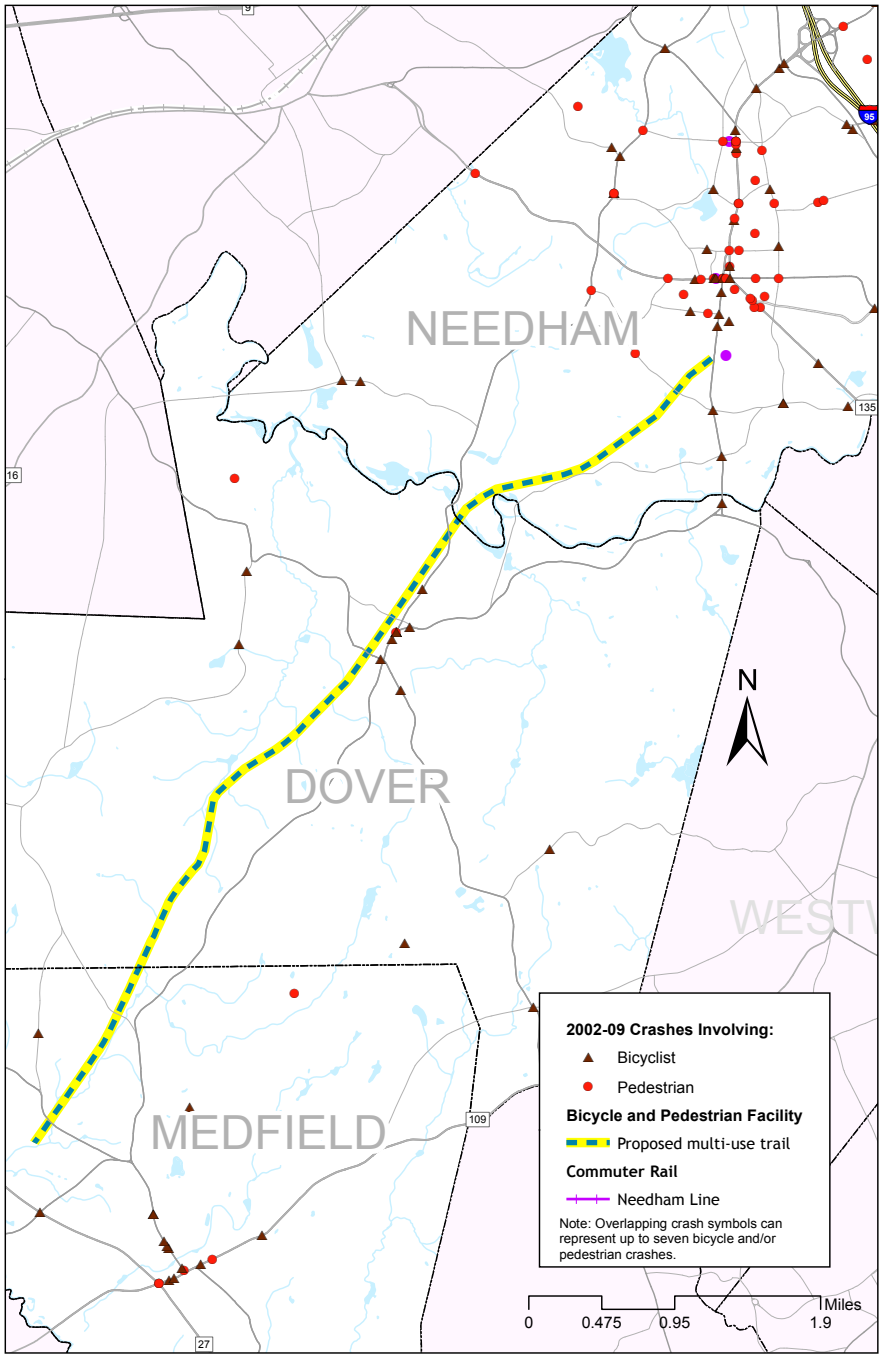
Sources: 2010 U.S. Census (population); MassDOT Registry of Motor Vehicles (crashes).

There is not enough information to determine why certain communities have higher rates of crashes than others do. Possible explanations are higher levels of motor-vehicle volumes and/or higher levels of walking and bicycling. Factors pertaining to specific locations might include excessive speed, disregard of traffic controls, lack of space for pedestrians and bicyclists, and poor sight distance.

To determine the specific areas where crashes were concentrated, the crashes were mapped by community. These results are shown in Figure 2.

Although there are no at-grade crossings along the right-of-way that have a high number of crashes, Figure 2 indicates that a high number of crashes occurred at Dedham Street and Centre Street in Dover. This intersection has also been identified by a traffic study, commissioned by the Dover Board of Selectmen and completed by Vanasse and Associates in 2011, as being problematic for vehicles.

Bay Colony Trail Memo Annotated - cont.



Boston Region MPO

FIGURE 2
Medfield, Dover, and Needham Crashes in 2002-09

Bay Colony Rail Trail Feasibility Study

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2. Rail Corridor Right-of-Way

This section provides a short history of the rail service that used to operate between Needham Junction and Medfield Junction, followed by a physical description of the rail corridor's right-of-way, environmental issues, and current use.

History of Rail Service

The inactive railroad line that would be used for the proposed Bay Colony Rail Trail between Needham Junction and Medfield Junction was once the midsection of a through route for passenger and freight trains between Boston and Woonsocket, Rhode Island. This line had numerous operators and name designations from its original construction until it terminated service. The segment from Needham Junction to Medfield Junction was originally part of a line opened in November 1861 by the New York & Boston Railroad between Needham Center and Medway. This was an extension of the Charles River Branch Railroad, which had begun service from Brookline Village to Newton Upper Falls in 1852 and to Needham Center in 1853, and had been merged into the NY&B in 1855. The line was further extended to West Medway in 1862 and to Woonsocket in 1863.

In 1865 the NY&B was merged into the Boston, Hartford & Erie Railroad, becoming that line's Woonsocket Division. The BH&E was succeeded in 1875 by the New York & New England Railroad, which was reorganized in 1895 as the New England Railroad and was leased in 1898 to the New York, New Haven & Hartford Railroad (New Haven Railroad). In 1906 the New Haven built a connecting link to the Woonsocket Division at Needham Junction from West Roxbury on an existing branch of the Boston & Providence Railroad from Forest Hills and rerouted passenger trains for points beyond Needham Junction via the new link. The New England Railroad was merged into the New Haven in 1908.

In 1917, all U.S. railroads were required to reduce levels of passenger service in order to conserve resources for freight transportation during the First World War. The wartime cuts were never restored, and declining ridership, partly as a result of greatly increased automobile ownership, led to more service cutbacks during the 1920s.

Through passenger service between Boston and Woonsocket via Needham Junction was cut back in 1926 to service between Boston and Bellingham Junction with connecting service from there to Woonsocket, which ended in 1930. Further cutbacks gradually reduced passenger service south of Needham Junction to a few connecting trains from there to West Medway by 1941. The New Haven Railroad was in bankruptcy from 1935 to 1947, and again starting in 1961. In 1966 the MBTA began subsidizing passenger service on several lines that the New Haven had received federal approval to discontinue. This included one weekday round-trip from Needham Junction to locations as far away as Millis. Because of low ridership, this service was dropped when the subsidy contract was renewed in 1967.

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On December 31, 1968, the New Haven was merged into the Penn Central Company, which assigned new names to many routes. The line from Needham Junction to Medfield Junction became the Dover Secondary Track, and the route from Medfield Junction to Millis became the Clicquot Secondary Track. The New Haven had abandoned the line between Millis and West Medway shortly before the merger. Penn Central went into bankruptcy in June of 1970. In 1973 a sale of several active and abandoned rights-of-way in Greater Boston from Penn Central to the MBTA was finalized. This included the Dover and Clicquot Secondary Tracks along with the Needham Branch from Forest Hills through Needham Junction to Needham Heights and the continuation of that line through Newton Upper Falls to Cook Street in Newton Highlands.

Penn Central retained operating rights for freight service on the lines that had been sold to the MBTA and continued the New Haven Railroad practice of serving an industrial area in Newton Upper Falls and Needham via the line from Medfield Junction to Needham Junction. There were no longer any freight customers at intermediate points on that segment.

In April 1976, the Consolidated Rail Corporation (Conrail), established by Congress to preserve freight service on essential lines of bankrupt railroads in the Northeast and Midwest, took over operation of Penn Central lines in Massachusetts. This initially included service to Newton Upper Falls from Medfield Junction, but as a result of a system reevaluation, this line was dropped from the Conrail system in 1982. Freight traffic in the Newton Upper Falls and Needham industrial areas had declined greatly as a result of replacement of rail-dependent industries with retail and office uses. The state arranged for continued freight service on several of the lines Conrail was dropping, including the line to Newton Upper Falls, by the newly formed Bay Colony Railroad. Freight demand continued to decline until trains to Newton Upper Falls ran only occasionally, as needed. The last freight train to Newton Upper Falls ran on June 16, 2006. Since then, no trains have run between Medfield Junction and Needham Junction or between Needham Heights and Upper Falls.

On July 11, 2012, the MBTA Board of Directors approved an authorization to enter into 99-year leases with the towns of Medfield, Dover, and Needham for use of the railroad right-of-way between Needham Junction and Medfield Junction as a multi-use transportation corridor open to the public. No lease has been signed, and each town would be responsible for its own negotiations and decision-making processes in order for the project to proceed.

Description of the Right-of-Way

The following section of this memorandum provides information on the right-of-way of the rail corridor for the towns of Needham, Dover, and Medfield. This information was obtained from the Railroad Valuation Plans (Val Plans) for the Millis Branch, dated June 30, 1915.

Bay Colony Trail Memo Annotated - cont.

Needham

There are two sections of a rail corridor in Needham: the first is from Needham Junction Station to Dover and the second is from Needham Heights Station to Newton. This study examines the first section of the rail corridor. There is an active commuter rail line between Needham Heights Station and Needham Junction Station, which would prohibit a direct connection from the proposed BCRT to the Needham Junction Station platform.

The width of the right-of-way in Needham varies from 50 feet to 255 feet. Heading south from Needham Junction Station, the right-of-way passes over Chestnut Street, a retail area connected to Needham Center. The right-of-way continues on an embankment, with commercial use in the immediate vicinity of Chestnut Street, and then residences.

After Needham Junction, the right-of-way gradually narrows to 90 feet, crosses High Rock Street, and then narrows to 60 feet just before it reaches a stone culvert. About a half-mile further, the right-of-way opens to about 110 feet. There is a slight narrowing to 90 feet before it reaches the at-grade crossing of Charles River Street. The right-of-way immediately opens to 255 feet and then narrows to 110 feet after crossing Fisher Street. A "metropolitan sewer line" crosses about 100 feet further down the line. The right-of-way is then 80 feet wide for a distance of about 280 feet. The right-of-way then narrows to 50 feet before opening to 75 feet for 300 feet, and then widens to 110 feet. The right-of-way goes over the Charles River on a bridge.

Dover

In Dover, the right-of-way of the rail corridor begins at the Needham-Dover town line, which lies along the Charles River, and terminates at the Dover-Medfield town line, which lies between Hunt Drive and Farm Street. The land use adjacent to the right-of-way of the rail corridor consists primarily of conservation and recreation open space, with some residential properties abutting the right-of-way and a few commercial properties in the center of town.

The width of the right-of-way in Dover ranges from 50 feet to 225 feet. From about 350 feet north of the Charles River into Dover, the right-of-way gradually narrows to 75 feet, which is the width at the Center Street over-grade crossing. After 700 feet, the right-of-way widens to 120 feet for a length of 300 feet. Then the line narrows to about 70 feet—45 on the west side of the centerline and 25 on the east side. This narrows to 30 feet on the west and 20 on the east, back to 40 on the west and 35 on the east, and then 33 on the west and 25 on the east, where it crosses Haven Street at grade. It then widens about 10 feet on each side of the centerline, crossing Dedham and Springdale streets in Dover Center at grade. Then for more than 200 feet, the right-of-way is 50 feet wide; it then widens to about 100 feet wide (60 feet on the west, 42 feet on the east) for a length of about 950 feet. There is a stone box culvert near the end of this section.

The right-of-way then widens to 75 on the west and 58 on the east, tapering down 400 feet later to 50 feet on the west and 34 on the east. This continues for 1,400 feet,

Bay Colony Trail Memo Annotated - cont.

passing through a rock cut. There are some irregular sections, from 46 feet on each side of the centerline, to 70 on the west and 46 on the east, back to 46 feet on either side. The width remains the same for another 1,300 feet, again passing through rock cuts.

It then widens to 60 on the east, with the width on the west side changing to 75 feet, then 100 feet, where it covers a stone culvert, and then it narrows to 75 feet. The next section is over 600 feet long, with 54 feet on the west side and 40 to the east. The next 100 feet or so expands to 170 feet on the west and 55 on the east, and for the next 1,000 feet the right-of-way expands again to 165 on the west and 135 on the east; there is another stone culvert in that area. For the next 1,500 feet, the right-of-way narrows to 145 on the west and 45 on the east. The next several hundred feet are 38 feet on the west side and 48 on the east, crossing Hunt Drive at-grade.

Medfield

In Medfield, the right-of-way of the rail corridor begins at the Dover-Medfield town line, which is about 1,700 feet north of the Farm Street crossing, and terminates at Ice House Road. The land use adjacent to the right-of-way of the rail corridor is zoned as residential and is surrounded primarily by woods. There are residential properties abutting the right-of-way.

The width of the right-of-way in Medfield ranges from 59.5 feet to 90 feet. The narrowest width is 25 feet on the west and 34.5 feet on the east, from just south of the Dover-Medfield town line to about a mile from Farm Street. That section has five culverts, located about 4,000 feet, 3,000 feet, 2,700 feet, 2,400 feet, and 2,000 feet north of Farm Street, respectively.

The right-of-way gradually widens to reach 60 feet on the west and 40 on the east about 100 feet past Farm Street. There is another culvert 800 feet further north. There is a slight widening to 90 feet 200 feet further, and then, 350 feet further, a slight narrowing to 52.5 feet on the west and 30 feet on the east. That width continues for about 4,500 feet to what is described on the 1915 map as Railroad Street or Harding Street, now Ice House Road. There is a brook within the right-of-way on the east side from about 1,250 feet to 3,300 feet north of Ice House Road. There is a brook on the west side from 1,200 feet to 1,500 feet.

The Valuation plans show the right-of-way continuing to Woonsocket. Another right-of-way crosses just beyond Ice House Road, heading east toward Mansfield and west toward Framingham.

Bay Colony Trail Memo Annotated - cont.

Trail Width

According to federal and state guidelines, the recommended width for a bidirectional, shared-use path is 12 feet.[2,3] A 2-foot-wide graded shoulder on each side of the path is recommended for clearance, yielding a total width of 16 feet. A review of the Val Plans for the Millis Branch indicate that there is ample space for a 16-foot rail trail within the right-of-way owned by the MBTA. However, there may be width restrictions related to the characteristics of the corridor. There are segments of the right-of-way where the railroad bed rises above the adjacent land on an embankment. Where the railroad traveled on a raised embankment, the available land is restricted by the embankment's width. There are areas where the drop from the embankment is fairly steep and deep, requiring fencing if a trail were to be built. Other segments are either at-grade with the surrounding terrain, or are cut into the land (referred to “cut” sections). Where the railroad traveled through a cut in the land, the available land was restricted by the walls of land or rock.

The width of a shared-use path can be narrowed to a minimum of eight feet under severe environmental, historical, and/or structural constraints.[4] There were no readily apparent private-property encroachments, but any potential constraints or encroachments within the right-of-way would be identified during the preliminary engineering and design phase.

At-Grade Crossings

A major advantage of an off-road trail is that it provides a place for users to travel that is separated from motor vehicles. Trail users share road space with motor vehicles only at the road crossings. On the Millis Branch, bridges further reduce interaction between trail users and motor vehicles. It is essential that the at-grade intersections be designed to be as safe as possible, keeping in mind the need to minimize the impact on roadway traffic flow.

Table 7 indicates the number of at-grade crossings on the Bay Colony right-of-way and on existing rail trails in Massachusetts. Driveways are not included.

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[2] American Association of State Highway and Transportation Officials (AASHTO), *Guide for the Development of Bicycle Facilities*, 2012.

[3] MassDOT Project Development and Design Guidebook, 2006.

[4] Ibid.

Bay Colony Trail Memo Annotated - cont.

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Table 7
Comparison of Rate of Occurrence of At-Grade Intersections on Bay Colony and on Major Massachusetts Rail Trails

Proposed or Existing Rail Trail	Length (mi.)	At-Grade Intersections	Miles per At-Grade Crossing
Bay Colony Rail Trail	7	8	0.9
Minuteman Bikeway	11	17	0.7
Norwottuck Rail Trail	8	8	1.0
Cape Cod Rail Trail	25	25	1.0

The average distance between intersections in the corridor is nearly a mile. Important factors that must be considered in designing at-grade crossings are traffic volume, sight distance, speed of traffic, gaps in traffic, the width of the intersection, and the angle of a crossing. These factors pertain to both a roadway and a trail. Low roadway volumes allow trail users to cross more easily and frequently. Very high roadway volumes can also be advantageous in that cars in slow-moving traffic are more willing to let others cross in front of them. Table 8 lists the average annual daily traffic (AADT) volumes at the eight at-grade crossings.

Table 8
Proposed Bay Colony Rail Trail Crossings

Intersection	Type of Crossing	Number of Lanes	AADT Volumes
Needham			
Charles River St.	At-grade	2	2,600
Fisher St.	At-grade	2	680
Dover			
Haven St.	At-grade	2	1,600
Dedham St.	At-grade	2	3,500
Springdale Ave.	At-grade	2	4,381
Hunt Dr.	At-grade	2	760
Medfield			
Farm St.	At-grade	2	N/A
Harding St.	At-grade	2	5,300

Sources: MassDOT Highway Division, Two-way Directional Traffic Counts, 2001–02.

Bay Colony Trail Memo Annotated - cont.

Given the limited number of roadways intersecting the proposed route of the rail trail and the low traffic volumes on those roadways, basic crosswalk markings with appropriate signage would likely be sufficient. Raised crossings could also be utilized to help reduce traffic speeds and enhance safety for trail users. Each community would need to discuss their options with their police, fire, and public works departments, as there might need to be policy decisions for the use of this type of crossing.

Sight distance is another factor to consider in the design. Sight distance refers to the distance the trail user or roadway user is from the intersection when it is sighted. Fast-moving traffic clearly needs greater sight distances than slow-moving traffic. Trail users also need adequate warning of an upcoming intersection. The width of an intersection and the trail's angle of crossing determine the distance over which the trail user will be exposed to potential conflicts. To help minimize conflicts, the angle of the path as it crosses a roadway should be as perpendicular as possible. ADA-compliant curb-cut ramps that are the same width as the path should be provided.

Environmental Issues

According to Federal Highway Administration regulations, bicycle facilities receiving federal or state funding are usually exempt from federal requirements for environmental impact statements, but they are subject to the provisions of the Massachusetts Environmental Policy Act (MEPA). An Environmental Notification Form is required by MEPA to determine whether an environmental impact report would be necessary for permitting a rail trail to be constructed in the right-of-way. The project would also need to meet state and local wetlands bylaw requirements, the requirements of the Natural Heritage and Endangered Species Program, and the Massachusetts Department of Environmental Protection's storm water guidelines.[5,6]

It is anticipated that modest noise and air emissions will be generated during construction of a trail. Once constructed, use of the right-of-way for a rail trail generates minimal, if any, on-site air emissions and noise levels, since motorized vehicles would not be permitted (except police and service vehicles, and motorized wheelchairs, as determined by the individual towns). The exclusion of snowmobiles and other off-road motorized vehicles would need to be enforced by police.

The project should generate positive benefits to air quality and reduce noise in the neighborhoods through which the right-of-way passes since the path is expected to eliminate some motor vehicle trips, especially short trips or so-called "cold starts," which

[5] This program seeks to protect the 190 species of animals, vertebrate and invertebrate, and 258 species of native plants officially listed as "Endangered, Threatened, or of Special Concern" in the Commonwealth.

[6] Administered by the Massachusetts Department of Environmental Protection.

Bay Colony Trail Memo Annotated - cont.

contribute disproportionately to air quality degradation. The only additional noise should be conversations of trail users.

As part of the environmental review process, the proposed trail may trigger MEPA review for its impacts on wetlands and special flood hazard areas. Findings may result in the identification of the need for mitigation of environmental impacts. Examples of mitigation measures to minimize impacts on adjacent areas might be to build on a boardwalk to minimize impacts on wetlands or wildlife, or setting aside additional land to replace an impacted floodplain.

The work scope for this study did not include soil testing for the presence of environmental contamination. Therefore, whoever enters into a lease for use of the right-of-way may consider testing for contaminants prior to acquisition and the initiation of design and engineering work. The MPO staff has assumed that since the right-of-way supported both passenger and freight operations for many years, there is the potential for environmental contamination. Sources of potential contaminants may include: substances leached from tracks, ties, bridges, or signal infrastructure; illegal dumping; leaks or spills from railroad cars; substances deposited through the implementation of vegetation management programs; and derailments.

In the Boston region, environmental reviews for projects are conducted by the proponent transportation agency or municipality, not the MPO. Three MPO signatory operating agencies, MassDOT, the MBTA, and Massport, have procedures for environmental reviews. Any requirements for these areas would be worked out in the design phase, through orders of conditions issued by the local conservation commissions. Mitigation possibilities include compensatory storage (for increases in fill), a narrowing of the trail, or alternative construction methods.

Current Uses

The MBTA has neither posted “No Trespassing” signs nor in any known way attempted to prohibit trespassing on the right-of-way. As described above, while parts of the right-of-way are overgrown and virtually impassable, most of it is usable for walking. There is no information available on the extent of such usage. There is horseback riding along the right-of-way in Medfield and Dover, where established trails cross the right-of-way. Swimmers were observed using the bridge over the Charles River. There was evidence of minor dumping in a few locations.

Information on leases for easements on the right-of-way was not available. It is possible that leases exist for such uses as water pipes and transmission lines. There were no readily apparent encroachments, although in areas where the right-of-way is wide, such uses would be hard to notice. In general, leases for these encroachments would have a 30-day termination clause. It is possible that, if a trail is built, the MBTA would maintain leases that are compatible with trail construction.

Bay Colony Trail Memo Annotated - cont.

3. Proposed Trail

This section examines various aspects of using the right-of-way as a trail. It discusses potential transportation users, including their modes and trip purposes, and presents an initial estimate of demand. The uses of the trail may differ across communities, depending on area characteristics, land use, and demographics. This section also discusses possible new Newton transportation connections, parking alternatives, and next steps.

Mode of Travel

In general, a rail trail is open to all nonmotorized users and to people using motorized wheelchairs. The type of surface strongly affects use. Bicyclists, walkers, skaters, joggers, people using wheelchairs, and people pushing baby carriages prefer to use a hard-paved surface. A soft surface that is compatible with Americans with Disabilities Act (ADA) requirements would be less attractive to skaters and those on bicycles that are equipped with narrow tires. Depending on the snow removal policy in a given area, a trail could also be used by snowshoers and cross-country skiers.

As noted above, there is some equestrian use alongside or crossing the right-of-way. There may be other areas of interest to riders that could come up during the design process. There would also need to be consideration given to points where equestrians might cross the rail trail to access adjacent bridle paths.

Trip Purpose

Trips can be characterized as commuter trips (to work or school on a regular basis), utilitarian (to shops or the library, for example), or recreational. Adult commuters typically use trails on weekdays during regular commuter hours, although commuters who work during different shifts on other days of the week may also use such trails regularly. School children sometimes use trails to travel to and from school, to access organized activities, and simply for fun. Retirees, stay-at-home parents, and those with flexible work hours might use trails from midmorning to midafternoon, when others are at work or school. An individual may have many reasons for making a trip on the proposed trail: to exercise, save money, avoid traffic, save time, or unwind on the way home.

Estimated Demand

The estimated usage of a trail was calculated for this study by comparing certain demographics regarding the area along the Millis Branch with the same demographics along existing trails. Counts done on the existing trails are then used to estimate volumes on the proposed BCRT. The existing trails are the Nashua River Rail Trail in Groton, the Minuteman Bikeway in Lexington, and the Dr. Paul Dudley (P.D.) White Path on the Cambridge side and Boston side of the Charles River.

Bay Colony Trail Memo Annotated - cont.

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Table 5, below, includes AM-peak-period counts and three demographic units: population, number of employed residents, and number of employees. The latter category refers to those whose workplaces are located within the area. The area covered is a four-mile corridor, two miles on either side of the trail.

Table 5

Trail User Volumes (7:30–9:30 AM), and Population, Number of Employed Residents, and Number of Employees within Two Miles of Facility

Trail	Peak-Period Users	User Rate per 1,000 Pop.	Pop.	User Rate per 1,000 Employed Residents	Employed Residents	User Rate per 1,000 Employees	Employees
Nashua River							
Groton	37	.9	39,100	1.9	19,900	2.7	13,800
Minuteman							
Lexington	374	1.4	264,100	2.7	140,300	2.7	136,700
Dr. P. D. White							
Cambridge	460	.7	635,200	1.3	354,700	.7	658,800
Dr. P.D. White							
Boston	678	1.0	650,400	1.9	360,600	1.0	671,300

The population, the number of employed residents, and the number of employees along the Minuteman Bikeway, for example, are about an order of magnitude higher than along the Nashua River Trail, as is the trail usage. Likewise, the population and number of employed residents along the Dr. Paul Dudley White Path are more than twice the numbers for the Minuteman, and the number of employees along the Dr. Paul Dudley White Path is almost five times the number of employees along the Minuteman. Volumes on the Cambridge side of the Dr. Paul Dudley White Path are 25 percent higher than on the Minuteman, and those on the Boston side almost twice as high.

Applying the user rates per 1,000 population, employed residents, and employees to the same demographics within two miles of the Millis Branch can provide an estimate of

Source: 2010 U.S. Census (population); 2009 CTPS Model Group Estimates (employment).

what the usage on a Bay Colony Trail might be. Table 6 indicates the three categories of demographic data of the Millis Branch section of the proposed rail trail, and an estimated usage based on each user rate.

Bay Colony Trail Memo Annotated - cont.

Table 6
Population, Number of Employed Residents, and Number of Employees within Two Miles of the Millis Branch Section, and Estimated AM-Peak-Period Usage of Trail Based on Each Demographic Characteristic

	Population	Employed Residents	Employees
Current demographics	70,030	32,530	31,310
Average user rates	1	2	2
Resulting estimated usage	70	65	63

The three estimates range from 63 to 70 users per two-hour AM peak period. While this cannot be taken as a precise forecast, it is a reasonable estimate of the magnitude of usage to be expected on the proposed BCRT.

Newton Connection

The Needham Commuter Rail line uses the right-of-way between Needham Junction and Needham Heights. The right-of-way then continues unused from there to Newton. As previously mentioned, MAPC is conducting a study for this portion of the right-of-way. The results of that study will be incorporated into the final version of this study.

Parking

Very little weekday demand for trail parking is expected. Even on weekends, it is expected that many users would reach the trail either by bicycling or walking, or perhaps by public transit. For those who would drive, it is hoped that existing facilities could be used to minimize the need to build new parking facilities. Parking on streets that intersect the right-of-way is often not a viable option.

There are existing public and private lots near and adjacent to the right-of-way that may become available for weekend parking for trail users. If the trail goes forward, the owners of these lots could be asked about accommodating trail users. Where to allow trail users to park is a community decision. The provision of additional parking for trail users is not a requirement. If there are commercial or residential areas where a town does not wish to allow trail parking, those streets could be posted for limited or no parking. Likewise, any private driveways or roads that users might want to park on would need to be posted to inform people either that parking is not permitted or is time-limited.

If a town decided to create a trail map, it could inform users of the location of parking, as well as public transit connections and points of interest.

Bay Colony Trail Memo Annotated - cont.

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Next Steps

If the proposed BCRT project moves forward, the next steps would consist of public outreach, entering into lease agreements with the MBTA for public use of the right-of-way, preliminary engineering, design, permitting, construction, and trail operation and maintenance. It is anticipated that there would not be acquisition costs associated with the BCRT right-of-way. During the preliminary engineering and design phase, a design firm would survey the right-of-way, providing information on slopes, water tables, and wetlands. The preliminary engineering design plans would include a layout of where the trail would go, where fencing and buffering might be required, what types of drainage and bridge work would be needed, and wetland locations.

The final design plans would include detailed construction drawings that would be used in the field to build the trail. In the design phase, there would be extensive public review by state, regional, and local officials, and by members of the general public. It is during this stage that detailed decisions on the trail would be made. A general rule of thumb is that design costs for a project are about 10 percent of construction costs. A detailed construction cost estimate would be included, although the actual construction cost would not be determined until the project is bid. The design and construction costs could potentially be paid for with local, state, and/or federal dollars, as has been done for other paths.

A possible alternative design and construction solution would be to utilize the services of a railroad track salvage company. These types of organizations remove and sell track materials, and then use the proceeds to fund the construction of a rail trail at no cost to the town.

Safety, security, and maintenance are paramount to the operation of a trail. Enforcement and education are important components of safe operations. Selective enforcement of speed limits at crossing locations would help reduce speeding by motorists on the roads that cross the path. Education could be provided both to motorists who will cross the trail and to trail users. Parents and students, perhaps through parent-teacher organizations, the schools, and after-school programs, would need to be told that this trail, although separated from traffic for most of its length, does have crossings that would require users to stop and cross as they would at any roadway crossing.

Each town would be responsible for operation and maintenance of its segment of the trail, as is the case for other town-owned facilities such as streets, sidewalks, parks, and playgrounds. According to information obtained from police, fire and rescue crews, and public works departments in Bedford, Lexington, and Arlington in reference to the Minuteman Bikeway, each responsible community sets its own policy in regard to the path. Officers in Bedford, for example, patrol the bikeway on summer weekends for 4 hours a day, on average. In Lexington, bicycle officers patrol 16 hours a week for 32 weeks each year (late March to November). Bicycle patrols also cover other areas in town, including Lexington Center. In Arlington, the trail is policed routinely within patrol

Bay Colony Trail Memo Annotated - cont.

routes, as are the roads in town; there was no tally of hours spent on the bikeway. There have been very few bikeway-related problems, except for an occasional snowmobile or dirt bike using the path.

Maintaining the trail would be part of the community's overall responsibility, as is the case when a new street is added. Community-based organizations were formed along the Minuteman Bikeway to take on some general maintenance responsibilities and to provide a forum for discussion of issues that arose. On the Norwottuck Trail in western Massachusetts, many businesses are on a waiting list to sign on to the "Adopt-a-Trail" program. Such organizations could be formed in Medfield, Dover, and Needham to help local staff.

EP/SP/CB/cb

V. BCRT Needham Operations Manual

Needham Rail Trail Operations Manual

Draft: January 2013

1. Amenities

Bike racks

We will put racks at both Needham Junction and Red Wing Bay. There is one rack at the Needham Junction Commuter Rail already, but it tends to get filled commuters so another rack is needed at trailhead. Red Wing Bay is a spot people are likely to rest at or explore, so a place to safely park bikes would be useful there as well.

Benches

We will put 5 benches including one at each end of the trail and one every half mile.

Kiosks

We will put nice kiosks at each end of the trail, showing a map, and the rules. The map and rules will be displayed at every access point where there is parking.

(Karen Peirce is working on kiosks for trails across Needham, and these could be part of that effort).

Mile Markers

We plan to have mile markers, and possibly tenth of a mile markers, displaying the names of sponsors.

Not Included

There will be no lighting, due to the disturbance to abutters. Since most people have mobile phones, there will be no callboxes. There will be no restrooms initially.

2. Usage policies

Hours

Open dawn to dusk, but other times allowed for well-lit commuters.

Motorized Vehicles

No motorized vehicles allowed on rail trail, but permitted if disability requires it.

BCRT Needham Operations Manual - cont.

Dogs

Dogs are permitted. All dogs must be kept on a leash, and dog owners must remove pet waste. These are existing Needham laws.

Horses

Horses are not permitted, due to the potential conflict with others types of traffic, damage to the trail, and waste.

Trash

We initially plan to have a "carry-in/carry-out" policy. This applies to all forms of trash including dog waste. No trash barrels will be provided.

3. Maintenance

Trail surface

Spot repairs and re-grading may be required every few year or two. Resurfacing every 7-10 years. (Cost TBD and depending on surface.)

Plowing

We do not plan to have plowing initially. This could change depending on public interest.

Trimming

Mowing, clearing, and trimming will be required.

Spring Clean up.

After the winter, some Spring cleanup will be required to pick up fallen branches. This will be done by volunteers.

4. Public Safety

Road Crossings signage and logistics will be determined from study.

Police patrol TBD

We are still researching what kind of access is required for ambulances and police/fire vehicles. We will provide the required trail width and access points. (This should be included in our engineering study.)

Safety

For any safety concerns residents should call the police or 911. This will be stated in the trail rules.

2

BCRT Needham Operations Manual - cont.

Note: calls from a cell phone go to the state police and then get transferred to Needham, so we may want a specific Needham number. Feedback from Police and Fire required on the right approach.

We also need to educate people on being specific about their location – so anything we can do on the "mile markers" to give a clue would be great.

Resident engagement

Comments, complaints, feedback

The Park & Rec. department should field most comments. Some feedback may be relayed back to the volunteer rail trail group.

W. Best Management Practices for Controlling Exposure

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
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ROBERT W. GOLLEDGE, Jr.
Commissioner

Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails

This document summarizes **Best Management Practices ("BMPs")** that should be considered before, during, and after former railroad lines are converted to recreation trails. These BMPs have been developed to eliminate or minimize potential exposures to residual oil or hazardous materials commonly found along railroad rights-of-way being converted to rail trails. This document also identifies locations and conditions for which the application of BMPs alone may not be sufficiently protective of public health and the environment.

These BMPs have been developed specifically for situations where a municipality has acquired a property interest in a rail corridor from the Massachusetts Bay Transportation Authority (MBTA) in order to convert the corridor to a rail trail[1], This fact sheet is relevant to municipalities: (1) with specific knowledge of a release of oil or hazardous materials through testing or other means and/or (2) without specific knowledge of a release, that seek to prevent the exposure of persons to oil or hazardous materials that may be present in such corridor until a responsible person conducts response action under MGL Chapter 21E.

Background Information

The waxing and waning of railroad activity in Massachusetts over the past century has left the Commonwealth a legacy of under-utilized rights-of-way that may be redeveloped for new rail service (such as the Amtrak Downeaster and the Greenbush line) or recreational trails (such as the Minuteman Trail or the Mass Central Rail-Trail).

When active, these railroad lines were important transportation corridors serving the citizens and industries of Massachusetts. Now many communities are actively seeking to convert former railroad lines to create new links -- trails that link:

- commuter's homes to workplaces;
- children's schools to the playgrounds;
- tourists' curiosity to the region's history; and
- communities to their neighbors.

[1] More specifically, only for those situations addressed under Chapter 46 of the Acts of 2003

This information is available in alternate format. Call Debra Doherty, ADA Coordinator at 617-292-5565. TDD Service - 1-800-298-2207.

DEP on the World Wide Web: http://www.mass.gov/dep
Printed on Recycled Paper

Best Management Practices for Controlling Exposure - cont.

Many former rail lines were abandoned years ago and appear to be nearly reclaimed by nature. Other lines run parallel to active lines, or reveal rusted rails threading through industrial areas. In some instances adjacent industrial activities, historic loading practices, leaks during material transfers or storage, and repair activities have contaminated soil with oil or hazardous materials. In addition, residual contamination is often found along the length of the line, incidental to the maintenance and use of the railway itself.

Redevelopment of former rail lines to recreational trails can be accomplished in a way that protects public health and the environment. It requires recognizing potential problems and implementing actions to safeguard nearby residents, workers, and trail users throughout the life of the project.

Residual Contamination from Railroad Operations

Some historic railroad operations involved the use of chemicals that may have resulted in presence today of contamination. The most commonly reported contamination along rail lines includes metals, pesticides[2] (such as lead arsenate), and constituents of oil or fuel (petroleum products). These chemicals have been associated with normal railroad operations and are likely to be found anywhere along the line. For example, it would not be uncommon to find arsenic (up to ten times natural background levels) present in the soil along a right-of-way from old railroad ties dipped in an arsenic solution, arsenic weed-control sprays, and arsenic-laced slag used as railroad bed fill[3]. Lubricating oil and diesel that dripped from the trains are likely sources of the petroleum product found along the lines. Other sources of contaminants associated with historic railroad operation may include coal ash from engines, creosote from ties, and polynuclear aromatic hydrocarbons ("PAHs") from the diesel exhaust.

The BMPs outlined in this document are specifically designed to be protective of public health and provide a practical alternative to extensively testing for and possibly removing these "typical" residues expected from the historic operation of a rail line[4].

In some instances, a rail corridor may have been open for a relatively short time, during a period of time or in a region where chemicals were not used by the rail operator. Application of the BMPs would not provide any significant benefit in those instances. In the absence of good historic information, the only sure way to know whether residuals pose a risk to trail users is to collect environmental samples along the corridor. Location-specific sampling results may then be used to modify these measures or obviate the need for their use.

Elevated Contamination from Railroad Operations or Other Sources

Several potential sources of contamination along a rail line may pose significant health and environmental risks worthy of closer examination. These sources include operations at switching and repair yards, railroad accidents involving hazardous cargoes, and releases of chemicals on rail spurs and properties that abut rail lines, but which are unrelated to the railroad operations. The latter two examples may

[2] The application of pesticides consistent with their labeling is excluded from the definition of a "release" under M.G.L. Chapter 21E.
[3] Sampling along the abandoned Greenbush Line in the Fall of 2003, prior to its rehabilitation for commuter rail service, indicates the presence of arsenic concentrations up to 205 mg/kg, with 16% of the results greater than the MCP S-1 soil standard of 30 mg/kg, and 25% greater than the *proposed* standard of 20 mg/kg.
[4] Consistent with Section 8C of Chapter 46 of the Acts of 2003 (http://www.state.ma.us/legis/laws/seslaw03/sl030046.htm), the BMPs described in this document suitably prevent access to the residual oil or hazardous materials expected to be present along a railroad right-of-way.

Best Management Practices for Controlling Exposure - cont.

involve almost any chemical, such as the phosphorus trichloride released in an April 3, 1980, tank car incident in Somerville, or the asbestos released from the Zonolite processing plant in Easthampton. The contamination in rail yards is somewhat more predictable, including petroleum; metals; pesticides and organic compounds emanating from equipment cleaning areas; fueling areas; maintenance and repair activities; and the railroad beds themselves.

An MCP Phase 1[5] level of investigation, tailored to the nature of the contaminant and source, would be appropriate to address these sources of elevated chemical contamination. A Phase 1 Preliminary Investigation would typically contain sufficient information in the following areas to determine the need for a Response Action or further detailed investigation:

- General Disposal Site Information (description of location and potential receptors in the area);
- Disposal Site Map (description of the property itself, with buildings, drains, and sampling locations noted);
- Disposal Site History (description of ownership, releases, chemical use, management of waste, compliance history);
- Site Hydrogeological Characteristics (description of groundwater flow, borings, wells, and the results of any investigations);
- Nature and Extent of Contamination (description of evidence of releases, laboratory results, thickness of NAPL, approximate location of contamination);
- Migration Pathways and Exposure Potential (description of contamination in air, water, soil, and discussion of potential human and environmental receptors);
- Evaluation for Immediate Response Actions; and
- Conclusions.

The results of such an investigation would be used to determine appropriate measures to implement to eliminate or reduce current and future exposure to the contaminated soils. Such measures could be similar to the BMPs proposed in this guidance, more extensive than these BMPs, or less stringent, depending on the outcome of the investigation.

Identifying Areas of Concern

As described above, locations along rail corridors could exhibit a wide range of chemical contamination, depending on the use of the line and adjacent properties. Trail developers can conduct historic research to categorize segments of a rail corridor by level of concern.

DEP has identified four categories of interest for the purpose of implementing the soil BMPs. Any given rail-trail may be comprised of one or more of these areas.

<u>Residential, undeveloped or rural rights-of-way</u>
These are stretches along a rail line that border historically residential, undeveloped or rural properties. These areas are likely to have been affected only by the normal operation of the rail line, with a residual level of contamination. The BMPs outlined in this document are considered appropriate for these locations, absent evidence of a specific release.

[5] The general content of a Phase I "Initial Site Investigation Report" is described in the Massachusetts Contingency Plan, 310 CMR 40.0483.

Best Management Practices for Controlling Exposure - cont.

Stations and crossings
These relatively small stretches along a right-of-way would be expected to be associated with 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. The BMPs outlined in this document are considered appropriate for these locations, absent evidence of a specific release.

Industrial corridors
Many rail-trails include segments that pass through industrial areas, even the predominantly rural trails of western and central Massachusetts. These stretches have a higher *potential* for contamination within the right-of-way that is unrelated to the historic railroad use. The BMPs outlined in this document may not be sufficiently protective of public health and the environment at these locations. A preliminary review is recommended in order to establish whether site-specific concerns indicate a need for further investigation, including soil testing. Absent a site-specific concern, the BMPs outlined in this document are considered appropriate for these locations.

Switching and Repair Yards
As discussed earlier, switching and repair yards have a greater range of potential contaminants of concern and a higher likelihood that the contaminants are present at significant levels. The BMPs outlined in this document are not considered sufficient by themselves to protect public health and the environment at these locations, absent further investigation.

Figure 1 outlines the decision-making steps trail developers should follow in identifying locations of interest along the corridor they are developing and whether the BMPs apply without the need for further site investigation, including soil testing.

Goals of Best Management Practices

DEP's goals in publishing BMPs for use in developing rail-trails include:

- promoting rail-trail conversions that are both health-protective and cost-effective[6];
- recognizing the potential presence of oil or hazardous material along the right-of-way;
- recognizing the potential health and environmental risks associated with developing the right-of-way;
- expediting trail development to prevent (or minimize) risk to current users of "beaten paths" along inactive rail corridors;
- preventing (or minimizing) exposures to oil or hazardous material before, during, and after construction of rail-trails; and
- preventing (or minimizing) off-site migration of contaminants before, during, and after the construction of rail-trails.

These BMPs are intended to be applied to those rail corridor segments where residual contamination from historic railroad operations is assumed to be present. Trail developers always have the option to conduct soil testing to rule-out the presence of contamination and tailor soil management practices to actual site conditions.

In addition to reducing risk of exposure to contaminants, the focus of this guidance, trails promote public health by encouraging active and healthy lifestyles.

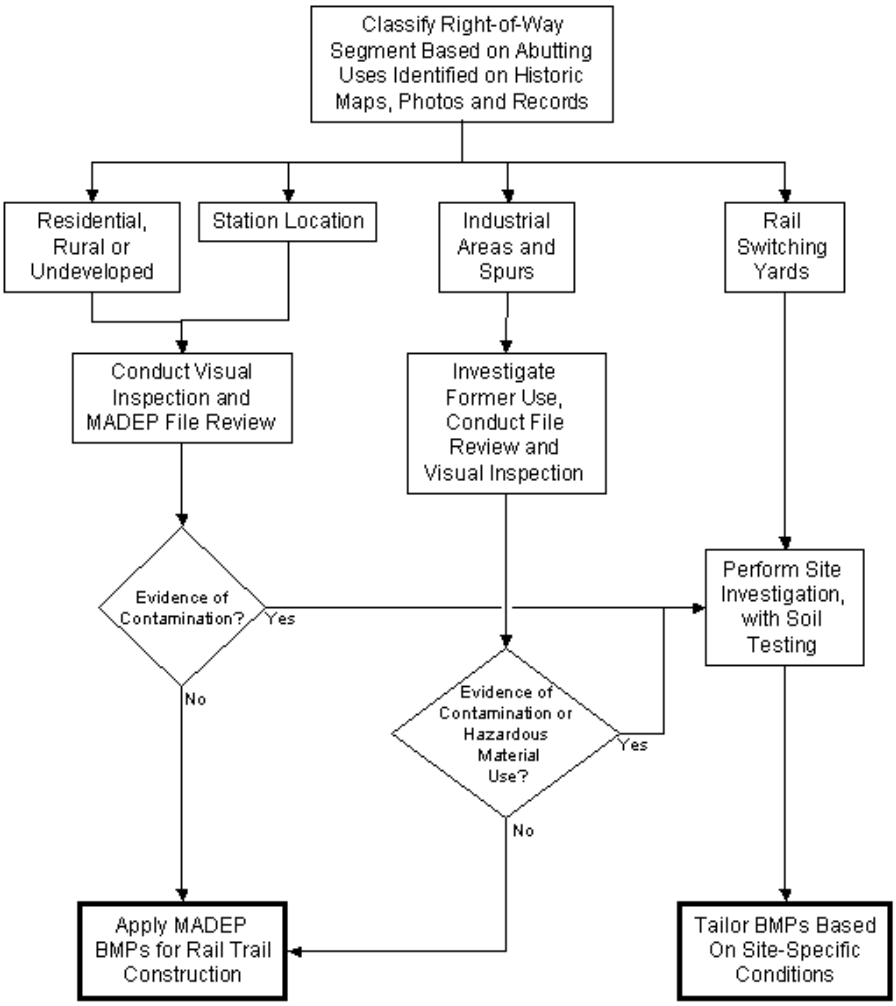
Best Management Practices for Controlling Exposure - cont.

The application of these BMPs to any portion of a rail corridor converted to residential use in conjunction with rail trail development is not appropriate. Only a site-specific investigation, including soil testing, can determine whether conversion to residential use is health protective.

Figure 1

Application of MADEP Best Management Practices at Rail Trail Conversions

(Pursuant to Section 8C of Chapter 46 of the Acts of 2003)



Page 5 of 11

Best Management Practices for Controlling Exposure - cont.

BMP Applicability

These BMPs were developed primarily for residential or rural rights-of-way, and stations and crossings. The BMPs will also be applicable in many industrial corridors, but those locations may need case-by-case review to determine the likelihood of contamination beyond the residual levels assumed here.

DEP does not believe that these BMPs are, by themselves, sufficient and appropriate for use without more extensive site investigation in industrial areas with known or likely non-railroad sources, or in rail yards.

Note that the focus of these BMPs is the potentially contaminated soil along the right-of-way and the human exposures and environmental exposures that may result from improperly managing that soil at or near the surface. This document is not intended to be a summary of all environmental requirements, such as wetlands permitting or Underground Storage Tank (UST) removal that may apply to a project. Municipalities developing rail trails are also obligated to contain the further release or threat of release of oil or hazardous materials from any structure or container within the corridor.

Phases of Project/Exposures of Concern

Rail-trail development occurs in three main phases, or time periods. Each phase has unique exposures that must be considered to identify appropriate BMPs. These phases are pre-construction, construction, and post-construction.

Pre-Construction Phase

The pre-construction phase covers the period up to the time construction actually begins. Depending on project finances and construction sequences, this phase may last several years as communities seek funds to develop a project. Trail design also occurs during the Pre-construction Phase.

While the right-of-way is not a designated rail-trail at this point, a potential may exist for people to be exposed to contaminated soil on or from the right-of-way. Dirt bikers, hikers, or children taking shortcuts, and adjacent residents may receive runoff or dust from the rail bed in its unimproved condition. Many future rail-trails also serve as utility corridors. Workers repairing or installing subsurface utilities (such as sewer lines) may have the highest potential for exposure, albeit short-term.

During trail design, developers should identify which soils will be handled during construction and plan the areas where people will congregate once the trail has been completed.

As the final grades are established, areas for playgrounds identified, and trailheads located, long-term exposures may be created to any contaminated soil remaining along the trail. By following the design guidelines provided below, designers can ensure that any long-term exposures are eliminated or minimized.

If any soil will be excavated from the right-of-way and reused off-site, the potential for exposure should also be considered.

Best Management Practices for Controlling Exposure - cont.

Construction Phase

The construction phase has the potential to create significant exposures to contaminated soil as the old rail line is cleared, the right-of-way is prepared, and the trail is constructed. While construction activities may be sporadic and short-term on any given stretch of the line, the project itself may continue for many months, or even longer than a year.

The receptors of concern during the construction phase include:
demolition workers (clearing the brush; and removing the rails, ties, ballast, and debris);
construction workers (grading and shaping the trail; and creating, moving, and dissipating soil stockpiles);
adjacent residents (inhaling dust generated from the project; exploring the partially-built trail; coming in contact with soil pushed onto their property, etc...); and
environmentally sensitive areas/species.

Post –Construction Phase

After construction, trail managers must monitor activities along the trail corridor to ensure that the steps taken to reduce exposure remain effective. Trail managers should be involved in decisions to excavate material from the trail corridor to ensure that users are protected both during and after such excavation. Workers repairing or installing subsurface utilities (such as sewer lines) may have the highest potential for exposure, albeit short-term. Maintenance activities will be necessary to ensure the integrity of the trail surface, structures and landscaping that help serve to eliminate exposures.

Recommended BMPs

Absent analytical evidence to the contrary, all soil along the right-of-way should be presumed to have at least residual levels of lead, arsenic, and PAHs from historic railroad operations, as described above. The following BMPs should be considered for the pre-construction, construction, and post-construction phases of rail-trail development, as appropriate.

Pre-Construction

1. Conduct a thorough, pre-construction paper review of the right-of-way and adjacent properties.
   - Investigate the rail line history; locate old stations, crossings, spurs, and rail yards. The Valuation Plans and historic aerial photos for the properties abutting the rail line can provide much of this information[7].
   - Investigate site use and the history of adjacent properties; identify commercial and industrial stretches. The Valuation Plans and Sanborn Insurance maps can provide much of the information for the snapshot in time when they were developed. Local historical societies may have information on leading local industrialists and their local businesses.
   - Review the existing list of known or suspected disposal sites to see if any are located along the right-of-way[8]

[6]Rails-to-Trails Conservancy provides additional guidance in its publication "Acquiring Rail Corridors" p 95-97. (http://www.trailsandgreenways.org/resources/development/acquis/arc_book.asp)

Best Management Practices for Controlling Exposure - cont.

- Inquire with neighbors, fire department personnel or the local historical society for further information on train crashes, accidents, and other incidents that may have released chemicals.[9]

2. Conduct a thorough, visual inspection of the right-of-way, looking for:
   - contaminated soil as evidenced by discoloration, odors, differences in soil properties, pipes, or buried debris;
   - signs of illegal dumping of waste from businesses or industry (not simply household trash);
   - stressed vegetation or "dead zones";
   - areas of soil run-off, both away from the right-of-way and toward the right-of-way;
   - signs of wind erosion sufficient to create a dust inhalation exposure;
   - signs of public use of the existing right-of-way (condoned or trespassing), such as dirt-bike trails, play forts, beverage cans, and fire pits.

3. Control current (pre-construction) exposures to soil in areas of concern by implementing one or more of the following measures, as indicated by site conditions:
   - install signs to redirect people from areas of concern; or
   - strategically place barriers to control use in the areas of concern; or
   - implement other measures to eliminate contact with soils in areas of concern.

   In the event these three measures do not prove successful, trail developers should consider covering areas of exposed soil or planting bushes (such as puckerbrush) to divert people away from areas of concern.

Design Guidelines to Reduce Exposure

While developing the design for the trail, the design engineer or architect should follow these guidelines in order to reduce potential exposures.

1. Within the tread way[10] and in areas designated for recreational use along the trail (such as rest areas, picnic areas, and playgrounds), eliminate contact with potentially contaminated soil by implementing one or more measures, as appropriate:
   - Place potentially contaminated soil under pavement or an equivalent layer of compacted stone dust; or
   - Place potentially contaminated soil under at least 12 inches of clean fill and mark with a geosynthetic barrier immediately above the potentially contaminated soil; or
   - Remove and appropriately dispose of potentially contaminated soil off-site. Replace with clean material (soil, stone dust, wood chips, etc.) to establish the path and maintain grade.

[7]The Massachusetts DEP databases (http://Mass.Gov/dep/cleanup/sites/sdown) have spills information from the early 1980's and list known and suspected locations of contamination by street address. If evidence exists that an off-site source may have contaminated the right-of-way, further investigation is needed. DEP files may contain sufficient information to determine whether the right-of-way has been affected.
[8]If evidence exists that an incident may have contaminated the right-of-way, further investigation is indicated. DEP files may contain sufficient information to determine the extent of the problem.
[9]The tread way includes any area intended for active use including jogging side paths and equestrian trails

Best Management Practices for Controlling Exposure - cont.

2. Outside of the tread way, control contact with potentially contaminated soil by implementing one or more measures to minimize or eliminate contact with potential residual contamination, including:
   - Design landscaping, including the nature, location, and density of plantings, that channels recreational users of the trail to the tread way, disrupts the creation of informal tread ways (such as single track trails) and directs users away from potentially contaminated soil;
   - Create areas of congregation, such as benches, rest areas, and scenic areas, that draw recreational users of the trail and encourage congregation away from potentially contaminated soil;
   - Install signs informing users of upcoming congregation areas and/or advising users to remain on the path;
   - Stabilize the soil through plantings, grading, or other erosion control measures;
   - Install guardrails, curbing, or fences in areas to encourage users to stay the tread way; or
   - Implement other design features that would minimize or eliminate contact with residual contamination in the soil.

3. The design should identify areas where potentially contaminated soil will be removed and areas within the corridor where such soils can be safely stored temporarily so that the Construction Contractors can re-use as much material on-site as possible.

During Construction

The following BMPs presume the trail construction includes excavation, movement, placement and grading of soil. Trail construction activities that involve no movement of soil may be carried out with the application of standard dust control measures, such as spraying soil with water.

The following guidelines should be followed during construction involving soil grading and excavation and be incorporated into the construction bid documents in order to ensure the proper handling of soils during trail construction:

1. Hire an independent environmental monitor or task existing staff to oversee the Construction Contractor[11]. The monitor will:
   - Verify that construction-related plans and training are in place before construction begins ;
   - Oversee all excavation,
   - Visually inspect material that will be moved, and
   - Ensure proper management of soil along the right-of-way and the implementation of BMPs.

   During construction, the environmental monitor should be present whenever known contaminated soil will be excavated and should inspect construction-related BMPs several times each week.

[10]For example, a municipality may enter into an agreement with Mass Highway to manage a trail construction funded with federal transportation appropriations. The agreement should require that the construction contract include provisions requiring the contractor to follow the BMPs and the directions of the independent environmental monitor.

Best Management Practices for Controlling Exposure - cont.

2. Minimize or eliminate exposure of construction workers to potentially contaminated soil.
   - Prepare site-specific soil management and health and safety plans.
   - Have employees and subcontractors complete a safety-training program covering the potential hazards associated with working with contaminated soil likely to be present along a rail line, before excavation work begins.
   - Educate employees and subcontractors in identifying contaminated soil and on handling and disposal procedures for contaminated soil.
   - Hold regular meetings to discuss and reinforce the health and safety procedures.
   - Prevent visible dust during excavation, transportation, and placement operations. Implement dust control measures, such as spraying soil with water, during excavation or grading operations. Exercise caution to prevent soil spillage during transport.

3. Minimize or eliminate exposure of adjacent residents and curious trespassers to potentially contaminated soil.
   - Prevent visible dust during excavation, transportation, and placement operations. Implement dust control measures, such as spraying soil with water, during excavation or grading operations. Exercise caution to prevent soil spillage during transport.
   - Install temporary signs and/or security fence to surround and secure areas where potentially contaminated soil may pose an Imminent Hazard to human health.
   - Avoid temporary stockpiling of potentially contaminated soils. Take the following precautions stockpiling, as necessary:
     - Identify long-term stockpile locations that are away from residences, schools or playgrounds;
     - Cover the stockpile with plastic sheeting or tarps to prevent dust generation and erosion;
     - Install a berm, hay bales, and/or silt fences around the stockpile to prevent runoff from leaving the area;
     - Do not stockpile in or near storm drains or watercourses; and
     - Clean-up materials should be staged near the storage area.

4. Minimize or eliminate the migration of potentially contaminated soil off-site.
   - Protect gutters, storm drains, catch basins, and other drainage system features on the site with hay bales and/or silt fences during construction. They should be cleaned following the completion of site work.
   - Prevent visible dust during excavation, transportation, and placement operations. Implement dust control measures, such as spraying soil with water, during excavation or grading operations.
   - Exercise caution to prevent soil spillage during transport.
   - Stabilize exposed areas of potentially contaminated soil and prevent run-off.

5. Prevent new leaks and spills and notify DEP, as appropriate, if they occur.

6. Transport and dispose potentially contaminated soil in accordance with the applicable rules and regulations of the United States Department of Transportation (USDOT), the United States Environmental Protection Agency (USEPA), and the Massachusetts Department of Environmental Protection (MADEP) (the specifications for the off-site management of contaminated soil supersede the procedures outlined in this BMP).

Best Management Practices for Controlling Exposure - cont.

Post- Construction

1. Establish a protocol to ensure that future workers performing maintenance or construction within the right-of-way are made aware of the need for appropriate BMPs, including:
   - Posting of signage indicating that a permit from the trail manager is necessary before any excavation of the corridor begins.
   - Sending notice of the existence of such requirement to easement holders and the municipal engineer and/or public works department; and
   - Developing Standard Operating Procedures with local utilities, easement holders, DPWs, and other municipal offices for work in the right-of-way.

2. Establish a procedure for the trail manager to periodically travel the corridor and inspect the integrity of the trail surface, structures and landscaping and require appropriate action to correct any problems observed.

DEP Contact

For further information, please contact Paul Locke in the DEP Bureau of Waste Site Cleanup at (617) 556-1160 or Paul.Locke@state.ma.us.

X. Open Items

The Rail Trail Committee has identified eighty-plus items to be reviewed and studied in the Feasibility Study. Through the process of gathering information and answers to questions, it was determined that neither the Committee nor the Town of Dover had the resources necessary to address some critical issues pertinent to the conversion of the Bay Colony Railway to a recreational path. A request for funding for the hiring of outside professionals was denied at the May 2013 Town Meeting.

If and when funding should be available it is the opinion of the Committee that continued research and review will include but not be limited to the following open items for the completion of the Feasibility Study:

- Right-of-way Review of all abutting properties by a Licensed Site Planner and determination of any required action
- MBTA Lease Terms
  - Continued review of Alternative Transportation Corridor Lease Agreement
  - Evaluate potentially limiting the extent of the rail to be developed and terminating at points prior to the Charles River
- Engineering Analysis
  - Review of existing conditions and critical issues to be addressed
  - Full scope of work necessary
  - Development of construction as builts required by MBTA lease agreement
- Construction Contracting
  - Further evaluation of the use of the IHP model, town resources or a combination thereof
  - Develop a scope of work based on existing conditions
  - Formulate a budget of costs for the full project taking into account the IHP model and the extent of the work covered by the sale of the steel salvage
  - Develop a policy for addressing abutting properties and request for fencing and privacy screening
  - Prevailing wage and labor issues
- Environmental Review
  - Legal review of Town of Dover's obligations with regards to project
  - Review environmental insurance policies and develop a recommendation of level of coverage if necessary

Y. DCR Public Trails and New Rules for Access

Public Trails and New Rules for Access

Presented at:

Massachusetts Trails Conference

November 12, 2011

dcr

Session Overview

- Introduction to the US Department of Justice (DOJ) rule regarding access to recreation facilities by people with mobility disabilities.
- Overview of access requirements for wheelchairs and Other Power Driven Mobility Devices (OPDMDs)
- Introduction to trail or facility assessment procedures
- DCR, Mass Audubon and The Trustees of Reservation's plans for compliance with the rule

dcr

DCR Public Trails and New Rules for Access - cont.

The US Department of Justice Rule

- **1990 Americans with Disabilities Act (ADA)**
  - A person isn't to be denied participation just because they have a disability…
    - Unless their participation would require changes / impacts to be made that would fundamentally alter that program.
- **DOJ rule**: The rule adopts a two-tiered approach to mobility devices, drawing distinctions between wheelchairs and "other power-driven mobility devices."

Spirit of the law is to prevent discrimination

dcr

Where Does the DOJ Rule Apply?

The rule applies to:

- Trails and facilities on State and local government lands
- Trails and facilities open to the public on privately or commercially-managed lands

dcr

DCR Public Trails and New Rules for Access - cont.

What is Required by the New DOJ Rule?

"Wheelchairs (and other devices designed for use by people with mobility impairments) must be permitted in all areas open to pedestrian use."

dcr

What is a Wheelchair?

A wheelchair "means a manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor or of both indoor and outdoor locomotion."

dcr

DCR Public Trails and New Rules for Access - cont.

Wheelchair Requirements

Gate openings 32” or greater?

dcr

What is Required by the New DOJ rule?

“Other power-driven mobility devices" must be permitted to be used unless the covered entity can demonstrate that such use would fundamentally alter its programs, services, or activities, create a direct threat, or create a safety hazard.”

Spirit of the Law is to prevent discrimination

dcr

DCR Public Trails and New Rules for Access - cont.

What are Other-Power Driven Mobility Devices?

- **<u>Other power-driven mobility device</u>** (OPDMDs) means **any mobility device powered by batteries, fuel, or other engines**--whether or not designed primarily for use by individuals with mobility disabilities--that is **used by individuals with mobility disabilities for the purpose of locomotion…**

dcr

What are Other-Power Driven Mobility Devices?

dcr

DCR Public Trails and New Rules for Access - cont.

Who may use OPDMDs?

Q. What evidence of a mobility disability is necessary to allow OPDMDs?

1. A valid, State-issued, disability plate or placard or other State-issued proof or disability,
2. Or, the person may simply state that they are using that OPDMD due to mobility disability.

Spirit of the law is to prevent discrimination

dcr

What is Required by the New DOJ Rule?

- The entity should complete an assessment to determine if any class of OPDMD can be operated in accordance with legitimate safety requirement or one or more of the assessment factors in the rule.
- The burden of proof is on the trail manager.
- A visitor with a mobility disability has the right to expect to be able to use an OPDMD unless the trail entity has completed an assessment.

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dcr

DCR Public Trails and New Rules for Access - cont.

DOJ Assessment Factors

- Assessment Factor (i) The type, size, weight, dimensions, and speed of the device;

dcr

DOJ Assessment Factors

- Assessment Factor (ii) The facility´s volume of pedestrian traffic (which may vary at different times of the day, week, month, or year);

dcr

DCR Public Trails and New Rules for Access - cont.

DOJ Assessment Factors

- Assessment Factor (iii) The facility´s design and operational characteristics

dcr

DOJ Assessment Factors

- Assessment Factor (iv) Whether legitimate safety requirements can be established to permit the safe operation of the other power-driven mobility device;

dcr

DCR Public Trails and New Rules for Access - cont.

DOJ Assessment Factors

- Assessment Factor (v) Whether the use of the OPDMD creates a substantial risk of serious harm to the immediate environment or natural or cultural resources…

dcr

Applying the Assessment Factors

1. The type, size, weight of the vehicle
2. Volume of pedestrian traffic
3. Design or operational characteristics
4. Legitimate safety requirements
5. Risk of harm to natural or cultural resources

dcr

DCR Public Trails and New Rules for Access - cont.

Applying the Assessment Factors

1. The type, size, weight of the vehicle
2. Volume of pedestrian traffic
3. Design or operational characteristics
4. Legitimate safety requirements
5. Risk of harm to natural or cultural resources

Access, Public Safety and Resource Protection

dcr

Two Approaches to Compliance

Massachusetts Audubon

The Trustees of Reservations

dcr

DCR Public Trails and New Rules for Access - cont.

Informing the Public

- Provide information about the classes or types of devices that are allowed where a person can get that information *before they arrive on-site*.
  - Locate information on website, at kiosks, park headquarters …

Spirit of the Law is to prevent discrimination

dcr

Additional Resources

American Trails website:
www.americantrails.org

US Dept. of Justice website
www.ada.gov

dcr

DCR Public Trails and New Rules for Access - cont.

Questions

Spirit of the law is to prevent discrimination

dcr

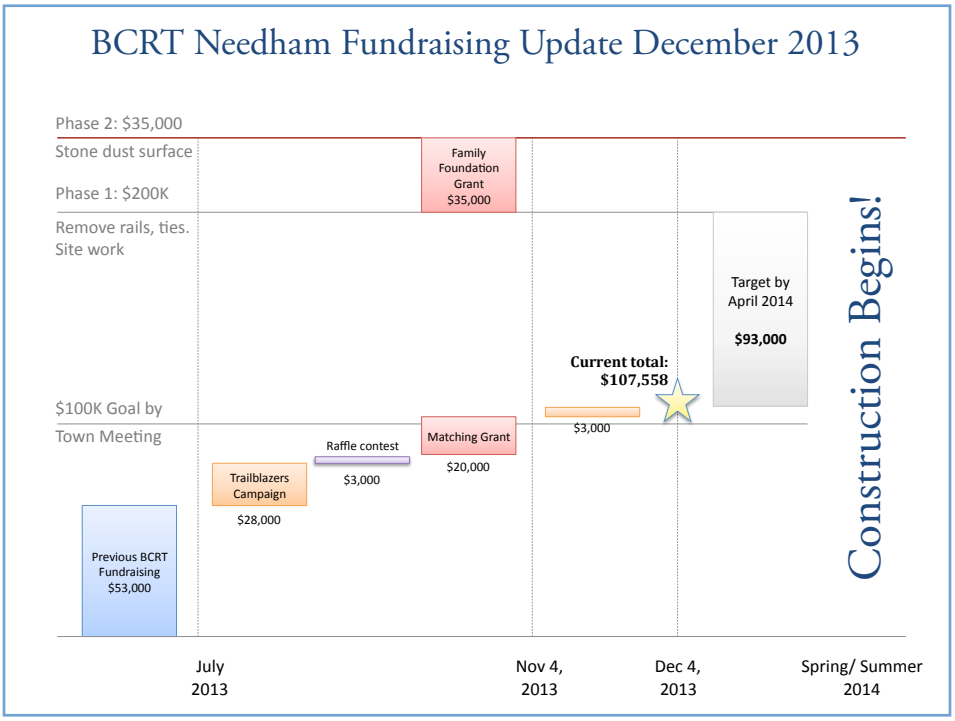
DCR's Approach to Assessment

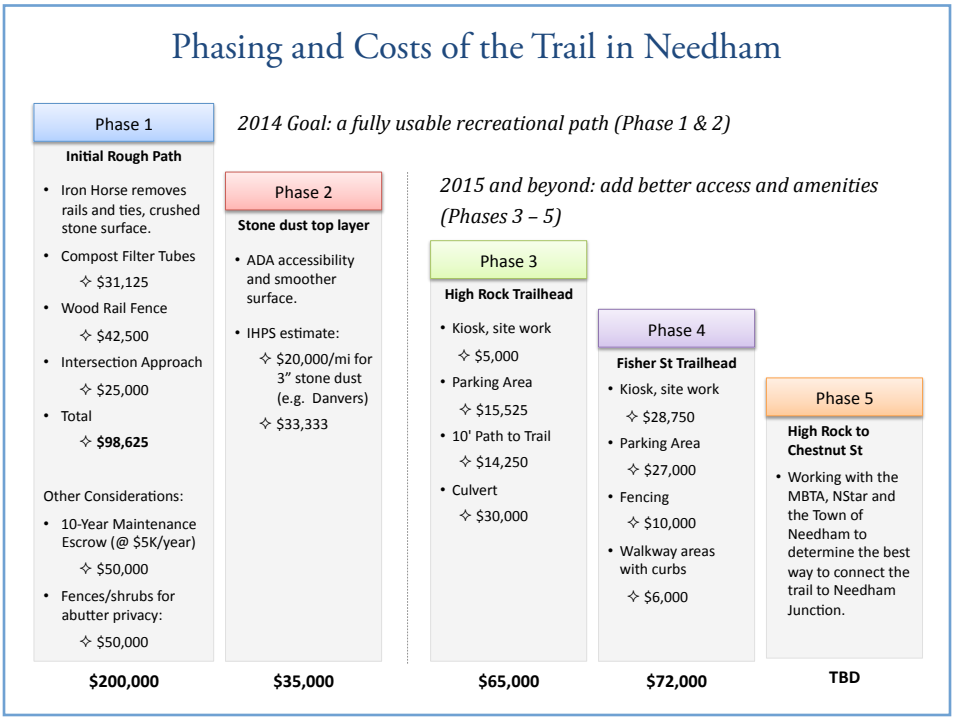
- What access or use policies, procedures or regulations are in place for your trail or facility?
  - What means of access are currently allowed on your trail(s) or facilities?
  - How was it decided that other classes/types devices were not to be allowed?
  - Were any of the DOJ Assessment Factors used in making that determination?

dcr

DCR Public Trails and New Rules for Access - cont.

Z. Town of Needham/BCRT Fundraising Update





AA. Town of Dover Fay Spoffard Thorndike RFP

A17

Dave Ramsay

From:	John Hendrickson <JHendrickson@fstinc.com>
Sent:	Tuesday, April 23, 2013 8:17 PM
To:	Dave Ramsay
Cc:	streets@doverma.org; Jennifer Ducey
Subject:	Dover Bay Colony Rail trail
Attachments:	Feasibilty Study Design Fee.xls; Proposal Soft Surface Trail.doc

Hi David,

Attached is our preliminary proposal for developing a feasibility study of the Bay Colony Rail Trail in Dover. We have set up the tasks similar to our current project in Needham and the many studies we have completed on similar rail trails. Typically, we walk the corridor before we submit a scope and fee to determine if there are items that are not typical of a rail trail. However, the attached estimate should include the tasks necessary to complete the study in Dover.

At our recent meeting, we also discussed developing bid documents for the removal of the railroad track and constructing a soft surface trail. Attached for your information is a scope of services for the City of Malden that took a similar approach. The scope of services states,

"The project includes the removal and disposal of existing railroad track, ties and timbers, the grading of a hard pack-surface trail base along the abandoned railroad corridor, and the installation of appropriate signs and pavement markings at roadway crossings, the preparation of final bid documents, and assistance with advertising and awarding the project for construction."

Our estimated fee for developing plans at this level of construction in Dover would be approximately $40,000.

We hope this helps in your planning.

John

John K. Hendrickson, PE | Vice President

Fay, Spofford & Thorndike (FST)

5 Burlington Woods | Burlington, MA 01803

Tel: 781.221.1133 | Cell: 339-234-2943

jhendrickson@fstinc.com | www.fstinc.com

<<Feasibilty Study Design Fee.xls>> <<Proposal Soft Surface Trail.doc>>

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1

Town of Dover Fay Spoffard Thorndike RFP - cont.

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Fee

Town of Dover
Bay Colony Rail Trail
Conceptual Planning and Design Study

Fay, Spofford & Thorndike

FEE SUMMARY

Fay Spofford & Thorndike - Conceptual Planning and Design Study	$34,600.00
Direct Costs - Mileage, Printing, etc.	$400.00
Total Project Fee	$35,000.00

FEE SCHEDULE

Feasibility and Conceptual Design Study

PROJECT TASKS	Project Manager	Project Engineer	Design Engineer	Junior Engineer	CADD Technician	TOTAL
Parking and Access	2	12	16		12	42
At-Grade Crossings		12		4		16
Wetlands		6		10		16
Drainage Conditions		4	12			16
Abutter Concerns (Includes Public Meetings)	8	16	16		16	56
Right-of-Way Concerns		10		18		28
Soil Contamination		2	8			10
GIS Plan Preparation	4	12	24		40	80
Study Report Preparation	8	12	24		24	68
TOTAL	22	86	100	32	92	332
SALARY	60.00	52.00	32.00	28.00	32.00	
DIRECT COST (a)	1320.00	4472.00	3200.00	896.00	2944.00	$12,832.00
INDIRECT COST (b)(@145%)	1914.00	6484.40	4640.00	1299.20	4268.80	$18,606.40
NET (c)(@10%)	323.40	1095.64	784.00	219.52	721.28	3143.84
TOTAL (a+b+c)	3557.40	12052.04	8624.00	2414.72	7934.08	$34,582.24
					Total	$34,582.24
					Say	$34,600.00

Town of Dover Fay Spoffard Thorndike RFP - cont.

December 2, 2010

Ms. Elizabeth Debski
Malden Redevelopment Authority
Government Center
200 Pleasant Street
Malden, Massachusetts 02148

Subject: ***Proposal for Engineering Services – Bike to the Sea***

Dear Ms. Debski:

FAY, SPOFFORD & THORNDIKE, LLC (FST) is pleased to this proposal for the provision of engineering design services and the development of a final bid package for the interim Bike to the Sea Trail in Malden. We have developed our proposal based on our experiences working with the City of Malden and the Bike to the Sea Group, our experience with preparing bid documents for bicycle trail facilities, and our familiarity with the proposed trail corridor.

Our proposal identifies by task the proposed scope of services to develop design documents to be used by the Malden Redevelopment Authority (MRA) to advertise and award a Construction Contract for this phase of the Bike to the Sea Trail. The project includes the clearing of vegetation and removal of existing rails and ties in order to construct a hard pack bicycle and pedestrian trail along the abandoned MBTA Right of Way.

In preparing our proposal, FST has reviewed the City of Everett's Request for Proposal for the Construction of the Bike to the Sea Trail from West Street to Wyllis Ave. dated June 24, 2010. The City of Everett's RFP was developed for the sole purpose of removing existing rails and ties and creating a hard-pack surface trail along a short section of the Bike to the Sea corridor. This section of the trail in Everett does not intersect or cross any major roadways; therefore the RFP does not include provisions for specific intersection/trail treatments or improvements.

Due to the number of roadway crossings (some major roadways), the proximity of signalized intersections, and existing sidewalk facilities, we recommend the City consider the benefits associated with the development of a more detailed set of bid documents that include not only the trail bed construction, but also detail specific improvements and modifications at roadway crossings. This work would include full-depth paved roadway crossings, sidewalk reconstruction, and paved trail aprons at intersections. Included in our proposal is the level of effort required to examine each existing roadway crossing and detail and design intersection improvements such as proposed pavement improvements at roadway crossings, trail provisions (or separation) through existing parking areas, implications of trail encroachments, bypass routes for some trail segments, provisions to restrict motor vehicle access, proposed signs and pavement markings.

Town of Dover Fay Spoffard Thorndike RFP - cont.

PROJECT REVIEW/OVERVIEW

The proposed project involves the construction of a bicycle/pedestrian trail known as the Northern Strand (a.k.a. Bike to the Sea) along the abandoned MBTA Right of Way from Wyllis Avenue (approximate Everett City Line) to Lynn Street (approximate Revere City Line), a distance of approximately 16,500 feet (3.1 miles). The project includes the removal and disposal of existing railroad track, ties and timbers, the grading of a hard pack-surface trail base along the abandoned railroad corridor, and the installation of appropriate signs and pavement markings at roadway crossings, the preparation of final bid documents, and assistance with advertising and awarding the project for construction.

SCOPE OF SERVICES

Field Reconnaissance

FST will perform supplemental field reconnaissance of the proposed trail corridor to visually identify existing trail terrain surfaces and dispositions, as well as obstructions and/or potential corridor encroachments along the proposed alignment. FST will compare existing conditions to available GIS mapping and previous survey plans developed for the Bike to the Sea Trail.

Data Collection

As part of FST's data collection effort, we will utilize available City GIS datalayers and plan information to supplement field reconnaissance efforts to show existing topography and develop a proposed trail alignment. FST will also conduct a preliminary environmental assessment to identify potential areas of concern vis-à-vis environmental contamination within or adjacent to the railroad Right of Way.

Preliminary Alignment and Details

FST will develop a preliminary alignment for the proposed trail location within the existing railroad Right of Way. Existing survey plans, information obtained during field reconnaissance, and available GIS information will be used to depict existing base plan information on 11" x 17" plans at a scale of 1"=100' (note: typically, alignment plans are developed at a larger scale, 1"=40' or 1'=20', but we believe the type of improvements envisioned at this time for the trail and the level of design development to be provided for the bid documents can be accomplished at the smaller scale which reduces design costs significantly). FST will develop preliminary details for trail crossings at roadways for review and comment by City officials (we expect this will include representatives of the MRA, the City Engineer's office, the Public Works Department, and perhaps others as you may determine appropriate). Details will include proposed signage, pavement markings, bollards or other means of restricting vehicular access, and other proposed enhancements to create a safer trail crossing. FST will prepare a preliminary construction cost estimate based on similar projects and available cost information.

Town of Dover Fay Spoffard Thorndike RFP - cont.

Final Plans, Specifications and Details

Based on the City's comments on the Preliminary Alignment and Details, FST will develop 11" x 17" plans and sketches to be included in the final bid documents. FST will prepare technical specifications necessary to advertise and construct the project. FST will also update the preliminary estimated construction cost based on the final design and recent available cost information, including estimated quantities and unit prices.

Meetings – Design Review/Coordination

FST will attend up to four (4) design meetings with City Officials and/or other stakeholders as required by the City. FST will attend the meetings and prepare meeting minutes for your files.

Prepare Bid Documents Boiler Plate

FST will prepare and tailor the contract specification "boiler plate" (front portion) obtained from a recent Malden Redevelopment Authority contract specification *(Reconstruction of Pedestrian Crossing at 557 Pleasant Street)*. The documents will include the technical specifications developed as part of the Final Design Phase.

ASSUMPTIONS

- The "boiler plate" to be used will be the "boiler plate" used on the latest FST-prepared Malden Redevelopment Authority contract. *(Reconstruction of Pedestrian Crossing at 557 Pleasant Street)*
- The Contractor awarded the contract will be the lowest, responsible contractor that submits a bid responsive to the bid documents.
- The advertisement for Invitation to Bid will be published in one local newspaper.
- We do not expect there to be any permitting associated with the Wetlands Protection Act, nor do we expect any requirement to comply with the Massachusetts Environmental Policy Act (MEPA) or the National Environmental Policy Act (NEPA).
- The Contractor will be responsible for obtaining all necessary permits for construction, including but not limited to street opening permits and NPDES permit. Any other permits necessary for construction will be identified in the bid documents.
- The Malden Redevelopment Authority will be responsible for preparation of the Invitation to Bid for the contract and placing the advertisement in the *Malden Evening News* or other local publication, as appropriate. The MRA will also be responsible for submitting the project advertisement to the State's Central Register.

Town of Dover Fay Spoffard Thorndike RFP - cont.

- The Malden Redevelopment Authority will be responsible for scheduling and conducting the bid opening.
- The Malden Redevelopment Authority will be responsible for preparing a Canvas of Bids from the Contractors who submitted bids for the contract bid opening.
- The Malden Redevelopment Authority will be responsible for reviewing the submitted bids and credentials.
- The Malden Redevelopment Authority will be responsible for preparing the Contract Documents for execution and Notice to Proceed to the Contractor.

SCHEDULE

FST will initiate the Scope of Services described herein immediately upon receipt of Notice to Proceed. The following tentative project schedule is offered and is based on our understanding of the project as presently contemplated. The project schedule, particularly for the construction phase, will be adjusted as necessary as design development proceeds.

DESIGN DEVELOPMENT / FINAL CONSTRUCTION DOCUMENTS

- Preliminary Alignment Plans and Details complete within 1.5 months after NTP.
- Preliminary Design Review Meeting within 2 weeks after Preliminary Design Submittal.
- Final Plans, Specifications and Details 1 month after Review Meeting.
- Final Plan Design Review Meeting within 2 weeks after Final Plans, Specifications and Details.
- Final Contract Documents Submittal 1 week after Review Meeting.
- Final Contract Documents complete and ready to advertise 1 week after acceptance of Final Contract Documents Submittal.

BIDDING / CONTRACT AWARD (By the Malden Redevelopment Authority)

- Bid Opening - 3 weeks after public advertisement in Central Register and paper of local circulation.
- Bid Review and Award Recommendation complete within 2 weeks after bid opening.
- Contract Award - as required by MRA.

Town of Dover Fay Spoffard Thorndike RFP - cont.

ESTIMATED FEE

Our estimated fee to provide the described Scope of Services for Design is $00,000.00.

The total estimated fee will not be exceeded without prior written authorization from the MRA. A detailed breakdown of the estimated fee and the associated job-hours for each phase of the project is attached.

All services provided, and compensation therefore, will be in accordance with the Agreement for Professional Services By and Between the Malden Redevelopment Authority and Fay, Spofford & Thorndike, LLC dated March 15, 2010.

EXCLUSIONS

Our proposal includes only services expressly described above in the Scope of Services. Our proposal does not include services associated with the following. These or other services can be provided as additional services upon request.

- Supplemental topographic and/or property survey.
- Right of way layout or property acquisition services.
- Traffic data collection.
- Design of roadway intersections (signalized/non-signalized).
- Services associated with rights-of-entry that may be necessary to gain access to private properties for the purposes of conducting field investigations or supplemental survey.
- Services to investigate subsurface environmental conditions or prepare contract provisions for the management, handling, transport, and disposal of contaminated soil or contaminated groundwater. Investigations or contract provisions prepared by others, who will be responsible from a professional liability/errors and omissions perspective for their documents, will be incorporated into the contract documents.
- Design of drainage improvements or repairs.
- Environmental resource area delineation and permitting services.
- Construction Phase Services. FST can provide a full spectrum of services during construction. Services can range from limited technical support on specific matters to full time construction administration and on-site representation. The Scope of Services can be tailored to suit the MRA's needs, resources and available funds.

Town of Dover Fay Spoffard Thorndike RFP - cont.

ACCEPTANCE

Should you find our fee proposal acceptable, please sign and return one copy to our office. Retain one copy for your records. Our receipt of a signed, executed copy will serve as our Notice to Proceed.

If you have any questions or would like to discuss any aspect of our proposal, please do not hesitate to call. We look forward to this opportunity to be of continued assistance to the MRA on the development of the Bike to Sea Trail.

Very truly yours,

FAY, SPOFFORD & THORNDIKE, LLC.
By

, P.E.

ACCEPTANCE:

Malden Redevelopment Authority
By

_____
Executive Director

_____
Date

Attachments

JMM/jmm

ZB-10T98
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BB. Land Stewardship Zoning Guidelines
Environmental Monitor Public Review Notice 3-15-12

dcr
Massachusetts

Department of Conservation and Recreation
Commonwealth of Massachusetts

DRAFT UPDATE TO LAND STEWARDSHIP ZONING GUIDELINES AVAILABLE FOR PUBLIC REVIEW

As a result of DCR's recent statewide Landscape Designations process and efforts to align and integrate new and existing planning systems, DCR has updated its Land Stewardship Zoning Guidelines. Recently, DCR undertook a public process to designate all of the facilities within the State Parks System as Reserves, Parklands, or Woodlands. The current update to the existing Land Stewardship Zoning guidelines includes modifications that reflect and ensure consistency with DCR's Landscape Designations process.

DCR's Land Stewardship Zoning Guidelines are an integral component of the Resource Management Planning process, which is part of the agency's statutory responsibility to prepare such plans pursuant to M.G.L. Chapter 21, Section 2F.

The three Land Stewardship Zones and associated management guidelines provide a general continuum to categorize resources (relative to potential degradation from human activities), from undisturbed sites with highly sensitive resources, through stable / hardy resources, to sites that have been developed and consistently used for intensive recreation or park administration purposes.

The draft Land Stewardship Zoning Guidelines are available for public review on the DCR website: http://www.mass.gov/dcr/stewardship/rmp/lszguidelines.htm

DCR will invite written comments on the draft Land Stewardship Zoning Guidelines for a period of 30 days commencing with publication of this notice in the March 21, 2012 Environmental Monitor. As such, written comments will be accepted through 5:00 PM (EST) on Friday, April 20, 2012. Comments may be submitted via e-mail to DCR.Updates@state.ma.us (please put 'Land Stewardship Zoning' in the subject line) or by U.S. Mail to Department of Conservation and Recreation, Office of Public Outreach, 251 Causeway Street, Suite 600, Boston, MA 02114.

CC. Alternative Transportation Corridor Lease Agreement

ALTERNATIVE TRANSPORTATION CORRIDOR LEASE AGREEMENT

BY AND BETWEEN THE

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

AND

COMMONWEALTH OF MASSACHUSETTS BY AND THROUGH ITS DEPARTMENT OF CONSERVATION AND RECREATION

DECEMBER 30, 2010

[ONLY FOR RIGHTS-OF-WAY NOT IN ACTIVE USE]

Alternative Transportation Corridor Lease Agreement - cont.

ALTERNATIVE TRANSPORTATION CORRIDOR

LEASE AGREEMENT BETWEEN

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

AND

COMMONWEALTH OF MASSACHUSETTS

This Lease Agreement (hereinafter referred to as the "Lease" or the "Agreement") entered into as of the 30th day of December 2010 by and between the Massachusetts Bay Transportation Authority, a body politic and corporate and a political subdivision of the Commonwealth of Massachusetts, having its usual place of business at Ten Park Plaza, Boston, Massachusetts 02116 (hereinafter referred to as the "MBTA") and the Commonwealth of Massachusetts, acting by through its Department of Conservation and Recreation, having its usual place of business at 251 Causeway Street, Suite 600, Boston, Massachusetts 02114 (hereinafter referred to as the "DCR").

WITNESSETH THAT:

1. Agreement

In consideration of the mutual covenants and agreements herein contained, and subject to appropriation or availability of funds to DCR, the parties hereto agree as follows:

2. Premises

The Premises consist of the parcel or parcels of land described in Exhibit A attached hereto, consisting generally of that certain railroad right of way known as the portion of the Central Massachusetts Branch extending from Waltham to Berlin starting at or about the Belmont/Waltham/Weston town line (Right-of-Way Track Map, Boston and Maine R.R. V-5, 4/30 dated June 30, 1914) running approximately twenty-six miles ending at or about Station 1478+40 in Berlin (Right-of-Way Track Map, Boston and Maine R.R. V-5, 30/30 dated June 30, 1914).

MBTA acquired the portion of the Premises located in Worcester County on or about February 1977 pursuant to an Order of Taking recorded in the Worcester South District Registry of Deeds in Book 6145, Page 377; and the portion of the Premises located in Middlesex County on or about December 1979 pursuant to an Order of Taking recorded in the Middlesex South District Registry of Deeds in Book 13156, Page 34. Under both Orders of Taking, the Boston and Maine Corporation ("B&M") retained freight service rights pursuant to an agreement between the MBTA and Robert W. Meserve and Benjamin H. Lacey, Trustees of the B&M, dated December 27, 1976, and recorded in the Worcester South District Registry of Deeds in Book 6096, Page 140, and in the Middlesex South District Registry of Deeds in Book 13117, Page 113. B&M filed an application in August 1979 for a certificate of public necessity and convenience to permit the abandonment of the line. Following a report from the Interstate Commerce Commission, dated March 26, 1980, recommending approval of B&M's discontinuance application (I.C.C. Docket No. AB-32 (Sub-No. 7F)), approval of discontinuance was

Alternative Transportation Corridor Lease Agreement - cont.

granted by the United States District Court, as found in the Memorandum and Order of Senior District Judge Frank J. Murray, In the Matter of Boston and Maine Corporation, Debtor, No. 70-250-M (D. Mass., Oct. 3, 1980). (A copy attached hereto as Exhibit B). The parties agree that, with that action, B&M no longer retains any right or interest in this line.

Within the Premises there shall exist a contiguous corridor ("Corridor") to be designated by DCR, with the consent of the MBTA, said Corridor shall generally consist of a path that is 15' wide with 2' shoulders on either side. Said corridor shall not interfere in any way with the MBTA's ability to lease, license or otherwise encumber the Premises for revenue purposes consistent with the right of the MBTA's authority detailed in Section 9. Infra. The MBTA will notify with DCR of its revenue plans, but any portion of the Corridor so utilized in connection with any third party transactions will continue to provide for continuity of the Rail Trail Corridor and DCR shall work cooperatively with the MBTA and any third party grantees, lessees or licensees for this purpose. The MBTA shall be consulted on the construction of the Corridor and be provided with as-built plans of said Corridor.

3. Use of Premises

Subject to the terms and conditions herein, the MBTA hereby leases the Premises to the DCR for use as follows:

(a) The Corridor is to be used for purposes of the installation, operation, maintenance and use of a rail-trail as defined M.G.L. C.82 §35A and in the definition of Owner or Operator in M.G.L.C. 21E§2, and as amended from time to time, and as further defined under M.G.L.C.21E§2(d)(1), as a property converted from a former use as a railroad right-of-way to a revitalized use as a publicly owned, improved and maintained corridor for bicycle, pedestrian and other non-motorized public transportation, recreation and associated purposes and

(b) The remainder of the Premises may further be used by the DCR, subject to MBTA approval, to access, construct and maintain the Corridor and maintain, including landscaping, the Premises, for ancillary uses which provide no revenue or other tangible benefit, for such other uses as MBTA may permit by prior written consent provided however that the MBTA shall maintain the right to utilize the Premises for revenue purposes consistent with the right of the MBTA's authority detailed in Section 9. *infra*. DCR acknowledges the MBTA's right to generate revenue in and on the Premises, but any portion of the Corridor so utilized in connection with any third party transactions will continue to provide for continuity of the Rail Trail Corridor and DCR shall work cooperatively with the MBTA and any third party grantees, lessees or licensees for this purpose. MBTA will notify DCR of its revenue plans in advance as necessary.

Notwithstanding the preceding, this Lease is not intended to transfer land or

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Alternative Transportation Corridor Lease Agreement - cont.

easements to create a perpetual right to any use, or a right to use longer than the term of the lease or lesser term if terminated sooner, that may be subject to protection by Article XCVII (97), as amended, of the Amendments to the Constitution of the Commonwealth of Massachusetts or by legislation enacted to pursuant thereto.

The Premises shall be open to the public, and no fee or other consideration shall be charged for use of the Premises.

The DCR will diligently act to secure funds necessary to fulfill its obligations under the Lease for the design, bidding and the construction of the rail-trail project.
DCR also agrees that it will provide its plans for the use of the site sixty (60) days prior to the bidding to the MBTA for its approval, said approval which shall not be unreasonably withheld provided that the use is consistent with paragraph 3(a) and (3(b), above. If the plans for the site are not consistent with paragraph 3(a) and 3(b), above, the MBTA reserves the right, subject to the notice and cure provisions of paragraph 11, to terminate the lease and demand return of the property. Said use shall also comply with the current (as of the commencement of construction) MA DEP Best Management Practices:

The DCR shall be responsible for all costs associated with any soil testing. The MBTA will allow DCR to enter upon the Premises's for testing purposes provided DCR receives a License from the MBTA in the normal course prior to entry on the Premises.

4. Term

The Term of this Lease shall be for a period of ninety-nine (99) years beginning on the date hereof; except that the MBTA may terminate this Lease upon two (2) years' written notice to DCR for the greater public good. DCR acknowledges that that the Premises or a major portion thereof may be necessary for active railroad or other transportation purposes in the future. The MBTA may terminate this Agreement for the greater public good within the meaning of Federal Highway Administration requirements other than the Transportation Enhancement (the defined ATC) and the MBTA will not be required to provide any reimbursement whatsoever for said termination. MBTA does not impose a fee for the lease of this property. Additionally, The MBTA may terminate this Lease with respect to any part of the non-Corridor portion of the Premises with ninety - (90) days written notice for any reason or the balance of the Premises, consistent with the right of the MBTA's authority detailed in Section 9. *infra* and for the uses stated above. The MBTA may continue to utilize the Premises for revenue purposes but any portion of the Corridor so utilized in connection with any third party transactions will continue to provide for continuity of the Rail Trail Corridor and DCR shall work cooperatively with the MBTA and any third party grantees, lessees or licensees for this purpose.

5. Condition of the Premises

The DCR has inspected the Premises, accepts the Premises "as is", and agrees the Premises are suitable for DCR's intended use. The MBTA makes no warranty of any kind, express or implied, as to the condition of the Premises or its suitability for the above uses. The DCR assumes all risk of entry on the Premises for the intended

Alternative Transportation Corridor Lease Agreement - cont.

development and use of the Premises as a Rail Trail, including, but not limited to the presence of oil or hazardous material on the Premises, if any, as defined in M.G.L.C. 21E, as amended from time to time, but in accordance with Best Management Practice of the Department of Environmental Protection. DCR acknowledges that it will avail itself of the M.G.L.c. 21E§5J defense if necessary and appropriate.

6. Terms and Conditions of Lease

This Lease is subject to the following terms and conditions:

6.1 Liability for Personal Injury, Death, and Property Damage

All issues regarding liability for personal injury, death or property damage shall be governed by the provisions of Chapter 258 of the General Laws, as amended. The Parties acknowledge the intention that this Lease, and the recreational activities planned for the general public, are at no charge and are to be subject to the limited liability protections of G.L. c. 21, s. 17C (the, so called, "Recreational Use Statute").

6.2 Remediation Obligation of the DCR

During the design, construction and operation of the rail trail, the DCR shall follow the provisions of BMP's for Controlling Exposure to Soil during the Development or Rail Trails promulgated by the Massachusetts Department of Environmental protection in March 2004.

Whenever the DCR is responsible for the remediation of Hazardous Materials on or below the Premises by law or pursuant to this Lease, the DCR, upon written demand of the MBTA, shall conduct at its sole cost and expense, all response actions required by Chapter 21E and the MCP with respect to the Hazardous Materials (including the hiring of a Licensed Site Professional).

Any such response action on the Premises, if performed by the DCR, shall be performed in accordance with Chapter 21E, the MCP, any other applicable statutes and regulations, and in accordance with plans and specifications approved by the MBTA, shall be completed in a timely manner to the reasonable satisfaction of the MBTA, and shall allow the MBTA to use the Premises, for its active railroad or other transportation purposes.

For purposes of this Section, the term "MBTA" shall include the MBTA, and its directors, officers, employees, agents and any legislatively approved entity that may succeed the MBTA. Additionally, for purposes of this Section the "MBTA" does not include easement holders, MBTA lessees, or licensees or successors to any real property of the MBTA through sale, assignment, pledge, mortgage, exchange or gift.

6.3 Insurance of Contractors

DCR shall cause its contractors and agents to maintain sufficient liability insurance, and general insurance, with coverage for bodily injury, wrongful death, and property damage, consistent with MBTA insurance requirements as enumerated below, naming the MBTA

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Alternative Transportation Corridor Lease Agreement - cont.

as an additional insured, and indemnifying the Commonwealth of Massachusetts and the MBTA. DCR shall require its contractors and consultants to take out and maintain sufficient Commercial General Liability insurance (with coverage for bodily injury, wrongful death, and property damage to cover loss arising from all work whether above or below ground), Workers Compensation Insurance (with coverage in the amount required by DCR in such contract, but no less than the statutory minimum under G.L. c. 152, as amended), and Vehicle Liability Insurance under any Public Works contract under G.L. c. 30, vertical construction contract under G.L. c. 149, or Goods and Service contract under G.L. c.7, as applicable, for work performed by any consultant or contractor on the Premises. All insurance shall be provided at the contractor's expense and shall be in full force and effect for the full term of the contract or for such longer period as the contract would require. The MBTA insurance requirements are as follows:

(a) Commercial General Liability Insurance
For Public Works projects with a minimum liability coverage for personal injury, bodily injury and property damage with limits not less than One Million ($1,000,000.00) Dollars per occurrence and Three Million ($3,000,000.00) Dollars in aggregate. Umbrella liability coverage with limits of not less than Two Million ($2,000,000.00) Dollars covering all work performed must also be provided; and minimum liability coverages for goods and services contracts in accordance with DCR requirements. Such insurance shall be written on an occurrence basis (as opposed to a claims-made basis) and name the Commonwealth of Massachusetts, MBTA and others hereinafter designated as additional insureds as their interests may appear. Such insurance may be subject to standard exclusions found in property and general liability insurance policies.

(b) Worker's Compensation Insurance
(i) For all DCR contractors, insuring all persons employed by the DCR in connection with any work done on or about the Premises with respect to which claims for death or bodily injury could be asserted against the MBTA or the Premises with limits of liability of not less than those required by Massachusetts General Laws Chapter 152 as amended. The policy shall contain a clause waiving the company's right to subrogation against the MBTA if such a policy is commercial available, and

(ii) For all DCR contractors and agents by providing evidence of an active workmen's compensation program for DCR contractors agent funded by DCR, a copy of which is attached.

(c) Automobile Liability Insurance
Automobile liability insurance with limits of not less than One Million ($1,000,000.00) Dollars covering all owned, non-owned, hired, rented or leased vehicles of the contractors or agents of DCR.

The required insurance coverage's herein specified shall be placed with insurance companies licensed by the Massachusetts Division of Insurance to do business in the Commonwealth of Massachusetts and having a Best's rating of B+ or better;

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Alternative Transportation Corridor Lease Agreement - cont.

The DCR shall be responsible for seeing that its contractors and consultants are properly covered by insurance. MBTA must be provided evidence of same.

Notwithstanding any other provision of this section 6.3, DCR reserves the right to propose to meet the requirement by adding such insurance coverage to existing policies subject to the terms and conditions of those existing policies or to obtain new policies containing terms and conditions generally included in policies provided to state agencies in Massachusetts.

6.4. Compliance with Laws

The DCR shall comply with, and shall cause all work performed to comply with, all applicable Federal and state governmental statutes, laws, rules, orders and regulations. The DCR shall also be responsible for obtaining any and all applicable permits and/or approvals under Federal or state law necessary to carry out the activities permitted hereunder.

7. Maintenance

During the Term hereof, the DCR shall keep, repair, manage, operate, and maintain the entire Premises in good and clean order, operation, condition and repair. Except for any claim of damage arising from the exercise by the MBTA of the rights reserved to it, the MBTA shall have no responsibility whatsoever for the maintenance, repair or the condition of the Premises.

8. Utilities

Except as reasonably necessary for the operation of the alternative transportation use of the Corridor, no utilities shall be installed on the Premises by the DCR without the written approval of the MBTA.

9. Reservation of Rights

9.1 Non-Exclusivity

(a) The MBTA makes no representations or warranty, express or implied, that the DCR shall have sole or exclusive use of the Premises. In the event other licenses, leases or easements have been or are granted or exist by reservations in deeds, the DCR shall be responsible for coordinating its work and activities with that of other licensees, grantees and other parties with interests in the Premises. The MBTA shall not be liable for delays, obstructions, or like occurrences affecting the DCR, arising out of the work of the MBTA or other licensees, grantees or parties in interest; provided, however, that the MBTA shall make reasonable efforts to mitigate impacts on the Use of the Premises. The MBTA will make a list available to the DCR of any and all leases or licenses along the Corridor designated under this Lease.

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Alternative Transportation Corridor Lease Agreement - cont.

(b) The DCR'S rights herein are granted subject to existing, easements, and rights of record to the extent that such easements rights and takings are still in effect and applicable. The MBTA explicitly reserves the right to all uses of the Premises not herein granted to the DCR, including the right to lease, license, grant easements and reserve encroachments relative to portions of the Premises to third parties, except that the MBTA shall not (and shall not grant to others the right to) do anything on the Premises that shall materially impede the permitted Use of the Premises, as defined in Section 3 ,supra, except temporarily (e.g. while a pipe line is being installed or repaired) The MBTA may continue to utilize the Premises for revenue purposes but any portion of the Corridor so utilized in connection with any third party transactions will continue to provide for continuity of the Rail Trail Corridor and DCR shall work cooperatively with the MBTA and any third party grantees, lessees or licensees for this purpose. The MBTA agrees to minimize any potential impact to the DCR maintained Corridor including consultation with DCR on public safety, rail trail use and operations, and proposed mitigation measure considerations. The MBTA shall retain the right to authorize subsurface or bridge crossings, provided sufficient clearance is maintained to allow for passage of public safety vehicles along the Corridor. If the MBTA shall create after the date of this Agreement an "at grade" easement, right of way or allow a permitted crossing of the Corridor with a new third party, the new third-party recipient of said easement, right of way or permitted crossing shall be responsible for providing sufficient liability insurance, and general insurance, with coverage for bodily injury, wrongful death, and property damage, consistent with MBTA insurance requirements as enumerated below, naming the MBTA and the Commonwealth of Massachusetts as an additional insured, and indemnifying the Commonwealth of Massachusetts and the MBTA. Notwithstanding language in Section 6.1, 6.2, 6.3, and 7, DCR shall bear no responsibility for such easement, right of way or permitted crossing or for the acts or omissions of the said new third-party or the general public on such easement, right of way or permitted crossing.

The DCR's rights herein are granted subject to existing leases, licenses easements and encroachments, now existing or granted in the future, to the extent that such rights are still in effect and applicable. The MBTA hereby agrees to provide the DCR with copies of the documents that establish the location and term of existing licenses, leases, easements or encroachments, if any. Upon completing a 25% design of the proposed rail trail, the DCR may request that the MBTA exercise any rights it may have to modify or terminate an existing lease or license that would prevent the creation of a contiguous Corridor. The MBTA shall make all reasonable attempts to fulfill such requests to create a contiguous corridor.

(c) The DCR expressly agrees that any revenues obtained from the leasing, licensing, or the granting of rights for any use of the Premises to any utility or

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Alternative Transportation Corridor Lease Agreement - cont.

other entity shall belong solely to the MBTA.

The DCR shall not be entitled to impose any fees, charges, requirements for betterments, linkage payments or other benefits to the DCR on any lessee, licensee or grantee of the MBTA or any other party either for installations on the Premises or on public way crossings along the Premises (except those fees normally charged by the DCR for engineering and environmental review, if any). If despite this section the DCR does receive some such benefit, then the MBTA shall be paid the fair market value of that benefit by the DCR.

(d) The DCR expressly agrees that if there is any encroachment onto the Premises by a third-party, the MBTA will have the sole right to cure said encroachment and to obtain revenue from such cure or to permit such encroachment, provided that such cure does not materially interfere with the DCR's use of the Corridor. Notwithstanding the preceding, to the extent that the encroachment is on the Corridor, then the DCR shall have the right to expel such encroacher.

9.2 Utility and Communication Lines and Emergency Access

The MBTA expressly reserves all of its rights in the Premises for itself, its successors and assigns, to install, maintain, repair, replace and remove aerial, surface and subsurface utility and communication lines, wires, antennas and conduits in, on, under or above the Premises as well as the right to lease, license and/or grant easements for such utility and communication rights to third parties; except that the DCR shall have the rights specifically granted herein. The MBTA shall take all necessary safety measures including, but not by way of limitation, notification to the DCR of its intention to perform (or have performed) such installation and/or maintenance, the erection of barricades, as shall be reasonably required to protect persons performing such work and construction, as well as members of the public, from injury or damage caused by, or resulting from, any entry, work or construction performed by the MBTA or its contractors, licensees, lessees, grantees (and their contractors) pursuant to this Section. The MBTA shall, at its cost and expense, return the Premises to a condition in which the Premises can be used for the purposes for which they were used before the work pursuant to this paragraph, if its contractors, licensee, lessees, or grantees, as the case may be, fail to do so.

Prior to entry, the MBTA shall require that any contractor, licensee, lessee or grantees provide the DCR, during the Term thereof, insurance of the activities permitted by the MBTA, to the same extent and on the same terms that the MBTA is insured. The DCR shall be named as an additional insured on any general liability policy. All policies shall waive the right of subrogation for any claim that may be made against the DCR.

10. Security and Operations

The MBTA shall have no obligation to provide security services or lighting for the

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Alternative Transportation Corridor Lease Agreement - cont.

Premises. DCR may implement public safety and emergency services for the Corridor under the DCR's usage, and may address providing public safety services through municipal public safety departments, as well as police services with the State Police and municipal police departments. DCR, its agents or assignees, may install lighting and adopt time of use and other restrictions applicable to the public. Provided such are not inconsistent with the provisions of this Lease, the Premises shall be subject to DCR regulations regarding the public's use and conduct of activities on DCR property. Any portion of the Corridor that is utilized by a third party shall not be subject to any DCR regulation which would interfere with the third party's ability to operate said portion of the Corridor.

11. Default

In the event the DCR shall have failed or refused to take a required action or to observe any covenant or undertaking herein on its part to be performed and/or observed and such failure or refusal has continued for at least thirty (30) days after written notice from the MBTA of the breach of such covenant(s) by the DCR, which notice shall specify the nature of the breach in reasonable detail, the MBTA may, immediately or at any time thereafter (notwithstanding any license or waiver of the benefit hereof, or consent in a former instance) and without any further demand or notice, in person or by agent or attorney, enter the Premises or any part thereof and block access to the Premises by the public; and/or the MBTA may terminate this Lease by written notice to the DCR and, in either event, expel the DCR and those claiming through or under it and remove their effects without being deemed guilty of any manner of trespass and without prejudice to any remedy which otherwise might be used for breach of covenant and upon entry or notice as aforesaid this Lease shall terminate.

12. Condition of the Premises at Termination

The DCR agrees to deliver up the Premises to the MBTA at the expiration of the Term or termination by the MBTA hereof in as good condition as the Premises were after the DCR installed improvements were made, reasonable wear and tear excepted. DCR shall have no obligation to remove or reimburse the MBTA for costs of removal of any of the DCR installed improvements; and such improvements shall not be considered a change to the grade existing at the commencement of this Lease.

13. Existing Utilities

The DCR acknowledges that there may be surface and subsurface utilities on and adjacent to the Premises and agrees to exercise extreme caution in performance of the scope of work. The DCR shall comply with Massachusetts General Laws, Chapter 82, Section 40 (said statute also known as the "Dig Safe" law) and the regulations promulgated pursuant thereto including but not limited to the Code of Massachusetts Regulations, more particularly, 220 CMR 99.00 et seq. To the extent the MBTA, or parties acting in behalf of the MBTA, locate and mark railroad utilities in the railroad rights of way and appurtenant thereto, the DCR shall be responsible for payment to such parties for such services which may include, but not be limited to, locating and

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Alternative Transportation Corridor Lease Agreement - cont.

marking utilities, facilities and appurtenances thereto serving the railroad line(s) or used in connection with services or operations of the MBTA. Any damage to such utilities caused by the DCR shall be the sole responsibility of the DCR. If the DCR does not immediately repair any utilities it has damaged, the MBTA, without being under any obligation to do so and without waiving the DCR's obligation hereunder, may repair any utilities damaged by the DCR immediately and without notice in case of emergency. In the event the MBTA exercises such right, the DCR shall pay to the MBTA immediately upon demand all of the MBTA's cost of performing such repairs plus a fee equal to twenty-five percent of the MBTA's cost of performing such repairs to reimburse the MBTA for its administrative costs.

The MBTA reserves the right to remove the rail infrastructure and agrees that if it chooses to do so, said removal shall be within 180 days of the date the DCR notifies the MBTA to be the date of the trail construction commencement.The DCR shall be responsible for removal and disposal of all other rail infrastructure, after the said 180 days, and may retain any revenue from DCR's removal and disposal of such.

14. Notice of Project Completion and Record Drawings

Upon completion of its work, the DCR shall provide written notice ("Notice of Project Completion") to the MBTA Railroad Operations Department of the date of project completion. The DCR shall also provide the MBTA Railroad Operations Department with one reproducible "As-Built" copy of each approved construction drawing marked to indicate all changes and deviations from the original approved plans and recording the final conditions of the Premises ("Record Drawings") upon completion of the work authorized hereunder. All Record Drawings shall be received and accepted by the MBTA prior to final inspection. The Notice of Project Completion and the Record Drawings shall be delivered to:

Section Chief, Engineering and Maintenance
MBTA Railroad Operations Department
32 Cobble Hill Road
Somerville, MA 02143

15. Results

If the DCR conducts certain investigations on MBTA owned land, then the DCR agrees to provide to the MBTA, at no cost, a copy of the results of such investigations (including data and analysis) and all other work conducted under this Lease in both hard copy form and in a digital format specified by the MBTA regardless of whether the report was prepared by the DCR, its agent, consultant or contractor, or prepared on behalf of the DCR. All results and reports shall be provided to the MBTA within ten (10) days of receipt by the DCR. The DCR agrees to consult with the MBTA prior to contacting any governmental entity, regarding any information, results of analysis or reports regarding the Premises. The DCR shall give the MBTA a copy of any reports or notifications, including but not limited to release notifications, prior to submitting the same to any governmental entity.

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Alternative Transportation Corridor Lease Agreement - cont.

16. Construction and Access Plan

The DCR shall submit a plan and detailed specifications (including the materials to be used) and the proposed methods of performing the work, or any part thereof (the "Plan") to the MBTA. The DCR shall not enter the Premises to undertake construction until the Plan has been approved by the MBTA, which approval shall not be unreasonably withheld. The scope of work for said construction, installation, and/or replacement will be more fully defined in the approved Plan, which approved Plan will automatically be incorporated herein by reference and made part of this Lease. The DCR shall also provide the MBTA with a detailed schedule of times when the DCR, its employees, contractors, subcontractors, or agents would like to be on the Premises to undertake the construction and installation of the rail trail improvements (the "Access Plan")..

17. Contracts for Improvements

All contracts for the construction or installation of the improvements at the Premises shall require:

(a) that all contractors and subcontractors provide labor that can work in harmony with other elements of labor employed or to be employed at or near the Premises.

(b) insurance coverage and suretyship reasonably satisfactory to the MBTA, provide that customary coverage's used by DCR in its public contracting shall be considered reasonably customary, provided said coverage's are in accord with the then current MBTA insurance requirements.

(c) that all contractors or subcontractors comply with all applicable provisions of this Lease; and

performance bonds and payment bonds in form and substance satisfactory to the MBTA, each of which shall name the MBTA, as an additional oblige, provide that customary coverage's used by DCR in its public contracting shall be considered reasonably customary, provided said coverage's are in accord with the then current MBTA insurance requirements.

18. Notices

All notices required or permitted to be given hereunder shall be in writing and addressed as follows:

In the case of the MBTA to:
Massachusetts Bay Transportation Authority
10 Park Plaza, Room 5750

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Alternative Transportation Corridor Lease Agreement - cont.

Boston, Massachusetts 02116
Attn: Director of Real Estate

With a copy to:
MBTA Railroad Operations Directorate
Section Chief, Engineering and Maintenance
32 Cobble Hill Road
Somerville, Massachusetts 02143

With a copy to:
DESIGNATED REPRESENTATIVE
Transit Realty Associates, LLC
77 Franklin Street
Boston, Massachusetts 02110
Attn: General Counsel

And in the case of the DCR to:

Department of Conservation and Recreation
251 Causeway Street, Suite 600
Boston, MA 02114
Attn: General Counsel

All notices, demands, requests, consents, approvals and other instruments required or permitted to be given pursuant to the terms hereof (hereinafter "Notice"), shall be in writing and shall be deemed to have been properly given when deposited in registered or certified United States mail, postage prepaid, return receipt requested, addressed, as described above or when delivered by messenger or overnight mail service to the correct addressee. Notice shall be deemed received when actually received or when the proffered Notice has been refused by the Addressee. The signature of an employee, servant or agent of the Addressee shall be determinative on the issue of actual receipt.

The DCR and the MBTA shall, at any time and from time to time, have the right to specify as their proper addresses for purposes of this Lease any other address or addresses giving fifteen (15) days' written notice thereof to the other party.

19. Nondiscrimination

With respect to its exercise of all rights and privileges herein granted, the DCR shall undertake affirmative action as required by Federal and State laws, rules and regulations pertinent to Civil Rights and Equal Opportunity unless otherwise exempted therefrom. The DCR agrees that it shall comply with any and all required affirmative action plans submitted pursuant to the directives of any Federal agency and in accordance with applicable Federal law and applicable state laws, rules and regulations.

The DCR shall use reasonable efforts to contact, encourage and utilize minority and female business enterprises in the procurements of materials and services under this

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Alternative Transportation Corridor Lease Agreement - cont.

Lease.

The DCR shall not discriminate against any person, employee or applicant for employment because of race, color, religion, creed, national origin, age, sex, sexual orientation, disability/handicap or veteran status in its activities at the Premises, including without limitation, the hiring and discharging of employees, the provision or use of services and the selection of suppliers, contractors or subcontractors.

20. **Work In Harmony**

The DCR agrees that in any work performed in or about the Premises, it will employ only labor which can work in harmony with all elements of labor being employed by the MBTA on or adjacent to the Premises.

21. **Assignment**

The DCR shall not, without the prior written consent of the MBTA, transfer or assign this Lease or any part hereof. Such consent may be withheld in the sole discretion of the MBTA.

22. **Entire Agreement**

This Lease contains the entire agreement of the parties hereto with respect to the subject matter hereof, and no representations, inducements, promises, or agreements, oral or otherwise, between the parties hereto with respect to the subject matter hereof not embodied herein shall be of any force or effect.

IN WITNESS WHEREOF, the parties hereto, each for itself, its successors and assigns, have caused these presents to be executed, as a sealed instrument, by its officers, thereunto duly authorized.

Approved as to Form:

William A. Mitchell, Jr.
General Counsel

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BY:

Richard A. Davey
General Manager

DEPARTMENT OF CONSERVATION AND RECREATION

BY:

Richard K. Sullivan, Jr.
Commissioner

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DD. City of Newton MBTA Executed Lease

ALTERNATIVE TRANSPORTATION CORRIDOR LEASE AGREEMENT

BY AND BETWEEN

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

AND

THE CITY OF NEWTON

AUGUST 2013

[ONLY FOR RIGHTS-OF-WAY NOT IN ACTIVE USE]

City of Newton MBTA Executed Lease - cont.

ALTERNATIVE TRANSPORTATION CORRIDOR
LEASE AGREEMENT BETWEEN
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
AND
CITY OF NEWTON

This Lease Agreement (hereinafter referred to as the "Lease" or the "Agreement") entered into as of the 4th day of October by and between the Massachusetts Bay Transportation Authority, a body politic and corporate and a political subdivision of the Commonwealth of Massachusetts, established pursuant to M.G.L.C. 161A, having its usual place of business at Ten Park Plaza, Boston, Massachusetts 02116 (hereinafter referred to as the "MBTA") and the City of Newton, of Middlesex County, a Massachusetts municipal corporation, having its usual place of business at 1000 Commonwealth Avenue, Newton, Massachusetts 02459 (hereinafter referred to as the "MUNICIPALITY").

WITNESSETH THAT:

1. Agreement

In consideration of the mutual covenants and agreements herein contained, the parties hereto agree as follows:

2. Premises

The Premises consist of the parcel or parcels of land described in Exhibit A attached hereto, consisting generally of that certain railroad right of way known as the Needham Secondary Branch in the Municipality of Newton as shown on Valuation Map V 4.27, sheets 1 and 2 starting at the Needham/Newton line and ending in Newton at a point on the right of way shown on Valuation Map 4.27, sheet 1, designated by a straight line across the entire width right of the right of way just after the notation "TO COOK STREET AT NEWTON HIGHLANDS" on said Valuation Map. Within the Premises the MUNICIPALITY shall, with the consent of the MBTA, which shall not be unreasonably withheld or delayed, designate a contiguous corridor (the "Corridor") within which the uses permitted hereby shall be located.

3. Use of Premises

Subject to the terms and conditions herein, the MBTA hereby leases the Premises to the MUNICIPALITY for use as follows (See MBTA Board Authorization Exhibit D):

(a) The Corridor is to be used for purposes of the installation, operation, maintenance and use of a rail-trail as defined M.G.L. C.82 §35A and in the definition of Owner or Operator in M.G.L.C. 21E§2, and as amended from time to time, and as further defined under M.G.L.C.21E§2(d)(1), as a property converted from a former use as a railroad right-of-way to a

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revitalized use as a publicly owned, improved and maintained corridor for bicycle, pedestrian and other non-motorized public transportation, recreation and associated purposes and

(b) The remainder of the Premises shall be further be used solely by the Municipality exclusively to access, construct and maintain the Corridor, for ancillary uses which provide no revenue or other tangible benefit, and for such other uses as MBTA may permit by prior written consent.

Notwithstanding the preceding, this Lease is not intended to transfer land or easements for purposes protected by or to create a perpetual right to any use that may be subject to protection by Article XCVII (97), as amended of the Amendments to the Constitution of the Commonwealth of Massachusetts or by legislation enacted to pursuant thereto.

The MBTA reserves the right to reasonably require the MUNICIPALITY to install improvements (including but not limited to signs) designed to prevent or discourage those using the Corridor from entering onto the remainder of the Premises. The Corridor shall be open to the public, and no fee or other consideration shall be charged for use of the Premises.

The Municipality will diligently act to secure funds necessary to fulfill its obligations under the Lease for the design, bidding and the construction of the rail-trail project. The Municipality acknowledges that a failure to undertake efforts to secure funds may negate the municipal liability exemption for rail trails under M.G.L.C. 21E§2, and as amended from time to time

The Municipality also agrees that it will provide its plans for the use of the site sixty (60) days prior to the bidding to the MBTA for its approval, said approval which shall not be unreasonably withheld provided that the use is consistent with paragraph 3(a) and 3(b), above. If the plans for the site are not consistent with paragraph 3(a) and 3(b), above, the MBTA reserves the right to void the lease and demand return of the property. Said use shall also comply with the current (as of the commencement of construction) MA DEP Best Management Practices:

No testing shall be made of the soil by the Municipality on the Premises and no soil shall be removed from the Premises until this lease has been fully executed and entered into by an official Municipal authority (Exhibit B) and the MBTA, unless necessary to respond to a release of Hazardous Materials on the Premises. The Municipality shall be responsible for all costs associated with any such testing.

4. Term

The Term of this Lease shall be for a period of ninety-nine (99) years beginning on the date hereof; except that the MBTA may terminate this Lease upon two (2) years' written notice to the MUNICIPALITY, as provided by M.G.L. C.82 §35A. The Municipality acknowledges that that the Premises or a major portion thereof may be necessary for

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City of Newton MBTA Executed Lease - cont.

active railroad or other transportation purposes in the future. The MBTA may terminate this Agreement for the greater public good other than the Transportation Enhancement (the defined ATC) and the MBTA will not be required to provide any reimbursement whatsoever for said termination. The MBTA may also terminate this Lease with respect to any part of the non-Corridor portion of the Premises with one (1) year's written notice for any reason so long as the use to be made of that portion will not substantially interfere with the public use of the Corridor for the uses stated above.

5. Condition of the Premises

The MUNICIPALITY has inspected the Premises, accepts the Premises "as is", and agrees the Premises are suitable for MUNICIPALITY's intended use. The MBTA makes no warranty of any kind, express or implied, as to the condition of the Premises or its suitability for the above uses. The MUNICIPALITY assumes all risk of entry on the Premises, including, but not limited to the presence of oil or hazardous material, if any, as defined in M.G.L.C. 21E, as amended from time to time.

6. Terms and Conditions of Lease

This Lease is subject to the following terms and conditions:

6.1 Indemnification and Release of MBTA

(a) The Municipality will not be required to indemnify the MBTA, unless specifically required by Federal law in connection with any grant for construction of a rail-trail, provided the Municipality has purchased environmental insurance naming the MBTA as an additional insured with minimum coverage limits of $3,000,000.00 per incident, a maximum deduction of $50,000.00 per incident, and a term of at least 5 years. If the Municipality is unable to or chooses not to purchase environmental insurance consistent with the aforementioned terms the following provisions will apply;

(1) the MUNICIPALITY, in accordance with official Municipal approval (Exhibit B), agrees to indemnify (to the extent permitted by law) defend (at the option of the MBTA) and save the MBTA harmless from and against any and all liabilities, losses, damages, costs, expenses (including reasonable attorneys' expenses and fees), causes of action, suits, claims, demands or judgments of any nature whatsoever including, without limitation, any accident, injury to, or death of any person or any damage to property occurring on the Premises (or any part thereof) or caused by something occurring on the Premises or that may be imposed upon, incurred by, or asserted against the MBTA by reason of any of the following occurrences:

(a) the activities of the MUNICIPALITY, members of the public or others present on the Premises; or

(b) the discovery of pre-existing Hazardous Materials, defined below, or the release of any Hazardous Materials on the Premises (or

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City of Newton MBTA Executed Lease - cont.

other property of the MBTA adjacent to the Premises) which is a result of (i) the MUNICIPALITY'S activities hereunder including the activities of those present from time to time on the Premises, or (ii) the migration from land now or previously owned, leased, occupied or operated by the MUNICIPALITY or for which the MUNICIPALITY is a potentially responsible party as defined under Chapter 21E, defined below; or

(2) any failure of the MUNICIPALITY to perform or comply with any of the terms hereof, or of any contracts, agreements or restrictions, statutes, laws, ordinances or regulations affecting the activities or any part thereof.

Notwithstanding anything in the previous paragraph, the MUNICIPALITY does not agree to indemnify the MBTA for claims arising from natural or man-made disasters, injuries that occurred prior to the execution of this Lease, war, civil unrest or claims arising from the exercise of rights expressly reserved by the MBTA under this agreement.

"Hazardous Materials" is defined to be "oil," "hazardous materials," or "hazardous wastes" as those terms are defined in Massachusetts General Laws Chapter 21E ("Chapter 21E"), as from time to time amended, and the regulations promulgated pursuant thereto, including the Massachusetts Contingency Plan, 310 CMR 40.0000 et seq. (the "MCP") and as further defined in all other applicable state and Federal laws regarding Hazardous Materials.

For the purposes of this Lease, the term "applicable laws" with regard to environmental laws and/or Hazardous Materials means, without limitation, all applicable laws, statutes, codes, acts, ordinances, orders, judgments, decrees, injunctions, rules, regulations, permits, licenses, authorizations, directions and requirements, of all governments, departments, and offices relating in any way to the control and/or abatement of environmental pollution and environmental hazards that now or at any time hereafter may be applicable.

(3) The MUNICIPALITY hereby releases the MBTA from any responsibility for the MUNICIPALITY'S losses or damages related to the condition of the Premises. The MUNICIPALITY covenants and agrees that it will not assert or bring, nor cause any third party to assert or bring, any claim, demand, lawsuit or cause of action (whether by way of original claim, cross claim, counterclaim, contribution claim, indemnification claim, third-party claim or fourth-party claim) (hereinafter "Claims") against the MBTA including, without limitation, claims for response actions, response costs, assessments, containment, removal and remedial costs, governmental oversight charges, including any overhead or response action costs incurred or assessed by DEP, fines or penalties, permit and annual compliance fees, reasonable attorney and expert fees, natural resource damages, property damages, including diminution in property value

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claims, and personal injury damages and damages related to a person's illness or death relating to, or arising from, the MUNICIPALITY'S use of the Premises (or the use of the Premises by those permitted onto the Premises by the MUNICIPALITY) pursuant to this Lease.

(4) The MUNICIPALITY shall be timely notified, in writing, by the MBTA of the assertion of any claim against it that the MUNICIPALITY has agreed to indemnify as stated above (the "Indemnified Claim").

(a) If the MBTA decides to itself conduct the defense of an Indemnified Claim against it or to conduct any other response itself, the MUNICIPALITY shall cooperate therewith and reimburse the MBTA for all reasonable costs and expenses (including, without limitation, reasonable attorney's fees and expenses) incurred by the MBTA in connection with the MBTA's defense of the Indemnified Claim against it and/or the conduct of all response actions, including, without limitation, those required by Chapter 21E and the MCP.

(b) If the MBTA decides to have the MUNICIPALITY defend the claim or handle the response action, the MBTA shall notify the MUNICIPALITY of that decision in writing, and the MUNICIPALITY shall bear the entire cost thereof and shall have sole control of the defense of any Indemnified Claim and all negotiations for its settlement or compromise provided that the MBTA is fully indemnified by the MUNICIPALITY and provided further that the settlement or compromise shall not include the admission of guilt (or comparable plea), wrongdoing or negligence or the permitting or imposition of civil or criminal penalties or indictments, or the entering of consent decrees or orders of any kind by the MUNICIPALITY on behalf of the MBTA or any other action that would materially prejudice the rights of the MBTA without the MBTA's express written approval. The MBTA may at any time assume defense of any claim by notice to the MUNICIPALITY and shall cooperate with the MUNICIPALITY in the defense of any Indemnified Claim.

If any response action due to the presence of Hazardous Materials or the threat of release of Hazardous Materials onto the Premises (or other property of the MBTA which abuts the Premises) is performed by the MUNICIPALITY, the response action shall be performed in accordance with Section 6.2.

If the MBTA determines in good faith for any reason, any indemnification herein of the MBTA by the MUNICIPALITY proves ineffective, the MBTA shall have the right to immediately terminate this Lease. The provisions of this Section 6.1 shall survive the termination or expiration of this Lease.

(c) For purposes of this Section, the term "MBTA" shall include the MBTA and

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City of Newton MBTA Executed Lease - cont.

its directors, officers, employees, agents and any legislatively approved entity that may succeed the MBTA. For the purposes of This Section the term "MBTA" expressly does not include easement holders, MBTA lessees, or licensees or successors to any real property of the MBTA through sale, exchange or gift.

(d) The MBTA reserves the right to lease, assign, pledge and otherwise alienate all or part of the premises to third parties ("Third party Transferee's") and to retain all consideration therefore; provided that such lease, license, mortgage, assignment, or other facility of transfer is conditioned upon any third Party Transferee: (a) not unreasonably interfering with the MUNICIPALITY'S use of the Premises and (b) fulfilling obligations to provide the MUNICIPALITY'S insurance under Section 9.2. Any such transfer shall not relive the MBTA or the Third Party Transferee from any obligations it may have under this Agreement.

6.2 Remediation Obligation of the MUNICIPALITY

During the design, construction and operation of the rail trail, the Municipality shall follow the provisions of BMP's for Controlling Exposure to Soil during the Development or Rail Trails promulgated by the Massachusetts Department of Environmental protection in March 2004.

Whenever the MUNICIPALITY is responsible for the remediation of Hazardous Materials on or below the Premises by law or pursuant to this Lease, the MUNICIPALITY, upon written demand of the MBTA, shall conduct at its sole cost and expense (or, at the MBTA's election, reimburse the MBTA for the cost and expense incurred by the MBTA in connection with the MBTA'S conduct of), all response actions required by Chapter 21E and the MCP with respect to the Hazardous Materials (including the hiring of a Licensed Site Professional).

Any such response action, if performed by the MUNICIPALITY, shall be performed in accordance with Chapter 21E, the MCP, any other applicable statutes and regulations, and in accordance with plans and specifications approved by the MBTA, shall be completed in a timely manner to the reasonable satisfaction of the MBTA, and shall allow the MBTA to use the Premises, and/or adjacent or contiguous property, for its present use and/or any future use that the MBTA deems appropriate. The MUNICIPALITY shall also be responsible for the reasonable costs incurred by the MBTA in hiring consultants to review, supervise and inspect any plans, specifications, proposed method of work, installation, operation and results. Such costs shall be presumed to be reasonable if the MBTA (1) provides the MUNICIPALITY with a notice that it intends to hire a consultant, a scope of work and a budget and (2) solicits three (3) price proposals from three (3) eligible consultants.

For purposes of this Section, the term "MBTA" shall include the MBTA, and its directors, officers, employees, agents and any legislatively approved entity that may exceed the MBTA. Additionally, for purposes of this Section the "MBTA" does not include easement holders, MBTA lessees, or licensees or successors to any real property of the MBTA

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City of Newton MBTA Executed Lease - cont.

through sale, assignment, pledge, mortgage, exchange or gift.

6.3 Insurance

Prior to entry hereunder, and during the Term hereof, the MUNICIPALITY and its consultants and contractors shall provide the MBTA, hereof, insurance *(notwithstanding the environmental insurance required pursuant to Section 6.1 above)* for the activities permitted hereunder and the MUNICIPALITY's covenant of indemnification in Section 6.1(a)(1) and 6.1(a)(3) hereinabove, with companies that are reasonably acceptable to the MBTA, as stated below, and which provide minimum liability coverage as follows:

(a) Commercial General Liability Insurance
Insuring the MBTA and the Premises and all activities allowed hereunder as well as the MUNICIPALITY'S indemnification obligations contained in Section 6.1(a)(1) and 6.1(a)(3) with a minimum liability coverage for personal injury, bodily injury and property damage with limits not less than One Million ($1,000,000.00) Dollars per occurrence and Three Million ($3,000,000.00) Dollars in aggregate. Umbrella liability coverage with limits of not less than Two Million ($2,000,000.00) Dollars covering all work performed must also be provided. Such insurance shall be written on an occurrence basis (as opposed to a claims-made basis) and name the MUNICIPALITY, MBTA and others hereinafter designated as additional insureds as their interests may appear. Such insurance may be subject to standard exclusions found in property and general liability insurance policies.

(b) Worker's Compensation Insurance
(i) For all Municipal contractors, insuring all persons employed by the MUNICIPALITY in connection with any work done on or about the Premises with respect to which claims for death or bodily injury could be asserted against the MBTA or the Premises with limits of liability of not less than those required by Massachusetts General Laws Chapter 152 as amended. The policy shall contain a clause waiving the company's right to subrogation against the MBTA if such a policy is commercial available, and

(ii) For all MUNICIPAL employees by providing evidence of an active workmen's compensation program for MUNICIPAL workers funded by the MUNICIPALITY, a copy of which is attached as Exhibit C.

(c) Automobile Liability Insurance
Automobile liability insurance with limits of not less than One Million ($1,000,000.00) Dollars covering all owned, non-owned, hired, rented or leased vehicles or the MUNICIPALITY.

The required insurance coverage's herein specified shall be placed with insurance companies licensed by the Massachusetts Division of Insurance to do business in the Commonwealth of Massachusetts and having a Best's rating of B+ or better; shall be taken out before the Lease is commenced and be kept in full force and effect throughout the term of the Lease; shall be primary to and non-contributory to any coverages

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City of Newton MBTA Executed Lease - cont.

maintained by the MBTA; and shall require the MBTA be given at least thirty (30) days' advance notice in the event of any cancellation or materially adverse change in coverage. Prior to the inception date of the Lease and throughout the term, the MBTA shall be provided with certificates of insurance evidencing that such insurance policies are in place and provide coverage as required. The required insurance coverage's herein specified may be increased from time to time upon notice by the MBTA to such coverage's as the MBTA may then customarily require for similar circumstances. Each of the MUNICIPALITY's contractors and agents whose employees enter onto the Premises shall have similar policies covering their employees. The MUNICIPALITY shall be responsible for seeing that its contractors and consultants are properly covered by insurance.

In the event of the cancellation of any policy during the term of this Lease, or the failure to keep in effect the insurance required by this section, the MBTA may, without further notice and at its option, procure or renew such insurance on account of the MUNICIPALITY. The MUNICIPALITY agrees to repay such MBTA expense, with interest thereon at the rate of eighteen (18%) percent annually as an additional fee.

Notwithstanding any other provision of this section 6.3, the MUNICIPALITY reserves the right to propose to meet the requirement by adding such insurance coverage to existing policies subject to the terms and conditions of those existing policies or to obtain new policies containing terms and conditions generally included in policies provided to municipalities in Massachusetts.

Notwithstanding the foregoing provisions of this section 6.3, the MUNICIPALITY shall meet the requirements of section 6.3(a) and 6.3(b) as a self-insured political subdivision of the Commonwealth of Massachusetts as evidenced by the MUNICIPALITY'S self-insured letter attached hereto as Exhibit E.

6.4. Compliance with Laws

The MUNICIPALITY shall comply with, and shall cause all work performed to comply with, all applicable Federal, state, county, municipal and other governmental statutes, laws, rules, orders, regulations and ordinances. The MUNICIPALITY shall also be responsible for obtaining any and all applicable Federal, state, and/or local permits and/or approvals necessary to carry out the activities permitted hereunder.

6.5 Special Conditions

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7. Maintenance

During the Term hereof, the MUNICIPALITY shall keep, repair, manage, operate, and maintain the entire Premises in good and clean order, operation, condition and repair. Except for any claim of damage arising from the exercise by the MBTA of the rights reserved to it, the MBTA shall have no responsibility whatsoever for the maintenance, repair or the condition of the Premises.

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City of Newton MBTA Executed Lease - cont.

8. Utilities

Except as reasonably necessary for the operation of the alternative transportation use of the Corridor, no utilities shall be installed on the Premises by the MUNICIPALITY without the approval of the MBTA.

9. Reservation of Rights

9.1 Non-Exclusivity

(a) The MBTA makes no representations or warranty, express or implied, that the MUNICIPALITY shall have sole or exclusive use of the Premises. In the event other licenses, leases or easements have been or are granted or exist by reservations in deeds, the MUNICIPALITY shall be responsible for coordinating its work and activities with that of other licensees, grantees and other parties with interests in the Premises. The MBTA shall not be liable for delays, obstructions, or like occurrences affecting the MUNICIPALITY, arising out of the work of the MBTA or other licensees, grantees or parties in interest; provided, however, that the MBTA shall make reasonable efforts to mitigate impacts on the Use of the Premises. The MBTA will make a list available to the Municipality of any and all leases or licenses along the Corridor designated under this Lease.

(b) The MUNICIPALITY'S rights herein are granted subject to existing, easements, and rights of record to the extent that such easements rights and takings are still in effect and applicable. The MBTA explicitly reserves the right to all uses of the Premises not herein granted to the MUNICIPALITY, except that the MBTA shall not (and shall not grant to others the right to) do anything on the Premises that shall materially impede the permitted Use of the Premises except temporarily (e.g. while a pipe line is being installed or repaired).

The Municipality's rights herein are granted subject to existing leases and licenses to the extent that such rights are still in effect and applicable. The MBTA hereby agrees to provide the Municipality with copies of the documents that establish the location and term of existing licenses and leases. Upon completing a 25% design of the proposed rail trail, the MUNICIPALITY may request that the MBTA exercise any rights it may have to modify or terminate an existing lease or license that would prevent the creation of a contiguous Corridor. The MBTA shall make all reasonable attempts to fulfill such requests to create a contiguous corridor.

(c) The MUNICIPALITY expressly agrees that any revenues obtained from the leasing, licensing, or the granting of rights for any use of the Premises to any utility or other entity shall belong solely to the MBTA.

The MUNICIPALITY shall not be entitled to impose any fees, charges,

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City of Newton MBTA Executed Lease - cont.

requirements for betterments, linkage payments or other benefits to the MUNICIPALITY on any lessee, licensee or grantee of the MBTA or any other party either for installations on the Premises or on public way crossings along the Premises (except those fees normally charged by the MUNICIPALITY for engineering and environmental review, if any). If despite this section the MUNICIPALITY does receive some such benefit, then the MBTA shall be paid the fair market value of that benefit by the MUNICIPALITY.

(d) The Municipality expressly agrees that if there is any encroachment onto the Premises by a third-party, the MBTA will have the sole right to cure said encroachment and to obtain revenue from such cure or to permit such encroachment, provided that such cure does not substantially interfere with the Municipality's use of the Corridor. Notwithstanding the preceding, to the extent that the encroachment is on the Corridor, then the Municipality shall have the right to expel such encroacher.

9.2 Utility and Communication Lines and Emergency Access

The MBTA expressly reserves all of its rights in the Premises for itself, its successors and assigns, to install, maintain, repair, replace and remove aerial, surface and subsurface utility and communication lines, wires, antennas and conduits in, on, under or above the Premises as well as the right to lease, license and/or grant easements for such utility and communication rights to third parties; except that the MUNICIPALITY shall have the rights specifically granted herein. The MBTA shall take all necessary safety measures including, but not by way of limitation, notification to the MUNICIPALITY of its intention to perform (or have performed) such installation and/or maintenance, the erection of barricades, as shall be reasonably required to protect persons performing such work and construction, as well as members of the public, from injury or damage caused by, or resulting from, any entry, work or construction performed by the MBTA or its contractors, licensees, lessees, grantees (and their contractors) pursuant to this Section. The MBTA shall, at its cost and expense, return the Premises to a condition in which the Premises can be used for the purposes for which they were used before the work pursuant to this paragraph, if its contractors, licensee, lessees, or grantees, as the case may be, fail to do so.

Prior to entry, the MBTA shall require that any contractor, licensee, lessee or grantees provide the Municipality, during the Term thereof, insurance of the activities permitted by the MBTA, to the same extent and on the same terms that the MBTA is insured. The Municipality shall be named as an additional insured on any general liability policy. All policies shall waive the right of subrogation for any claim that may be made against the Municipality.

10. Security and Operations

The MBTA shall have no obligation to provide security services or lighting at the Corridor. The MUNICIPALITY shall be responsible for providing public safety and emergency services for the Corridor. The MUNICIPALITY may install lighting and adopt

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City of Newton MBTA Executed Lease - cont.

time of use and other restrictions applicable to the public.

11. Default

If the MUNICIPALITY defaults under any of its covenants and obligations contained in this Lease including, without limitation, the failure to fully indemnify the MBTA and its related parties as provided in Section 6.1, and such default is not cured by the MUNICIPALITY within thirty (30) days after notice, the MBTA may elect, in order to preserve the public's usage and access to the Premises and to ensure the public's safety, security and enjoyment, to pursue any or all of the following remedies: (i); without obligation, cure said default, which cure may include, without limitation, entry upon the Premises for purposes of maintenance thereof, and invoice the MUNICIPALITY for the cost of such cure, which invoice the MUNICIPALITY shall promptly pay; (ii) if the MUNICIPALITY shall continue to remain in default and/or fail to pay the MBTA after such notice, the MBTA may remove the custody and management of the Premises from the MUNICIPALITY in accordance with the provisions of this Lease and transfer said management and control of the Premises by a new lease agreement to another qualified party for that period remaining under this Lease as provided in Section 4, and the MBTA shall seek reimbursement from the MUNICIPALITY of all necessary and reasonable costs of management so incurred by the MBTA; and/or (iii) seek specific performance or other equitable relief from a court of competent jurisdiction and exercise any available remedy at law or in equity. In the event the MBTA shall seek removal of the MUNICIPALITY from the management and control of the Premises, no party other than the MUNICIPALITY shall be deemed qualified to assume such management and control, without the prior written approval of the Massachusetts Highway Department and the Federal Highway Administration (FHWA), in acknowledgement of the significant federal-aid investments in the construction of the rail-trail by the MUNICIPALITY undertaken as required under FHWA transportation enhancement policies and guidelines. In any event the Premises shall remain as an alternative transportation corridor in keeping with Section 3 [Use of Premises (Supra)] and provide for the access and enjoyment for the public for the duration of the Term as defined in Section 4, under the management and control of the MBTA, if necessary, until the execution of a new lease agreement or some other preliminary agreement by the MBTA with another duly selected qualified party. The MBTA shall exercise its right to block access to the Premises from the public only in the event of a continuing public safety situation and the failure of the MUNICIPALITY to undertake immediate action. No delay or failure by the MBTA in exercising its rights and remedies in any one instance shall constitute a waiver of such rights and remedies in any other instance. MBTA's remedies hereunder shall be cumulative and not exclusive to any other available remedy.

12. Condition of the Premises at Termination

The MUNICIPALITY agrees to deliver up the Premises to the MBTA at the expiration of the Term hereof in as good condition as the Premises were after the MUNICIPALITY-installed improvements were made, reasonable wear and tear excepted. Notwithstanding the preceding, if the MBTA is terminating this Lease because it plans to use the Premises for transportation purposes, the MBTA may require The

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City of Newton MBTA Executed Lease - cont.

MUNICIPALITY to restore the Premises to the grade existing at the commencement of this Lease.

13. Existing Utilities

The MUNICIPALITY acknowledges that there may be surface and subsurface utilities on and adjacent to the Premises and agrees to exercise extreme caution in performance of the scope of work. The MUNICIPALITY shall comply with Massachusetts General Laws, Chapter 82, Section 40 (said statute also known as the "Dig Safe" law) and the regulations promulgated pursuant thereto including but not limited to the Code of Massachusetts Regulations, more particularly, 220 CMR 99.00 et seq. To the extent the MBTA, or parties acting in behalf of the MBTA, locate and mark railroad utilities in the railroad rights of way and appurtenant thereto, the MUNICIPALITY shall be responsible for payment to such parties for such services which may include, but not be limited to, locating and marking utilities, facilities and appurtenances thereto serving the railroad line(s) or used in connection with services or operations of the MBTA. Any damage to such utilities caused by the MUNICIPALITY shall be the sole responsibility of the MUNICIPALITY. If the MUNICIPALITY does not immediately repair any utilities it has damaged, the MBTA, without being under any obligation to do so and without waiving the MUNICIPALITY'S obligation hereunder, may repair any utilities damaged by the MUNICIPALITY immediately and without notice in case of emergency. In the event the MBTA exercises such right, the MUNICIPALITY shall pay to the MBTA immediately upon demand all of the MBTA's cost of performing such repairs plus a fee equal to twenty-five percent of the MBTA's cost of performing such repairs to reimburse the MBTA for its administrative costs.

The MBTA reserves the right to remove the rail infrastructure and agrees that if it chooses to do so, said removal shall be within 180 days of the date the MUNICIPALITY notifies the MBTA to be the date of the trail construction commencement. The MUNICIPALITY shall be responsible for removal and disposal of all other rail infrastructure.

14. Notice of Project Completion and Record Drawings

Upon completion of its work, the MUNICIPALITY shall provide written notice ("Notice of Project Completion") to the MBTA Railroad Operations Department of the date of project completion. The MUNICIPALITY shall also provide the MBTA Railroad Operations Department with one reproducible "As-Built" copy of each approved construction drawing marked to indicate all changes and deviations from the original approved plans and recording the final conditions of the Premises ("Record Drawings") upon completion of the work authorized hereunder. All Record Drawings shall be received and accepted by the MBTA prior to final inspection. The Notice of Project Completion and the Record Drawings shall be delivered to:

Chief, Engineering and Maintenance
MBTA Railroad Operations Department
32 Cobble Hill Road
Somerville, MA 02143

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City of Newton MBTA Executed Lease - cont.

15. Results

If the MUNICIPALITY conducts certain investigations on MBTA owned land, then the MUNICIPALITY agrees to provide to the MBTA, at no cost, a copy of the results of such investigations (including data and analysis) and all other work conducted under this Lease in both hard copy form and in a digital format specified by the MBTA regardless of whether the report was prepared by the MUNICIPALITY, its agent, consultant or contractor, or prepared on behalf of the MUNICIPALITY. All results and reports shall be provided to the MBTA within ten (10) days of receipt by the MUNICIPALITY. The MUNICIPALITY agrees to consult with the MBTA prior to contacting any governmental entity, regarding any information, results of analysis or reports regarding the Premises. The MUNICIPALITY shall give the MBTA a copy of any reports or notifications, including but not limited to release notifications, prior to submitting the same to any governmental entity.

16. Construction and Access Plan

The MUNICIPALITY shall submit a plan and detailed specifications (including the materials to be used) and the proposed methods of performing the work, or any part thereof (the "Plan") to the MBTA. The MUNICIPALITY shall not enter the Premises until the Plan has been approved by the MBTA, which approval shall not be unreasonably withheld. The scope of work for said construction, installation, maintenance, operation and/or replacement will be more fully defined in the approved Plan, which approved Plan will automatically be incorporated herein by reference and made part of this Lease. The MUNICIPALITY shall also provide the MBTA with a detailed schedule of times when the MUNICIPALITY, its employees, contractors, subcontractors, or agents would like to be on the Premises to undertake the scope of work (the "Access Plan"). The MBTA shall have full power to make a final determination of when the MUNICIPALITY may be on the Premises as it is necessary to coordinate the work of all those desiring or having the right to access the Premises.

17. Contracts for Improvements

All contracts for the construction or installation of the improvements at the Premises shall require:

(a) that all contractors and subcontractors provide labor that can work in harmony with other elements of labor employed or to be employed at or near the Premises.

(b) insurance coverage and suretyship reasonably satisfactory to the MBTA:

(c) that all contractors or subcontractors comply with all applicable provisions of this Lease; and

(d) performance bonds and payment bonds in form and substance satisfactory to the MBTA, each of which shall name the MBTA, as an

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City of Newton MBTA Executed Lease - cont.

additional obligee and which shall be in the penal sum equal to the amount of the Municipality's construction contracts.

18. Notices

All notices required or permitted to be given hereunder shall be in writing and addressed as follows:

In the case of the MBTA to:
Massachusetts Bay Transportation Authority
10 Park Plaza, Room 5750
Boston, Massachusetts 02116
Attn: Assistant General Manager for Development

With a copy to:
MBTA Railroad Operations Directorate
Section Chief, Engineering and Maintenance
32 Cobble Hill Road
Somerville, Massachusetts 02143

With a copy to:
DESIGNATED REPRESENTATIVE
Transit Realty Associates, LLC
77 Franklin Street, 9th floor
Boston, Massachusetts 02110
Attn: General Counsel

And in the case of the MUNICIPALITY to:

Setti D. Warren, Mayor
City of Newton
1000 Commonwealth Avenue
Newton, MA 02459

All notices, demands, requests, consents, approvals and other instruments required or permitted to be given pursuant to the terms hereof (hereinafter "Notice"), shall be in writing and shall be deemed to have been properly given when deposited in registered or certified United States mail, postage prepaid, return receipt requested, addressed, as described above or when delivered by messenger or overnight mail service to the correct addressee. Notice shall be deemed received when actually received or when the proffered Notice has been refused by the Addressee. The signature of an employee, servant or agent of the Addressee shall be determinative on the issue of actual receipt.

The MUNICIPALITY and the MBTA shall, at any time and from time to time, have the

City of Newton MBTA Executed Lease - cont.

right to specify as their proper addresses for purposes of this Lease any other address or addresses giving fifteen (15) days' written notice thereof to the other party.

19. Nondiscrimination

With respect to its exercise of all rights and privileges herein granted, the MUNICIPALITY shall undertake affirmative action as required by Federal and State laws, rules and regulations pertinent to Civil Rights and Equal Opportunity unless otherwise exempted therefrom. The MUNICIPALITY agrees that it shall comply with any and all required affirmative action plans submitted pursuant to the directives of any Federal agency and in accordance with applicable Federal law and applicable state laws, rules and regulations.

The MUNICIPALITY shall use reasonable efforts to contact, encourage and utilize minority and female business enterprises in the procurements of materials and services under this Lease.

The MUNICIPALITY shall not discriminate against any person, employee or applicant for employment because of race, color, religion, creed, national origin, age, sex, sexual orientation, disability/handicap or veteran status in its activities at the Premises, including without limitation, the hiring and discharging of employees, the provision or use of services and the selection of suppliers, contractors or subcontractors.

20. Work In Harmony

The MUNICIPALITY agrees that in any work performed in or about the Premises, it will employ only labor which can work in harmony with all elements of labor being employed by the MBTA on or adjacent to the Premises.

21. Assignment

The MUNICIPALITY shall not, without the prior written consent of the MBTA, transfer or assign this Lease or any part hereof. Such consent may be withheld in the sole discretion of the MBTA.

22. Entire Agreement

This Lease contains the entire agreement of the parties hereto with respect to the subject matter hereof, and no representations, inducements, promises, or agreements, oral or otherwise, between the parties hereto with respect to the subject matter hereof not embodied herein shall be of any force or effect.

SIGNATURES ON NEXT PAGE

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City of Newton MBTA Executed Lease - cont.

IN WITNESS WHEREOF, the parties hereto, each for itself, its successors and assigns, have caused these presents to be executed, as a sealed instrument, by its officers, thereunto duly authorized.

Approved as to Form:

City Solicitor

CITY OF NEWTON

BY:

Setti D. Warren, Mayor

Approved as to Form:

Paige Scott Reed

General Counsel MassDOT and MBTA

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

BY:

Beverly A. Scott, Ph.D
General Manager and
Rail and Transit Administrator

COMMONWEALTH OF MASSACHUSETTS

Middlesex, ss. September 4, 2013

On this 4th day of September, 2013 before me, the undersigned notary public, personally appeared, Setti D. Warren proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding page, and acknowledged to me that he signed it voluntarily for its stated purpose as Mayor of the City of Newton.

ROBERT J. WADDICK
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
August 11, 2017

Notary Public

Print Name: Robert J. Waddick

My Commission expires: August 11, 2017

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City of Newton MBTA Executed Lease - cont.

COMMONWEALTH OF MASSACHUSETTS

Suffolk, ss. ____, 2013

On this 4th day of October, 2013 before me, the undersigned notary public, personally appeared Beverly A. Scott, Ph.D, proved to me through satisfactory evidence of identification, which was personal knowledge, to be the person whose name is signed on the preceding page, and acknowledged to me that she signed it voluntarily for its stated purpose as General Manager of the Massachusetts Bay Transportation Authority.

Notary Public

Print Name: CHERYL A. DUSTIN

My Commission expires: 3/14/2014

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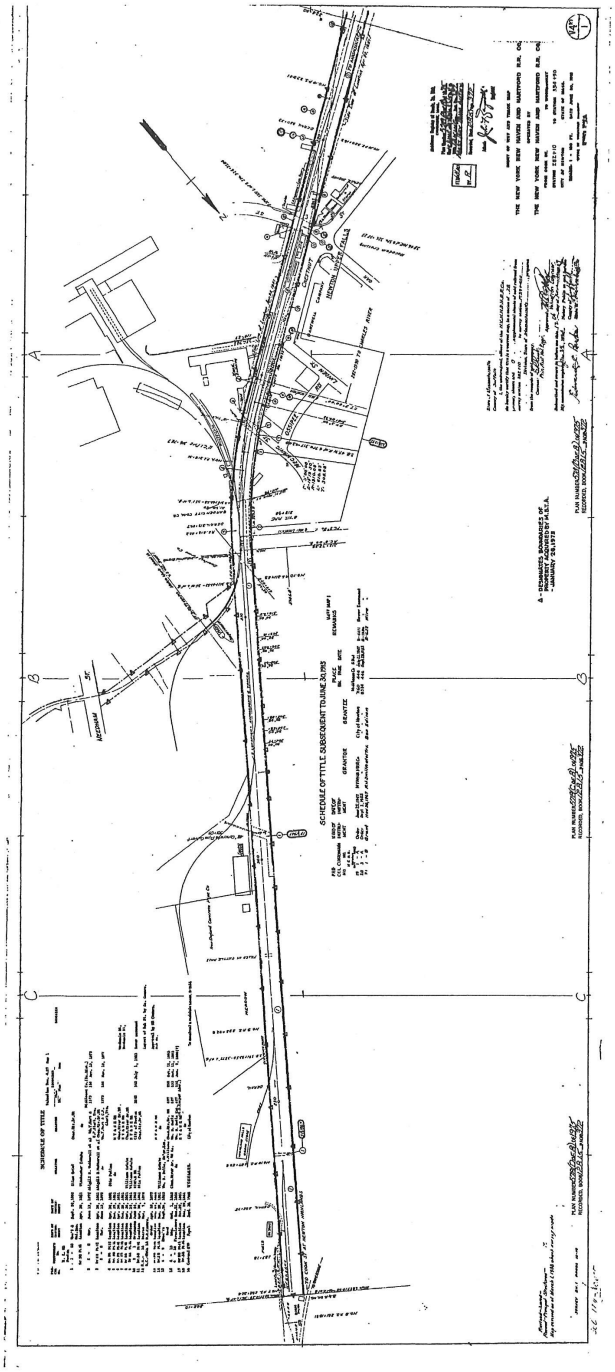
City of Newton MBTA Executed Lease - cont.

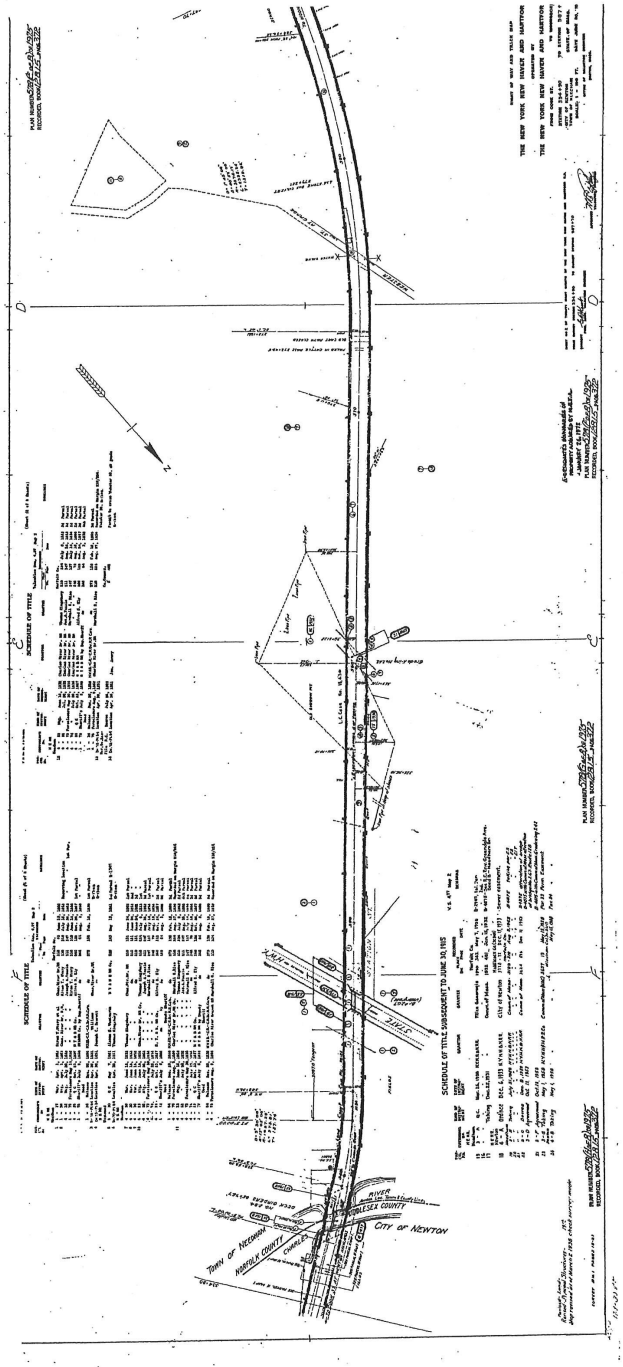
EXHIBIT A

PROPERTY DESCRIPTION

City of Newton MBTA Executed Lease - cont.



City of Newton MBTA Executed Lease - cont.



City of Newton MBTA Executed Lease - cont.

EXHIBIT B

MUNICIPAL BOARD VOTE

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City of Newton MBTA Executed Lease - cont.

#302-12

CITY OF NEWTON

IN BOARD OF ALDERMEN

December 17, 2012

ORDERED:

That, in accordance with the recommendation of the Programs & Services and Public Facilities Committees through their respective Chairman Amy Mah Sangiolo and Anthony J. Salvucci, His Honor the Mayor is hereby authorized to execute a 99-year lease between the City of Newton and the Massachusetts Bay Transportation Authority for .97 miles of unused MBTA rail bed that runs parallel to Needham Street to create a multi-purpose recreational pathway.

Under Suspension of Rules
Readings Waived and Approved
22 yeas 0 nays 2 absent (Aldermen Kalis and Merrill)

(SGD) DAVID A. OLSON
acting City Clerk

(SGD) SETTI D. WARREN
Mayor

12-28-12

City of Newton MBTA Executed Lease - cont.

EXHIBIT C

WORKMEN'S COMPENSATION LETTER

August 27, 2013

Beverly A. Scott, Ph.D
General Manager and Rail and Transit Administrator
Massachusetts Bay Transportation Authority
10 Park Plaza
Boston MA 02116

Re: Alternative Transportation Corridor Lease Agreement: Newton
Workmen's Compensation Program

Dear Dr.. Scott:

I am writing on behalf of the City of Newton in relation to the Worker's Compensation provision of Section 6.3(b)(ii) of the Alternative Transportation Corridor Lease Agreement between the MBTA and the City.

The City has an active, self-insured workers' compensation program. The program has an office at 1000 Commonwealth Avenue, Newton Centre, MA 02459. The phone number is (617) 796-1100. The City allocated $700,000.00 in the Fiscal Year 2014 to pay workers' compensation claims. The amount of claims paid varies from year to year based on the number and seriousness of injuries.

If you require any additional information regarding this program please contact me at (617) 796-1100.

Sincerely yours,

Maureen Lemieux

Maureen Lemieux
Chief Financial Officer
Acting Workers' Compensation Agent
City of Newton

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City of Newton MBTA Executed Lease - cont.

EXHIBIT D

MBTA BOARD OF DIRECTORS VOTE

22

City of Newton MBTA Executed Lease - cont.

Deval L. Patrick, Governor
Timothy P. Murray, Lt. Governor
Richard A. Davey, Secretary & CEO

massDOT
Massachusetts Department of Transportation

I, Paula Fallon, Recording Secretary of the Board of Directors of the Massachusetts Bay Transportation Authority, hereby certify that, at a Meeting of the Board of Directors of the Massachusetts Bay Transportation Authority, under the provisions of Chapter 161A of the General Laws, as amended to date, duly called and held on the eleventh day of July 2012, at which a quorum were present, the following Vote was adopted:

VOTED:That the General Manager be, and hereby is, authorized in the name of and on behalf of the Authority, and in a form approved by the General Counsel, to enter into a Ninety-nine (99) year Long Term Lease Agreement, and any and all other instruments deemed necessary for the long term lease of that certain section of abandoned railroad right of way know as the Dover Secondary extending from Medfield Junction to the Medfield/Dover line consisting of approximately 1.5 miles and shown on Valuation Plans V 4.28-29, sheet 11 and V 4.28 sheet 10 with the Town of Medfield, that certain section of abandoned railroad right of way known as the Dover Secondary Branch extending from the Medfield/Dover line to the Dover/Needham line consisting of approximately 3.6 miles and shown on Valuation Plans, V 4.28, sheets 6,7,8,9 and 10, that certain section of abandoned railroad right of way known as the Needham Secondary Branch extending from the Dover/Needham line to the Needham/Newton line consisting of approximately 3 miles and shown on Valuation Plans, V 4.27, sheets 2 and 3, V. 4.27-28, sheet 4, V 4.28, sheets 5 and 6 and that certain section of abandoned railroad right of way known as the Needham Secondary Branch extending from Needham/Newton line to Cook Street, Newton consisting of approximately 1 mile and shown on Valuation Plans, V 4.27, sheets 1 and 2, all for nominal consideration and solely for use as an Alternative Transportation Corridor open to the public. Said Lease Agreements and any other necessary instruments and documents shall contain such other terms and conditions as determined to be necessary and/or advisable by the General Counsel.

Board of Directors
John R. Jenkins, Chair • Ferdinand Alvaro, Jr. • Elizabeth Levin • Janice Loux • Andrew Whittle

City of Newton MBTA Executed Lease - cont.

Page Two:
Medfield, Dover, Needham, Newton Alternative Transportation Corridor

A true copy.

Attest: July 12, 2012

Paula Fallon

Paula Fallon
Recording Secretary
Board of Directors of the
Massachusetts Bay Transportation
Authority

City of Newton MBTA Executed Lease - cont.

EXHIBIT E
SELF-INSURED LETTER

LAW DEPARTMENT

CITY OF NEWTON, MASSACHUSETTS
CITY HALL
1000 COMMONWEALTH AVENUE
NEWTON CENTRE, MA 02459
TELEPHONE (617) 796-1240
FACSIMILE (617) 796-1254

CITY SOLICITOR
DONNALYN B. LYNCH KAHN
ASSOCIATE CITY SOLICITOR
OUIDA C.M. YOUNG

ASSISTANT CITY SOLICITORS
MARIE M. LAWLOR
ANGELA BUCHANAN SMAGULA
ROBERT J. WADDICK
MAURA E. O'KEEFE
JEFFREY A. HONIG
ALAN D. MANDL
JULIE B. ROSS

August 27, 2013

Beverly A. Scott, Ph.D
General Manager and Rail and Transit Administrator
Massachusetts Bay Transportation Authority
10 Park Plaza
Boston, MA 02116

Re: Alternative Transportation Corridor Lease Agreement: Newton' s Self Insured Status

Dear Dr. Scott:

This letter is given in connection with an Alternative Transportation Corridor Lease Agreement: between the Massachusetts Bay Transportation Authority and the City of Newton (the "Lease Agreement").

The City of Newton is a self-insured political subdivision of the Commonwealth of Massachusetts. Pursuant to G.L. c. 40, §5, the Mayor and Board of Aldermen are authorized to appropriate funds to cover the cost of its self-insurance program or to pay any damages incurred pursuant to G.L. c. 258, the Tort Claims Act. The self-insurance program covers all programs and operations of the City of Newton including the activities described in the Lease Agreement to the extent required by the provisions of Section 6.3(a) and 6.3(c) of the Lease Agreement.

The Massachusetts Bay Transportation Authority shall be given thirty (30) days prior written notice of any change in the city's self-insured status or coverage amounts and shall be entitled to the same rights and privileges that would be available if the required insurance was purchased.

Please contact the Office of the City Solicitor if additional information is required about the City's self-insured status.

Sincerely,

Donnalyn B. Lynch Kahn

Donnalyn B. Lynch Kahn
City Solicitor

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II. City of Newton Prevailing Wage

Contract #L-5991

10.7 The CONTRACTOR represents that it has secured, at its own expense, all personnel required for the performance of the PROJECT. All personnel engaged in the PROJECT shall be fully qualified to perform the required work.

10.8 Unless expressly authorized in the Scope of Work none of the work or services covered by this AGREEMENT, except services relating to document reproduction and other minor out-of-pocket expenses, shall be subcontracted without the prior written approval of the CITY.

10.9 Severability:

If any of the terms hereof shall be finally determined to be invalid or unenforceable in whole or part, the remaining provisions hereof shall remain in full force and effect, and be binding upon the parties hereto. The parties agree to reform this AGREEMENT to replace any such invalid or unenforceable provision with a valid enforceable provision that comes as close as possible to the intention of the stricken provision.

10.10 Notices:

Any notice required under this AGREEMENT to be given by the CITY to the CONTRACTOR, or by the CONTRACTOR to the CITY shall be deemed to have been so given, whether or not received, if mailed by prepaid postage by, respectively, the CITY to the CONTRACTOR at: c/o Dan Keen, Registered Agent, 1900 West Park Drive, Suite 280A, Westborough, Massachusetts 01581, or the CONTRACTOR to the CITY at: the City of Newton Engineering Division, 1000 Commonwealth Avenue, Newton, Massachusetts 02459.

10.11 Prevailing Wage:

Wage rate requirements under this AGREEMENT, including wage rate schedules are attached hereto and incorporated herein as Exhibit B.

10.12 CONTRACTOR shall comply with all applicable provisions of the Lease Agreement between the CITY and the MBTA a copy of which is attached hereto as Exhibit C.

10.13 CONTRACTOR shall follow the provisions of Best Management Practices (BMP's) for Controlling Exposure to Soils During the Development of Rail Trails promulgated by the Massachusetts Department of Environmental Protection in March 2004, a copy of which is attached hereto and incorporated herein as Exhibit D.

10.14 CONTRACTOR's labor force shall work in harmony with other elements of labor that may be employed at or near the Project site.

10.15 Notice is hereby given that the City of Newton Minority/Women Business Enterprise plan dated December 1999 is applicable to all City of newton Contracts for materials and supplies. A copy of this plan may be obtained from the City of Newton Purchasing Department.

City of Newton Prevailing Wage - cont.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

Prevailing Wage Rates

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

JOANNE F. GOLDSTEIN
Secretary
HEATHER E. ROWE
Director

Awarding Authority: City of Newton
Contract Number: RW 09182013 City/Town: NEWTON
Description of Work: Remove and Dispose of Railroad Rails and Treads from Charles River, Needham Street to Easy Street

Job Location: Various Locations

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- Awarding authorities must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during the life of the project in accordance with M.G.L. c. 149, § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Training (DAT). Apprentices must keep his/her apprentice identification card on his/her person during all work hours on the project. If an apprentice rate is listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports directly to the awarding authority and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

Issue Date: 09/18/2013 Wage Request Number: 20130918-054

City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
Construction						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.55	$8.91	$8.00	$0.00	$48.46
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.62	$8.91	$8.00	$0.00	$48.53
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.74	$8.91	$8.00	$0.00	$48.65
ADS/SUBMERSIBLE PILOT *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$84.21	$9.80	$18.17	$0.00	$112.18
	08/01/2014	$87.36	$9.80	$18.17	$0.00	$115.33
	08/01/2015	$90.51	$9.80	$18.17	$0.00	$118.48
AIR TRACK OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. *HEAT & FROST INSULATORS LOCAL 6 (BOSTON)*	06/01/2013	$29.88	$10.40	$5.95	$0.00	$46.23
	12/01/2013	$30.68	$10.40	$5.95	$0.00	$47.03
	06/01/2014	$31.58	$10.40	$5.95	$0.00	$47.93
	12/01/2014	$32.48	$10.40	$5.95	$0.00	$48.83
	06/01/2015	$33.43	$10.40	$5.95	$0.00	$49.78
	12/01/2015	$34.38	$10.40	$5.95	$0.00	$50.73
ASPHALT RAKER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER *LABORERS - ZONE 1*	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER *BOILERMAKERS LOCAL 29*	01/01/2010	$37.70	$6.97	$11.18	$0.00	$55.85

Apprentice - *BOILERMAKER - Local 29*
Effective Date - 01/01/2010

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$24.51	$6.97	$11.18	$0.00	$42.66
2	65	$24.51	$6.97	$11.18	$0.00	$42.66
3	70	$26.39	$6.97	$11.18	$0.00	$44.54
4	75	$28.28	$6.97	$11.18	$0.00	$46.43
5	80	$30.16	$6.97	$11.18	$0.00	$48.31
6	85	$32.05	$6.97	$11.18	$0.00	$50.20
7	90	$33.93	$6.97	$11.18	$0.00	$52.08
8	95	$35.82	$6.97	$11.18	$0.00	$53.97

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING) *BRICKLAYERS LOCAL 3 (NEWTON)*	08/01/2013	$48.06	$10.18	$18.15	$0.00	$76.39
	02/01/2014	$48.62	$10.18	$18.15	$0.00	$76.95
	08/01/2014	$49.52	$10.18	$18.22	$0.00	$77.92
	02/01/2015	$50.08	$10.18	$18.22	$0.00	$78.48
	08/01/2015	$50.98	$10.18	$18.29	$0.00	$79.45
	02/01/2016	$51.55	$10.18	$18.29	$0.00	$80.02
	08/01/2016	$52.45	$10.18	$18.37	$0.00	$81.00
	02/01/2017	$53.02	$10.18	$18.37	$0.00	$81.57

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *BRICK/PLASTER/CEMENT MASON - Local 3 Newton*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.03	$10.18	$18.15	$0.00	$52.36
2	60	$28.84	$10.18	$18.15	$0.00	$57.17
3	70	$33.64	$10.18	$18.15	$0.00	$61.97
4	80	$38.45	$10.18	$18.15	$0.00	$66.78
5	90	$43.25	$10.18	$18.15	$0.00	$71.58

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.31	$10.18	$18.15	$0.00	$52.64
2	60	$29.17	$10.18	$18.15	$0.00	$57.50
3	70	$34.03	$10.18	$18.15	$0.00	$62.36
4	80	$38.90	$10.18	$18.15	$0.00	$67.23
5	90	$43.76	$10.18	$18.15	$0.00	$72.09

Notes:

Apprentice to Journeyworker Ratio:1:5

BULLDOZER/GRADER/SCRAPER	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CAISSON & UNDERPINNING BOTTOM MAN	06/01/2013	$34.20	$7.10	$12.60	$0.00	$53.90
LABORERS - FOUNDATION AND MARINE	12/01/2013	$34.95	$7.10	$12.60	$0.00	$54.65
	06/01/2014	$35.70	$7.10	$12.60	$0.00	$55.40
	12/01/2014	$36.45	$7.10	$12.60	$0.00	$56.15
	06/01/2015	$37.20	$7.10	$12.60	$0.00	$56.90
	12/01/2015	$37.95	$7.10	$12.60	$0.00	$57.65
	06/01/2016	$38.70	$7.10	$12.60	$0.00	$58.40
	12/01/2016	$39.70	$7.10	$12.60	$0.00	$59.40
For apprentice rates see "Apprentice- LABORER"						
CAISSON & UNDERPINNING LABORER	06/01/2013	$33.05	$7.10	$12.60	$0.00	$52.75
LABORERS - FOUNDATION AND MARINE	12/01/2013	$33.80	$7.10	$12.60	$0.00	$53.50
	06/01/2014	$34.55	$7.10	$12.60	$0.00	$54.25
	12/01/2014	$35.30	$7.10	$12.60	$0.00	$55.00
	06/01/2015	$36.05	$7.10	$12.60	$0.00	$55.75
	12/01/2015	$36.80	$7.10	$12.60	$0.00	$56.50
	06/01/2016	$37.55	$7.10	$12.60	$0.00	$57.25
	12/01/2016	$38.55	$7.10	$12.60	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CAISSON & UNDERPINNING TOP MAN	06/01/2013	$33.05	$7.10	$12.60	$0.00	$52.75
LABORERS - FOUNDATION AND MARINE	12/01/2013	$33.80	$7.10	$12.60	$0.00	$53.50
	06/01/2014	$34.55	$7.10	$12.60	$0.00	$54.25
	12/01/2014	$35.30	$7.10	$12.60	$0.00	$55.00
	06/01/2015	$36.05	$7.10	$12.60	$0.00	$55.75
	12/01/2015	$36.80	$7.10	$12.60	$0.00	$56.50
	06/01/2016	$37.55	$7.10	$12.60	$0.00	$57.25
	12/01/2016	$38.55	$7.10	$12.60	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
CARBIDE CORE DRILL OPERATOR	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
LABORERS - ZONE 1	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
CARPENTER	09/01/2013	$34.53	$9.80	$15.61	$0.00	$59.94
CARPENTERS -ZONE 2 (Eastern Massachusetts)	03/01/2014	$35.13	$9.80	$15.61	$0.00	$60.54
	09/01/2014	$35.90	$9.80	$15.61	$0.00	$61.31
	03/01/2015	$36.67	$9.80	$15.61	$0.00	$62.08

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CARPENTER - Zone 2 Eastern MA*

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.27	$9.80	$1.57	$0.00	$28.64
2	60	$20.72	$9.80	$1.57	$0.00	$32.09
3	70	$24.17	$9.80	$10.90	$0.00	$44.87
4	75	$25.90	$9.80	$10.90	$0.00	$46.60
5	80	$27.62	$9.80	$12.47	$0.00	$49.89
6	80	$27.62	$9.80	$12.47	$0.00	$49.89
7	90	$31.08	$9.80	$14.04	$0.00	$54.92
8	90	$31.08	$9.80	$14.04	$0.00	$54.92

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.57	$9.80	$1.57	$0.00	$28.94
2	60	$21.08	$9.80	$1.57	$0.00	$32.45
3	70	$24.59	$9.80	$10.90	$0.00	$45.29
4	75	$26.35	$9.80	$10.90	$0.00	$47.05
5	80	$28.10	$9.80	$12.47	$0.00	$50.37
6	80	$28.10	$9.80	$12.47	$0.00	$50.37
7	90	$31.62	$9.80	$14.04	$0.00	$55.46
8	90	$31.62	$9.80	$14.04	$0.00	$55.46

Notes:

Apprentice to Journeyworker Ratio:1:5

CEMENT MASONRY/PLASTERING *BRICKLAYERS LOCAL 3 (NEWTON)*	07/01/2013	$42.68	$10.90	$18.71	$1.30	$73.59
	01/01/2014	$43.60	$10.90	$18.71	$1.30	$74.51
	07/01/2014	$44.20	$10.90	$18.71	$1.30	$75.11
	01/01/2015	$45.14	$10.90	$18.71	$1.30	$76.05
	07/01/2015	$45.72	$10.90	$18.71	$1.30	$76.63
	01/01/2016	$46.64	$10.90	$18.71	$1.30	$77.55

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *CEMENT MASONRY/PLASTERING - Eastern Mass (Newton)*

Effective Date - 07/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.34	$10.90	$12.21	$1.30	$45.75
2	60	$25.61	$10.90	$13.71	$1.30	$51.52
3	65	$27.74	$10.90	$14.71	$1.30	$54.65
4	70	$29.88	$10.90	$15.71	$1.30	$57.79
5	75	$32.01	$10.90	$16.71	$1.30	$60.92
6	80	$34.14	$10.90	$17.71	$1.30	$64.05
7	90	$38.41	$10.90	$18.71	$1.30	$69.32

Effective Date - 01/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.80	$10.90	$12.21	$1.30	$46.21
2	60	$26.16	$10.90	$13.71	$1.30	$52.07
3	65	$28.34	$10.90	$14.71	$1.30	$55.25
4	70	$30.52	$10.90	$15.71	$1.30	$58.43
5	75	$32.70	$10.90	$16.71	$1.30	$61.61
6	80	$34.88	$10.90	$17.71	$1.30	$64.79
7	90	$39.24	$10.90	$18.71	$1.30	$70.15

Notes:
Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

Apprentice to Journeyworker Ratio:1:3

CHAIN SAW OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$41.34	$10.00	$13.55	$0.00	$64.89
	12/01/2013	$42.12	$10.00	$13.55	$0.00	$65.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$28.19	$10.00	$13.55	$0.00	$51.74
	12/01/2013	$28.74	$10.00	$13.55	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2013	$45.01	$7.80	$15.60	$0.00	$68.41

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.51	$7.80	$0.00	$0.00	$30.31
2	55	$24.76	$7.80	$3.52	$0.00	$36.08
3	60	$27.01	$7.80	$3.84	$0.00	$38.65
4	65	$29.26	$7.80	$4.16	$0.00	$41.22
5	70	$31.51	$7.80	$13.68	$0.00	$52.99
6	75	$33.76	$7.80	$14.00	$0.00	$55.56
7	80	$36.01	$7.80	$14.32	$0.00	$58.13
8	90	$40.51	$7.80	$14.96	$0.00	$63.27

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

DEMO: ADZEMAN *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$31.80	$7.10	$12.45	$0.00	$51.35
DEMO: BACKHOE/LOADER/HAMMER OPERATOR *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.80	$7.10	$12.45	$0.00	$52.35
DEMO: BURNERS *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.55	$7.10	$12.45	$0.00	$52.10
DEMO: CONCRETE CUTTER/SAWYER *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.80	$7.10	$12.45	$0.00	$52.35
DEMO: JACKHAMMER OPERATOR *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$32.55	$7.10	$12.45	$0.00	$52.10
DEMO: WRECKING LABORER *LABORERS - ZONE 1* For apprentice rates see "Apprentice- LABORER"	12/01/2011	$31.80	$7.10	$12.45	$0.00	$51.35
DIRECTIONAL DRILL MACHINE OPERATOR *OPERATING ENGINEERS LOCAL 4* For apprentice rates see "Apprentice- OPERATING ENGINEERS"	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
DIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$56.14	$9.80	$18.17	$0.00	$84.11
	08/01/2014	$58.24	$9.80	$18.17	$0.00	$86.21
	08/01/2015	$60.34	$9.80	$18.17	$0.00	$88.31
DIVER TENDER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$40.10	$9.80	$18.17	$0.00	$68.07
	08/01/2014	$41.60	$9.80	$18.17	$0.00	$69.57
	08/01/2015	$43.10	$9.80	$18.17	$0.00	$71.07
DIVER TENDER (EFFLUENT) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$60.15	$9.80	$18.17	$0.00	$88.12
	08/01/2014	$62.40	$9.80	$18.17	$0.00	$90.37
	08/01/2015	$64.65	$9.80	$18.17	$0.00	$92.62

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
DIVER/SLURRY, (EFFLUENT)	08/01/2013	$84.21	$9.80	$18.17	$0.00	$112.18
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2014	$87.36	$9.80	$18.17	$0.00	$115.33
	08/01/2015	$90.51	$9.80	$18.17	$0.00	$118.48
DRAWBRIDGE OPERATOR (Construction)	09/01/2013	$43.96	$13.00	$14.42	$0.00	$71.38
ELECTRICIANS LOCAL 103	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN	09/01/2013	$43.96	$13.00	$14.42	$0.00	$71.38
ELECTRICIANS LOCAL 103	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELECTRICIAN - Local 103*

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.58	$13.00	$0.53	$0.00	$31.11
2	40	$17.58	$13.00	$0.53	$0.00	$31.11
3	45	$19.78	$13.00	$10.78	$0.00	$43.56
4	45	$19.78	$13.00	$10.78	$0.00	$43.56
5	50	$21.98	$13.00	$11.11	$0.00	$46.09
6	55	$24.18	$13.00	$11.45	$0.00	$48.63
7	60	$26.38	$13.00	$11.77	$0.00	$51.15
8	65	$28.57	$13.00	$12.11	$0.00	$53.68
9	70	$30.77	$13.00	$12.43	$0.00	$56.20
10	75	$32.97	$13.00	$12.77	$0.00	$58.74

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.78	$13.00	$0.53	$0.00	$31.31
2	40	$17.78	$13.00	$0.53	$0.00	$31.31
3	45	$20.00	$13.00	$11.04	$0.00	$44.04
4	45	$20.00	$13.00	$11.04	$0.00	$44.04
5	50	$22.23	$13.00	$11.37	$0.00	$46.60
6	55	$24.45	$13.00	$11.70	$0.00	$49.15
7	60	$26.67	$13.00	$12.03	$0.00	$51.70
8	65	$28.89	$13.00	$12.37	$0.00	$54.26
9	70	$31.12	$13.00	$12.69	$0.00	$56.81
10	75	$33.34	$13.00	$13.03	$0.00	$59.37

Notes: :
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

Apprentice to Journeyworker Ratio:2:3***

ELEVATOR CONSTRUCTOR *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2012	$52.45	$8.78	$6.96	$0.00	$68.19

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ELEVATOR CONSTRUCTOR - Local 4*
Effective Date - 01/01/2012

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$26.23	$8.78	$0.00	$0.00	$35.01
2	55	$28.85	$8.78	$6.96	$0.00	$44.59
3	65	$34.09	$8.78	$6.96	$0.00	$49.83
4	70	$36.72	$8.78	$6.96	$0.00	$52.46
5	80	$41.96	$8.78	$6.96	$0.00	$57.70

Notes:
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

Apprentice to Journeyworker Ratio:1:1

ELEVATOR CONSTRUCTOR HELPER *ELEVATOR CONSTRUCTORS LOCAL 4*	01/01/2012	$38.59	$8.78	$6.96	$0.00	$54.33
For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"						
FENCE & GUARD RAIL ERECTOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2013	$38.50	$10.00	$13.02	$0.00	$61.52
	11/01/2013	$39.26	$10.00	$13.02	$0.00	$62.28
	05/01/2014	$40.03	$10.00	$13.02	$0.00	$63.05
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2013	$39.91	$10.00	$13.02	$0.00	$62.93
	11/01/2013	$40.68	$10.00	$13.02	$0.00	$63.70
	05/01/2014	$41.45	$10.00	$13.02	$0.00	$64.47
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY *OPERATING ENGINEERS LOCAL 4*	05/01/2013	$21.17	$10.00	$13.02	$0.00	$44.19
	11/01/2013	$21.63	$10.00	$13.02	$0.00	$44.65
	05/01/2014	$22.08	$10.00	$13.02	$0.00	$45.10
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER *ELECTRICIANS LOCAL 103*	09/01/2013	$43.96	$13.00	$14.42	$0.00	$71.38
	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53
For apprentice rates see "Apprentice- ELECTRICIAN"						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING *ELECTRICIANS*	09/01/2013	$32.97	$13.00	$12.77	$0.00	$58.74
LOCAL 103	03/01/2014	$33.44	$13.00	$13.03	$0.00	$59.47
	09/01/2014	$33.84	$13.00	$13.05	$0.00	$59.89
	03/01/2015	$34.38	$13.00	$13.06	$0.00	$60.44
	09/01/2015	$35.10	$13.00	$13.08	$0.00	$61.18
	03/01/2016	$35.81	$13.00	$13.10	$0.00	$61.91
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER)	06/01/2013	$33.73	$10.00	$13.55	$0.00	$57.28
OPERATING ENGINEERS LOCAL 4	12/01/2013	$34.39	$10.00	$13.55	$0.00	$57.94
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER	06/01/2013	$20.50	$7.10	$12.45	$0.00	$40.05
LABORERS - ZONE 1	12/01/2013	$20.50	$7.10	$12.45	$0.00	$40.05
	06/01/2014	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2014	$20.50	$7.10	$12.45	$0.00	$40.05
	06/01/2015	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2015	$20.50	$7.10	$12.45	$0.00	$40.05
	06/01/2016	$20.50	$7.10	$12.45	$0.00	$40.05
	12/01/2016	$20.50	$7.10	$12.45	$0.00	$40.05
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER	09/01/2013	$38.61	$9.80	$16.71	$0.00	$65.12
FLOORCOVERERS LOCAL 2168 ZONE 1	03/01/2014	$38.61	$9.80	$16.71	$0.00	$65.12

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *FLOORCOVERER - Local 2168 Zone I*

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.31	$9.80	$1.79	$0.00	$30.90
2	55	$21.24	$9.80	$1.79	$0.00	$32.83
3	60	$23.17	$9.80	$11.34	$0.00	$44.31
4	65	$25.10	$9.80	$11.34	$0.00	$46.24
5	70	$27.03	$9.80	$13.13	$0.00	$49.96
6	75	$28.96	$9.80	$13.13	$0.00	$51.89
7	80	$30.89	$9.80	$14.92	$0.00	$55.61
8	85	$32.82	$9.80	$14.92	$0.00	$57.54

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.31	$9.80	$1.79	$0.00	$30.90
2	55	$21.24	$9.80	$1.79	$0.00	$32.83
3	60	$23.17	$9.80	$11.34	$0.00	$44.31
4	65	$25.10	$9.80	$11.34	$0.00	$46.24
5	70	$27.03	$9.80	$13.13	$0.00	$49.96
6	75	$28.96	$9.80	$13.13	$0.00	$51.89
7	80	$30.89	$9.80	$14.92	$0.00	$55.61
8	85	$32.82	$9.80	$14.92	$0.00	$57.54

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

FORK LIFT/CHERRY PICKER *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$28.19	$10.00	$13.55	$0.00	$51.74
	12/01/2013	$28.74	$10.00	$13.55	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS) *GLAZIERS LOCAL 35 (ZONE 2)*	01/01/2013	$35.51	$7.80	$14.60	$0.00	$57.91

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *GLAZIER - Local 35 Zone 2*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.76	$7.80	$0.00	$0.00	$25.56
2	55	$19.53	$7.80	$3.25	$0.00	$30.58
3	60	$21.31	$7.80	$3.54	$0.00	$32.65
4	65	$23.08	$7.80	$3.84	$0.00	$34.72
5	70	$24.86	$7.80	$12.83	$0.00	$45.49
6	75	$26.63	$7.80	$13.13	$0.00	$47.56
7	80	$28.41	$7.80	$13.42	$0.00	$49.63
8	90	$31.96	$7.80	$14.01	$0.00	$53.77

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.19	$10.00	$0.00	$0.00	$32.19
2	60	$24.20	$10.00	$13.55	$0.00	$47.75
3	65	$26.22	$10.00	$13.55	$0.00	$49.77
4	70	$28.24	$10.00	$13.55	$0.00	$51.79
5	75	$30.26	$10.00	$13.55	$0.00	$53.81
6	80	$32.27	$10.00	$13.55	$0.00	$55.82
7	85	$34.29	$10.00	$13.55	$0.00	$57.84
8	90	$36.31	$10.00	$13.55	$0.00	$59.86

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.62	$10.00	$0.00	$0.00	$32.62
2	60	$24.67	$10.00	$13.55	$0.00	$48.22
3	65	$26.73	$10.00	$13.55	$0.00	$50.28
4	70	$28.78	$10.00	$13.55	$0.00	$52.33
5	75	$30.84	$10.00	$13.55	$0.00	$54.39
6	80	$32.90	$10.00	$13.55	$0.00	$56.45
7	85	$34.95	$10.00	$13.55	$0.00	$58.50
8	90	$37.01	$10.00	$13.55	$0.00	$60.56

Notes:

Apprentice to Journeyworker Ratio:1:6

HVAC (DUCTWORK) *SHEETMETAL WORKERS LOCAL 17 - A*	09/01/2013	$42.35	$9.82	$19.08	$2.14	$73.39
	02/01/2014	$43.20	$9.82	$19.08	$2.14	$74.24
	08/01/2014	$44.05	$9.82	$19.08	$2.14	$75.09
	02/01/2015	$44.95	$9.82	$19.08	$2.14	$75.99
	08/01/2015	$45.95	$9.82	$19.08	$2.14	$76.99
	02/01/2016	$46.95	$9.82	$19.08	$2.14	$77.99
	08/01/2016	$48.10	$9.82	$19.08	$2.14	$79.14
	02/01/2017	$49.20	$9.82	$19.08	$2.14	$80.24
	08/01/2017	$50.30	$9.82	$19.08	$2.14	$81.34
	02/01/2018	$51.45	$9.82	$19.08	$2.14	$82.49

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) *ELECTRICIANS LOCAL 103*	09/01/2013	$43.96	$13.00	$14.42	$0.00	$71.38
	03/01/2014	$44.45	$13.00	$14.68	$0.00	$72.13
	09/01/2014	$45.12	$13.00	$14.70	$0.00	$72.82
	03/01/2015	$45.84	$13.00	$14.72	$0.00	$73.56
	09/01/2015	$46.80	$13.00	$14.75	$0.00	$74.55
	03/01/2016	$47.75	$13.00	$14.78	$0.00	$75.53

For apprentice rates see "Apprentice- ELECTRICIAN"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HVAC (TESTING AND BALANCING - AIR)	09/01/2013	$42.35	$9.82	$19.08	$2.14	$73.39
SHEETMETAL WORKERS LOCAL 17 - A	02/01/2014	$43.20	$9.82	$19.08	$2.14	$74.24
	08/01/2014	$44.05	$9.82	$19.08	$2.14	$75.09
	02/01/2015	$44.95	$9.82	$19.08	$2.14	$75.99
	08/01/2015	$45.95	$9.82	$19.08	$2.14	$76.99
	02/01/2016	$46.95	$9.82	$19.08	$2.14	$77.99
	08/01/2016	$48.10	$9.82	$19.08	$2.14	$79.14
	02/01/2017	$49.20	$9.82	$19.08	$2.14	$80.24
	08/01/2017	$50.30	$9.82	$19.08	$2.14	$81.34
	02/01/2018	$51.45	$9.82	$19.08	$2.14	$82.49
For apprentice rates see "Apprentice- SHEET METAL WORKER"						
HVAC (TESTING AND BALANCING -WATER)	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
PIPEFITTERS LOCAL 537						
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HVAC MECHANIC	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
PIPEFITTERS LOCAL 537						
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
HYDRAULIC DRILLS	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
LABORERS - ZONE I	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS)	09/01/2013	$42.11	$10.95	$12.10	$0.00	$65.16
HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2014	$44.11	$10.95	$12.10	$0.00	$67.16

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston*

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$21.06	$10.95	$9.00	$0.00	$41.01
2	60	$25.27	$10.95	$9.62	$0.00	$45.84
3	70	$29.48	$10.95	$10.24	$0.00	$50.67
4	80	$33.69	$10.95	$10.86	$0.00	$55.50

Effective Date - 09/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.06	$10.95	$9.00	$0.00	$42.01
2	60	$26.47	$10.95	$9.62	$0.00	$47.04
3	70	$30.88	$10.95	$10.24	$0.00	$52.07
4	80	$35.29	$10.95	$10.86	$0.00	$57.10

Notes:
Steps are 1 year

Apprentice to Journeyworker Ratio:1:4

IRONWORKER/WELDER *IRONWORKERS LOCAL 7 (BOSTON AREA)*	09/16/2013	$40.85	$7.70	$18.60	$0.00	$67.15

Apprentice - *IRONWORKER - Local 7 Boston*

Effective Date - 09/16/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$24.51	$7.70	$18.60	$0.00	$50.81
2	70	$28.60	$7.70	$18.60	$0.00	$54.90
3	75	$30.64	$7.70	$18.60	$0.00	$56.94
4	80	$32.68	$7.70	$18.60	$0.00	$58.98
5	85	$34.72	$7.70	$18.60	$0.00	$61.02
6	90	$36.77	$7.70	$18.60	$0.00	$63.07

Notes:
** Structural 1:6; Ornamental 1:4

Apprentice to Journeyworker Ratio:**

JACKHAMMER & PAVING BREAKER OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35

For apprentice rates see "Apprentice- LABORER"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER *LABORERS - ZONE I*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10

Apprentice - *LABORER - Zone I*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$19.83	$7.10	$12.45	$0.00	$39.38
2	70	$23.14	$7.10	$12.45	$0.00	$42.69
3	80	$26.44	$7.10	$12.45	$0.00	$45.99
4	90	$29.75	$7.10	$12.45	$0.00	$49.30

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$20.28	$7.10	$12.45	$0.00	$39.83
2	70	$23.66	$7.10	$12.45	$0.00	$43.21
3	80	$27.04	$7.10	$12.45	$0.00	$46.59
4	90	$30.42	$7.10	$12.45	$0.00	$49.97

Notes:

Apprentice to Journeyworker Ratio:1:5

LABORER: CARPENTER TENDER *LABORERS - ZONE I*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER *LABORERS - ZONE I*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10

For apprentice rates see "Apprentice- LABORER"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER *LABORERS - ZONE 1*	12/01/2011	$31.80	$7.10	$12.45	$0.00	$51.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MASON TENDER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER: MULTI-TRADE TENDER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
For apprentice rates see "Apprentice- LABORER"						
LABORER: TREE REMOVER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
This classification applies to the wholesale removal of standing trees including all associated trimming of branches and limbs, and applies to the removal of branches at locations not on or around utility lines. For apprentice rates see "Apprentice- LABORER"						
LASER BEAM OPERATOR *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MARBLE & TILE FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2013	$36.66	$10.18	$16.83	$0.00	$63.67
	02/01/2014	$37.11	$10.18	$16.83	$0.00	$64.12
	08/01/2014	$37.82	$10.18	$16.90	$0.00	$64.90
	02/01/2015	$38.27	$10.18	$16.90	$0.00	$65.35
	08/01/2015	$38.98	$10.18	$16.97	$0.00	$66.13
	02/01/2016	$39.43	$10.18	$16.97	$0.00	$66.58
	08/01/2016	$40.13	$10.18	$17.05	$0.00	$67.36
	02/01/2017	$40.59	$10.18	$17.05	$0.00	$67.82

Apprentice - *MARBLE & TILE FINISHER - Local 3 Marble & Tile*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.33	$10.18	$16.83	$0.00	$45.34
2	60	$22.00	$10.18	$16.83	$0.00	$49.01
3	70	$25.66	$10.18	$16.83	$0.00	$52.67
4	80	$29.33	$10.18	$16.83	$0.00	$56.34
5	90	$32.99	$10.18	$16.83	$0.00	$60.00

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$18.56	$10.18	$16.83	$0.00	$45.57
2	60	$22.27	$10.18	$16.83	$0.00	$49.28
3	70	$25.98	$10.18	$16.83	$0.00	$52.99
4	80	$29.69	$10.18	$16.83	$0.00	$56.70
5	90	$33.40	$10.18	$16.83	$0.00	$60.41

Notes:

Apprentice to Journeyworker Ratio:1:3

MARBLE MASONS,TILELAYERS & TERRAZZO MECH *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2013	$48.10	$10.18	$18.15	$0.00	$76.43
	02/01/2014	$48.66	$10.18	$18.15	$0.00	$76.99
	08/01/2014	$49.56	$10.18	$18.22	$0.00	$77.96
	02/01/2015	$50.12	$10.18	$18.22	$0.00	$78.52
	08/01/2015	$51.02	$10.18	$18.29	$0.00	$79.49
	02/01/2016	$51.59	$10.18	$18.29	$0.00	$80.06
	08/01/2016	$52.49	$10.18	$18.37	$0.00	$81.04
	02/01/2017	$53.06	$10.18	$18.37	$0.00	$81.61

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.05	$10.18	$18.15	$0.00	$52.38
2	60	$28.86	$10.18	$18.15	$0.00	$57.19
3	70	$33.67	$10.18	$18.15	$0.00	$62.00
4	80	$38.48	$10.18	$18.15	$0.00	$66.81
5	90	$43.29	$10.18	$18.15	$0.00	$71.62

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$24.33	$10.18	$18.15	$0.00	$52.66
2	60	$29.20	$10.18	$18.15	$0.00	$57.53
3	70	$34.06	$10.18	$18.15	$0.00	$62.39
4	80	$38.93	$10.18	$18.15	$0.00	$67.26
5	90	$43.79	$10.18	$18.15	$0.00	$72.12

Notes:

Apprentice to Journeyworker Ratio:1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES)	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1)	04/01/2013	$34.68	$9.80	$15.76	$0.00	$60.24
MILLWRIGHTS LOCAL 1121 - Zone 1	10/01/2013	$35.45	$9.80	$15.76	$0.00	$61.01
	04/01/2014	$36.23	$9.80	$15.76	$0.00	$61.79
	10/01/2014	$37.18	$9.80	$15.76	$0.00	$62.74
	04/01/2015	$38.14	$9.80	$15.76	$0.00	$63.70

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *MILLWRIGHT - Local 1121 Zone 1*

Effective Date - 04/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$19.07	$9.80	$4.32	$0.00	$33.19
2	65	$22.54	$9.80	$13.01	$0.00	$45.35
3	75	$26.01	$9.80	$13.80	$0.00	$49.61
4	85	$29.48	$9.80	$14.58	$0.00	$53.86

Effective Date - 10/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$19.50	$9.80	$4.32	$0.00	$33.62
2	65	$23.04	$9.80	$13.01	$0.00	$45.85
3	75	$26.59	$9.80	$13.80	$0.00	$50.19
4	85	$30.13	$9.80	$14.58	$0.00	$54.51

Notes:

Steps are 2,000 hours

Apprentice to Journeyworker Ratio: 1:5

MORTAR MIXER *LABORERS - ZONE 1*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$21.17	$10.00	$13.55	$0.00	$44.72
	12/01/2013	$21.59	$10.00	$13.55	$0.00	$45.14
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$24.57	$10.00	$13.55	$0.00	$48.12
	12/01/2013	$25.06	$10.00	$13.55	$0.00	$48.61
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2013	$45.01	$7.80	$15.60	$0.00	$68.41

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 - BRIDGES/TANKS*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$22.51	$7.80	$0.00	$0.00	$30.31
2	55	$24.76	$7.80	$3.52	$0.00	$36.08
3	60	$27.01	$7.80	$3.84	$0.00	$38.65
4	65	$29.26	$7.80	$4.16	$0.00	$41.22
5	70	$31.51	$7.80	$13.68	$0.00	$52.99
6	75	$33.76	$7.80	$14.00	$0.00	$55.56
7	80	$36.01	$7.80	$14.32	$0.00	$58.13
8	90	$40.51	$7.80	$14.96	$0.00	$63.27

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	01/01/2013	$35.91	$7.80	$15.60	$0.00	$59.31

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2*

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - New*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.96	$7.80	$0.00	$0.00	$25.76
2	55	$19.75	$7.80	$3.52	$0.00	$31.07
3	60	$21.55	$7.80	$3.84	$0.00	$33.19
4	65	$23.34	$7.80	$4.16	$0.00	$35.30
5	70	$25.14	$7.80	$13.68	$0.00	$46.62
6	75	$26.93	$7.80	$14.00	$0.00	$48.73
7	80	$28.73	$7.80	$14.32	$0.00	$50.85
8	90	$32.32	$7.80	$14.96	$0.00	$55.08

Notes:

Apprentice to Journeyworker Ratio:1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	01/01/2013	$33.97	$7.80	$15.60	$0.00	$57.37

PAINTERS LOCAL 35 - ZONE 2

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$16.99	$7.80	$0.00	$0.00	$24.79
2	55	$18.68	$7.80	$3.52	$0.00	$30.00
3	60	$20.38	$7.80	$3.84	$0.00	$32.02
4	65	$22.08	$7.80	$4.16	$0.00	$34.04
5	70	$23.78	$7.80	$13.68	$0.00	$45.26
6	75	$25.48	$7.80	$14.00	$0.00	$47.28
7	80	$27.18	$7.80	$14.32	$0.00	$49.30
8	90	$30.57	$7.80	$14.96	$0.00	$53.33

Notes:

Apprentice to Journeyworker Ratio:1:1

PAINTER (TRAFFIC MARKINGS) *LABORERS - ZONE I*	06/01/2013	$33.05	$7.10	$12.45	$0.00	$52.60
	12/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
	06/01/2014	$34.55	$7.10	$12.45	$0.00	$54.10
	12/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	06/01/2015	$36.05	$7.10	$12.45	$0.00	$55.60
	12/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	06/01/2016	$37.55	$7.10	$12.45	$0.00	$57.10
	12/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	01/01/2013	$34.51	$7.80	$15.60	$0.00	$57.91

* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. *PAINTERS LOCAL 35 - ZONE 2*

Apprentice - *PAINTER - Local 35 Zone 2 - BRUSH NEW*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$17.26	$7.80	$0.00	$0.00	$25.06
2	55	$18.98	$7.80	$3.52	$0.00	$30.30
3	60	$20.71	$7.80	$3.84	$0.00	$32.35
4	65	$22.43	$7.80	$4.16	$0.00	$34.39
5	70	$24.16	$7.80	$13.68	$0.00	$45.64
6	75	$25.88	$7.80	$14.00	$0.00	$47.68
7	80	$27.61	$7.80	$14.32	$0.00	$49.73
8	90	$31.06	$7.80	$14.96	$0.00	$53.82

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PAINTER / TAPER (BRUSH, REPAINT) *PAINTERS LOCAL 35 - ZONE 2*	01/01/2013	$32.57	$7.80	$15.60	$0.00	$55.97

Apprentice - *PAINTER Local 35 Zone 2 - BRUSH REPAINT*
Effective Date - 01/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$16.29	$7.80	$0.00	$0.00	$24.09
2	55	$17.91	$7.80	$3.52	$0.00	$29.23
3	60	$19.54	$7.80	$3.84	$0.00	$31.18
4	65	$21.17	$7.80	$4.16	$0.00	$33.13
5	70	$22.80	$7.80	$13.68	$0.00	$44.28
6	75	$24.43	$7.80	$14.00	$0.00	$46.23
7	80	$26.06	$7.80	$14.32	$0.00	$48.18
8	90	$29.31	$7.80	$14.96	$0.00	$52.07

Notes:
Steps are 750 hrs.

Apprentice to Journeyworker Ratio:1:1

PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.38	$8.91	$8.00	$0.00	$48.29
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$40.10	$9.80	$18.17	$0.00	$68.07
	08/01/2014	$41.60	$9.80	$18.17	$0.00	$69.57
	08/01/2015	$43.10	$9.80	$18.17	$0.00	$71.07
PILE DRIVER *PILE DRIVER LOCAL 56 (ZONE 1)*	08/01/2013	$40.10	$9.80	$18.17	$0.00	$68.07
	08/01/2014	$41.60	$9.80	$18.17	$0.00	$69.57
	08/01/2015	$43.10	$9.80	$18.17	$0.00	$71.07

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *PILE DRIVER - Local 56 Zone 1*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.05	$9.80	$18.17	$0.00	$48.02
2	60	$24.06	$9.80	$18.17	$0.00	$52.03
3	70	$28.07	$9.80	$18.17	$0.00	$56.04
4	75	$30.08	$9.80	$18.17	$0.00	$58.05
5	80	$32.08	$9.80	$18.17	$0.00	$60.05
6	80	$32.08	$9.80	$18.17	$0.00	$60.05
7	90	$36.09	$9.80	$18.17	$0.00	$64.06
8	90	$36.09	$9.80	$18.17	$0.00	$64.06

Effective Date - 08/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$20.80	$9.80	$18.17	$0.00	$48.77
2	60	$24.96	$9.80	$18.17	$0.00	$52.93
3	70	$29.12	$9.80	$18.17	$0.00	$57.09
4	75	$31.20	$9.80	$18.17	$0.00	$59.17
5	80	$33.28	$9.80	$18.17	$0.00	$61.25
6	80	$33.28	$9.80	$18.17	$0.00	$61.25
7	90	$37.44	$9.80	$18.17	$0.00	$65.41
8	90	$37.44	$9.80	$18.17	$0.00	$65.41

Notes:

Apprentice to Journeyworker Ratio:1:3

PIPEFITTER & STEAMFITTER *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48

Apprentice - *PIPEFITTER - Local 537*

Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$19.74	$8.75	$6.50	$0.00	$34.99
2.	45	$22.20	$8.75	$14.39	$0.00	$45.34
3	60	$29.60	$8.75	$14.39	$0.00	$52.74
4	70	$34.54	$8.75	$14.39	$0.00	$57.68
5	80	$39.47	$8.75	$14.39	$0.00	$62.61

Notes:
** 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.
Refrig/AC Mechanic **1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

Apprentice to Journeyworker Ratio:**

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
PIPELAYER *LABORERS - ZONE I*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
PLUMBERS & GASFITTERS *PLUMBERS & GASFITTERS LOCAL 12*	03/01/2013	$49.31	$9.32	$13.29	$0.00	$71.92

Apprentice - *PLUMBER/GASFITTER - Local 12*
Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$17.26	$9.32	$4.97	$0.00	$31.55
2	40	$19.72	$9.32	$5.61	$0.00	$34.65
3	55	$27.12	$9.32	$7.53	$0.00	$43.97
4	65	$32.05	$9.32	$8.81	$0.00	$50.18
5	75	$36.98	$9.32	$10.09	$0.00	$56.39

Notes:
** 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr
Step4 with lic$53.29 Step5 with lic$59.49

Apprentice to Journeyworker Ratio:**

PNEUMATIC CONTROLS (TEMP.) *PIPEFITTERS LOCAL 537*	03/01/2013	$49.34	$8.75	$14.39	$0.00	$72.48
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"						
PNEUMATIC DRILL/TOOL OPERATOR *LABORERS - ZONE I*	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
POWDERMAN & BLASTER *LABORERS - ZONE I*	06/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	12/01/2013	$34.80	$7.10	$12.45	$0.00	$54.35
	06/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	12/01/2014	$36.30	$7.10	$12.45	$0.00	$55.85
	06/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	12/01/2015	$37.80	$7.10	$12.45	$0.00	$57.35
	06/01/2016	$38.55	$7.10	$12.45	$0.00	$58.10
	12/01/2016	$39.55	$7.10	$12.45	$0.00	$59.10
For apprentice rates see "Apprentice- LABORER"						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
POWER SHOVEL/DERRICK/TRENCHING MACHINE	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS".						
PUMP OPERATOR (CONCRETE)	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER)	06/01/2013	$28.19	$10.00	$13.55	$0.00	$51.74
OPERATING ENGINEERS LOCAL 4	12/01/2013	$28.74	$10.00	$13.55	$0.00	$52.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
READY-MIX CONCRETE DRIVER	05/01/2011	$28.03	$7.75	$5.91	$0.00	$41.69
TEAMSTERS LOCAL 25b						
RECLAIMERS	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work)	04/01/2011	$24.24	$8.67	$15.51	$0.00	$48.42
CARPENTERS -ZONE 2 (Residential Wood)						
RESIDENTIAL WOOD FRAME CARPENTER **	05/01/2011	$24.24	$6.34	$6.23	$0.00	$36.81

** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. *CARPENTERS -ZONE 2 (Residential Wood)*

As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.

Apprentice - *CARPENTER (Residential Wood Frame) - Zone 2*

Effective Date - 05/01/2011

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$14.54	$6.34	$0.00	$0.00	$20.88
2	60	$14.54	$6.34	$6.23	$0.00	$27.11
3	65	$15.76	$6.34	$6.23	$0.00	$28.33
4	70	$16.97	$6.34	$6.23	$0.00	$29.54
5	75	$18.18	$6.34	$6.23	$0.00	$30.75
6	80	$19.39	$6.34	$6.23	$0.00	$31.96
7	85	$20.60	$6.34	$6.23	$0.00	$33.17
8	90	$21.82	$6.34	$6.23	$0.00	$34.39

Notes:

Apprentice to Journeyworker Ratio:1:5

RIDE-ON MOTORIZED BUGGY OPERATOR	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
LABORERS - ZONE 1	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35

For apprentice rates see "Apprentice- LABORER"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROLLER/SPREADER/MULCHING MACHINE	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg)	08/01/2013	$38.31	$10.50	$10.70	$0.00	$59.51
ROOFERS LOCAL 33	02/01/2014	$39.21	$10.50	$10.70	$0.00	$60.41
	08/01/2014	$40.11	$10.50	$10.70	$0.00	$61.31
	02/01/2015	$41.01	$10.50	$10.70	$0.00	$62.21
	08/01/2015	$41.91	$10.50	$10.70	$0.00	$63.11
	02/01/2016	$42.81	$10.50	$10.70	$0.00	$64.01

Apprentice - *ROOFER - Local 33*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.16	$10.50	$3.38	$0.00	$33.04
2	60	$22.99	$10.50	$10.70	$0.00	$44.19
3	65	$24.90	$10.50	$10.70	$0.00	$46.10
4	75	$28.73	$10.50	$10.70	$0.00	$49.93
5	85	$32.56	$10.50	$10.70	$0.00	$53.76

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$19.61	$10.50	$3.38	$0.00	$33.49
2	60	$23.53	$10.50	$10.70	$0.00	$44.73
3	65	$25.49	$10.50	$10.70	$0.00	$46.69
4	75	$29.41	$10.50	$10.70	$0.00	$50.61
5	85	$33.33	$10.50	$10.70	$0.00	$54.53

Notes: ** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.

Apprentice to Journeyworker Ratio:**

ROOFER SLATE / TILE / PRECAST CONCRETE	08/01/2013	$38.56	$10.50	$10.70	$0.00	$59.76
ROOFERS LOCAL 33	02/01/2014	$39.46	$10.50	$10.70	$0.00	$60.66
	08/01/2014	$40.36	$10.50	$10.70	$0.00	$61.56
	02/01/2015	$41.26	$10.50	$10.70	$0.00	$62.46
	08/01/2015	$42.16	$10.50	$10.70	$0.00	$63.36
	02/01/2016	$43.06	$10.50	$10.70	$0.00	$64.26

For apprentice rates see "Apprentice- ROOFER"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
SHEETMETAL WORKER *SHEETMETAL WORKERS LOCAL 17 - A*	09/01/2013	$42.35	$9.82	$19.08	$2.14	$73.39
	02/01/2014	$43.20	$9.82	$19.08	$2.14	$74.24
	08/01/2014	$44.05	$9.82	$19.08	$2.14	$75.09
	02/01/2015	$44.95	$9.82	$19.08	$2.14	$75.99
	08/01/2015	$45.95	$9.82	$19.08	$2.14	$76.99
	02/01/2016	$46.95	$9.82	$19.08	$2.14	$77.99
	08/01/2016	$48.10	$9.82	$19.08	$2.14	$79.14
	02/01/2017	$49.20	$9.82	$19.08	$2.14	$80.24
	08/01/2017	$50.30	$9.82	$19.08	$2.14	$81.34
	02/01/2018	$51.45	$9.82	$19.08	$2.14	$82.49

Apprentice - *SHEET METAL WORKER - Local 17-A*

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$16.94	$9.82	$4.82	$0.00	$31.58
2	40	$16.94	$9.82	$4.82	$0.00	$31.58
3	45	$19.06	$9.82	$8.45	$1.12	$38.45
4	45	$19.06	$9.82	$8.45	$1.12	$38.45
5	50	$21.18	$9.82	$9.24	$1.21	$41.45
6	50	$21.18	$9.82	$9.49	$1.21	$41.70
7	60	$25.41	$9.82	$10.80	$1.38	$47.41
8	65	$27.53	$9.82	$11.59	$1.47	$50.41
9	75	$31.76	$9.82	$13.16	$1.64	$56.38
10	85	$36.00	$9.82	$14.23	$1.80	$61.85

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$17.28	$9.82	$4.82	$0.00	$31.92
2	40	$17.28	$9.82	$4.82	$0.00	$31.92
3	45	$19.44	$9.82	$8.45	$1.12	$38.83
4	45	$19.44	$9.82	$8.45	$1.12	$38.83
5	50	$21.60	$9.82	$9.24	$1.21	$41.87
6	50	$21.60	$9.82	$9.49	$1.21	$42.12
7	60	$25.92	$9.82	$10.80	$1.38	$47.92
8	65	$28.08	$9.82	$11.59	$1.47	$50.96
9	75	$32.40	$9.82	$13.16	$1.64	$57.02
10	85	$36.72	$9.82	$14.23	$1.80	$62.57

Notes:
Steps are 6 mos.

Apprentice to Journeyworker Ratio:1:4

SIGN ERECTOR *PAINTERS LOCAL 35 - ZONE 2*	06/01/2013	$25.81	$7.07	$7.05	$0.00	$39.93

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *SIGN ERECTOR - Local 35 Zone 2*
Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$12.91	$7.07	$0.00	$0.00	$19.98
2	55	$14.20	$7.07	$2.45	$0.00	$23.72
3	60	$15.49	$7.07	$2.45	$0.00	$25.01
4	65	$16.78	$7.07	$2.45	$0.00	$26.30
5	70	$18.07	$7.07	$7.05	$0.00	$32.19
6	75	$19.36	$7.07	$7.05	$0.00	$33.48
7	80	$20.65	$7.07	$7.05	$0.00	$34.77
8	85	$21.94	$7.07	$7.05	$0.00	$36.06
9	90	$23.23	$7.07	$7.05	$0.00	$37.35

Notes:
Steps are 4 mos.

Apprentice to Journeyworker Ratio:1:1

SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.84	$8.91	$8.00	$0.00	$48.75
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$32.13	$8.91	$8.00	$0.00	$49.04
SPRINKLER FITTER *SPRINKLER FITTERS LOCAL 550 - (Section A)*	03/01/2013	$52.58	$8.42	$12.60	$0.00	$73.60

Apprentice - *SPRINKLER FITTER - Local 550*
Effective Date - 03/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	$18.40	$8.42	$8.00	$0.00	$34.82
2	40	$21.03	$8.42	$8.00	$0.00	$37.45
3	45	$23.66	$8.42	$8.00	$0.00	$40.08
4	50	$26.29	$8.42	$8.00	$0.00	$42.71
5	55	$28.92	$8.42	$8.00	$0.00	$45.34
6	60	$31.55	$8.42	$8.00	$0.00	$47.97
7	65	$34.18	$8.42	$8.00	$0.00	$50.60
8	70	$36.81	$8.42	$8.00	$0.00	$53.23
9	75	$39.44	$8.42	$8.00	$0.00	$55.86
10	80	$42.06	$8.42	$8.00	$0.00	$58.48

Notes:
Steps are 850 hours

Apprentice to Journeyworker Ratio:1:1

STEAM BOILER OPERATOR *OPERATING ENGINEERS LOCAL 4*	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TELECOMMUNICATION TECHNICIAN	09/01/2013	$32.97	$13.00	$12.77	$0.00	$58.74
ELECTRICIANS LOCAL 103	03/01/2014	$33.44	$13.00	$13.03	$0.00	$59.47
	09/01/2014	$33.84	$13.00	$13.05	$0.00	$59.89
	03/01/2015	$34.38	$13.00	$13.06	$0.00	$60.44
	09/01/2015	$35.10	$13.00	$13.08	$0.00	$61.18
	03/01/2016	$35.81	$13.00	$13.10	$0.00	$61.91

Apprentice - *TELECOMMUNICATION TECHNICIAN - Local 103*

Effective Date - 09/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.19	$13.00	$0.40	$0.00	$26.59
2	40	$13.19	$13.00	$0.40	$0.00	$26.59
3	45	$14.84	$13.00	$10.04	$0.00	$37.88
4	45	$14.84	$13.00	$10.04	$0.00	$37.88
5	50	$16.49	$13.00	$10.29	$0.00	$39.78
6	55	$18.13	$13.00	$10.53	$0.00	$41.66
7	60	$19.78	$13.00	$10.78	$0.00	$43.56
8	65	$21.43	$13.00	$11.03	$0.00	$45.46
9	70	$23.08	$13.00	$11.28	$0.00	$47.36
10	75	$24.73	$13.00	$11.53	$0.00	$49.26

Effective Date - 03/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	$13.38	$13.00	$0.40	$0.00	$26.78
2	40	$13.38	$13.00	$0.40	$0.00	$26.78
3	45	$15.05	$13.00	$10.29	$0.00	$38.34
4	45	$15.05	$13.00	$10.29	$0.00	$38.34
5	50	$16.72	$13.00	$10.54	$0.00	$40.26
6	55	$18.39	$13.00	$10.79	$0.00	$42.18
7	60	$20.06	$13.00	$11.04	$0.00	$44.10
8	65	$21.74	$13.00	$11.29	$0.00	$46.03
9	70	$23.41	$13.00	$11.54	$0.00	$47.95
10	75	$25.08	$13.00	$11.79	$0.00	$49.87

Notes:

Apprentice to Journeyworker Ratio:1:1

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TERRAZZO FINISHERS *BRICKLAYERS LOCAL 3 - MARBLE & TILE*	08/01/2013	$47.00	$10.18	$18.15	$0.00	$75.33
	02/01/2014	$47.56	$10.18	$18.15	$0.00	$75.89
	08/01/2014	$48.46	$10.18	$18.22	$0.00	$76.86
	02/01/2015	$49.02	$10.18	$18.22	$0.00	$77.42
	08/01/2015	$49.92	$10.18	$18.29	$0.00	$78.39
	02/01/2016	$50.49	$10.18	$18.29	$0.00	$78.96
	08/01/2016	$51.39	$10.18	$18.37	$0.00	$79.94
	02/01/2017	$51.96	$10.18	$18.37	$0.00	$80.51

Apprentice - *TERRAZZO FINISHER - Local 3 Marble & Tile*

Effective Date - 08/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.50	$10.18	$18.15	$0.00	$51.83
2	60	$28.20	$10.18	$18.15	$0.00	$56.53
3	70	$32.90	$10.18	$18.15	$0.00	$61.23
4	80	$37.60	$10.18	$18.15	$0.00	$65.93
5	90	$42.30	$10.18	$18.15	$0.00	$70.63

Effective Date - 02/01/2014

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	$23.78	$10.18	$18.15	$0.00	$52.11
2	60	$28.54	$10.18	$18.15	$0.00	$56.87
3	70	$33.29	$10.18	$18.15	$0.00	$61.62
4	80	$38.05	$10.18	$18.15	$0.00	$66.38
5	90	$42.80	$10.18	$18.15	$0.00	$71.13

Notes:

Apprentice to Journeyworker Ratio: 1:3

TEST BORING DRILLER *LABORERS - FOUNDATION AND MARINE*	06/01/2013	$34.45	$7.10	$12.60	$0.00	$54.15
	12/01/2013	$35.20	$7.10	$12.60	$0.00	$54.90
	06/01/2014	$35.95	$7.10	$12.60	$0.00	$55.65
	12/01/2014	$36.70	$7.10	$12.60	$0.00	$56.40
	06/01/2015	$37.45	$7.10	$12.60	$0.00	$57.15
	12/01/2015	$38.20	$7.10	$12.60	$0.00	$57.90
	06/01/2016	$38.95	$7.10	$12.60	$0.00	$58.65
	12/01/2016	$39.95	$7.10	$12.60	$0.00	$59.65

For apprentice rates see "Apprentice- LABORER"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER	06/01/2013	$33.17	$7.10	$12.60	$0.00	$52.87
LABORERS - FOUNDATION AND MARINE	12/01/2013	$33.92	$7.10	$12.60	$0.00	$53.62
	06/01/2014	$34.67	$7.10	$12.60	$0.00	$54.37
	12/01/2014	$35.42	$7.10	$12.60	$0.00	$55.12
	06/01/2015	$36.17	$7.10	$12.60	$0.00	$55.87
	12/01/2015	$36.92	$7.10	$12.60	$0.00	$56.62
	06/01/2016	$37.67	$7.10	$12.60	$0.00	$57.37
	12/01/2016	$38.67	$7.10	$12.60	$0.00	$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER	06/01/2013	$33.05	$7.10	$12.60	$0.00	$52.75
LABORERS - FOUNDATION AND MARINE	12/01/2013	$33.80	$7.10	$12.60	$0.00	$53.50
	06/01/2014	$34.55	$7.10	$12.60	$0.00	$54.25
	12/01/2014	$35.30	$7.10	$12.60	$0.00	$55.00
	06/01/2015	$36.05	$7.10	$12.60	$0.00	$55.75
	12/01/2015	$36.80	$7.10	$12.60	$0.00	$56.50
	06/01/2016	$37.55	$7.10	$12.60	$0.00	$57.25
	12/01/2016	$38.55	$7.10	$12.60	$0.00	$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS	06/01/2013	$39.96	$10.00	$13.55	$0.00	$63.51
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$13.55	$0.00	$64.29
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT	12/01/2012	$32.42	$9.07	$8.00	$0.00	$49.49
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A						
TUNNEL WORK - COMPRESSED AIR	06/01/2013	$45.33	$7.10	$13.00	$0.00	$65.43
LABORERS (COMPRESSED AIR)	12/01/2013	$46.08	$7.10	$13.00	$0.00	$66.18
	06/01/2014	$46.83	$7.10	$13.00	$0.00	$66.93
	12/01/2014	$47.58	$7.10	$13.00	$0.00	$67.68
	06/01/2015	$48.33	$7.10	$13.00	$0.00	$68.43
	12/01/2015	$49.08	$7.10	$13.00	$0.00	$69.18
	06/01/2016	$49.83	$7.10	$13.00	$0.00	$69.93
	12/01/2016	$50.83	$7.10	$13.00	$0.00	$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	06/01/2013	$47.33	$7.10	$13.00	$0.00	$67.43
LABORERS (COMPRESSED AIR)	12/01/2013	$48.08	$7.10	$13.00	$0.00	$68.18
	06/01/2014	$48.83	$7.10	$13.00	$0.00	$68.93
	12/01/2014	$49.58	$7.10	$13.00	$0.00	$69.68
	06/01/2015	$50.33	$7.10	$13.00	$0.00	$70.43
	12/01/2015	$51.08	$7.10	$13.00	$0.00	$71.18
	06/01/2016	$51.83	$7.10	$13.00	$0.00	$71.93
	12/01/2016	$52.83	$7.10	$13.00	$0.00	$72.93
For apprentice rates see "Apprentice- LABORER"						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TUNNEL WORK - FREE AIR	06/01/2013	$37.40	$7.10	$13.00	$0.00	$57.50
LABORERS (FREE AIR TUNNEL)	12/01/2013	$38.15	$7.10	$13.00	$0.00	$58.25
	06/01/2014	$38.90	$7.10	$13.00	$0.00	$59.00
	12/01/2014	$39.65	$7.10	$13.00	$0.00	$59.75
	06/01/2015	$40.40	$7.10	$13.00	$0.00	$60.50
	12/01/2015	$41.15	$7.10	$13.00	$0.00	$61.25
	06/01/2016	$41.90	$7.10	$13.00	$0.00	$62.00
	12/01/2016	$42.90	$7.10	$13.00	$0.00	$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE)	06/01/2013	$39.40	$7.10	$13.00	$0.00	$59.50
LABORERS (FREE AIR TUNNEL)	12/01/2013	$40.15	$7.10	$13.00	$0.00	$60.25
	06/01/2014	$40.90	$7.10	$13.00	$0.00	$61.00
	12/01/2014	$41.65	$7.10	$13.00	$0.00	$61.75
	06/01/2015	$42.40	$7.10	$13.00	$0.00	$62.50
	12/01/2015	$43.15	$7.10	$13.00	$0.00	$63.25
	06/01/2016	$43.90	$7.10	$13.00	$0.00	$64.00
	12/01/2016	$44.90	$7.10	$13.00	$0.00	$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL	12/01/2012	$31.84	$8.91	$8.00	$0.00	$48.75
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A						
WAGON DRILL OPERATOR	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
LABORERS - ZONE 1	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR	06/01/2013	$40.34	$10.00	$13.55	$0.00	$63.89
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$13.55	$0.00	$64.67
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER	03/01/2013	$49.31	$9.32	$13.29	$0.00	$71.92
PLUMBERS & GASFITTERS LOCAL 12						
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						
Marine Drilling						
BLASTER	10/01/2005	$27.83	$3.40	$4.50	$0.00	$35.73
MARINE DRILLING						
BOAT CAPTAIN	10/01/2005	$22.97	$3.40	$3.90	$0.00	$30.27
MARINE DRILLING						
BOAT MASTER	10/01/2005	$23.99	$3.40	$4.50	$0.00	$31.89
MARINE DRILLING						
CORE DRILLER	10/01/2005	$21.93	$3.40	$3.30	$0.00	$28.63
MARINE DRILLING						
CORE DRILLER HELPER	10/01/2005	$19.78	$3.40	$3.30	$0.00	$26.48
MARINE DRILLING						
DRILLER	10/01/2005	$27.30	$3.40	$4.50	$0.00	$35.20
MARINE DRILLING						

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ENGINEER *MARINE DRILLING*	10/01/2005	$27.29	$3.40	$4.50	$0.00	$35.19
HELPER *MARINE DRILLING*	10/01/2005	$23.97	$3.40	$3.30	$0.00	$30.67
MACHINIST *MARINE DRILLING*	10/01/2005	$27.03	$3.40	$3.90	$0.00	$34.33
OILER - MARINE DRILLING *MARINE DRILLING*	10/01/2005	$23.97	$3.40	$3.30	$0.00	$30.67
TUG DECKHAND *MARINE DRILLING*	10/01/2005	$19.14	$3.40	$3.30	$0.00	$25.84
WELDER *MARINE DRILLING*	10/01/2005	$27.03	$3.40	$3.90	$0.00	$34.33
Op Eng Marine (Dredging Work)						
BOAT OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$25.29	$5.20	$2.95	$0.00	$33.44
CERTIFIED WELDER *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$26.84	$5.20	$3.25	$0.00	$35.29
CHIEF WELDER/ CHIEF MATE *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
DERRICK / SPIDER / SPILLBARGE OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
DRAG BARGE OPERATOR / WELDER / MATE *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$26.14	$5.20	$2.95	$0.00	$34.29
ENGINEER / ELECTRICIAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
LICENSED BOAT OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
LICENSED TUG OPERATOR OVER 1000HP *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$32.89	$5.20	$3.25	$0.00	$41.34
MAINTENANCE ENGINEER *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
OILER - MARINE DIVISION *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$21.09	$5.20	$2.65	$0.00	$28.94
OPERATOR / LEVERMAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$32.89	$5.20	$3.25	$0.00	$41.34
RODMAN / SCOWMAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$21.09	$5.20	$2.65	$0.00	$28.94
SHOREMAN / DECKHAND *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$21.09	$5.20	$2.65	$0.00	$28.94
Rental of Equipment - East						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.55	$8.91	$0.00	$0.00	$40.46
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.62	$8.91	$0.00	$0.00	$40.53
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.74	$8.91	$0.00	$0.00	$40.65
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$40.34 $41.12	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$50.34 $51.12

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BARCO-TYPE JUMPING TAMPER	06/01/2013	$33.30	$7.10	$12.45	$0.00	$52.85
LABORERS - ZONE 1	12/01/2013	$34.05	$7.10	$12.45	$0.00	$53.60
	06/01/2014	$34.80	$7.10	$12.45	$0.00	$54.35
	12/01/2014	$35.55	$7.10	$12.45	$0.00	$55.10
	06/01/2015	$36.30	$7.10	$12.45	$0.00	$55.85
	12/01/2015	$37.05	$7.10	$12.45	$0.00	$56.60
	06/01/2016	$37.80	$7.10	$12.45	$0.00	$57.35
	12/01/2016	$38.80	$7.10	$12.45	$0.00	$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER	06/01/2013	$33.80	$7.10	$12.45	$0.00	$53.35
LABORERS - ZONE 1	12/01/2013	$34.55	$7.10	$12.45	$0.00	$54.10
	06/01/2014	$35.30	$7.10	$12.45	$0.00	$54.85
	12/01/2014	$36.05	$7.10	$12.45	$0.00	$55.60
	06/01/2015	$36.80	$7.10	$12.45	$0.00	$56.35
	12/01/2015	$37.55	$7.10	$12.45	$0.00	$57.10
	06/01/2016	$38.30	$7.10	$12.45	$0.00	$57.85
	12/01/2016	$39.30	$7.10	$12.45	$0.00	$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER	01/01/2010	$37.70	$6.97	$11.18	$0.00	$55.85
BOILERMAKERS LOCAL 29						

Apprentice - *BOILERMAKER - Local 29*
Effective Date - 01/01/2010

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	$24.51	$6.97	$11.18	$0.00	$42.66
2	65	$24.51	$6.97	$11.18	$0.00	$42.66
3	70	$26.39	$6.97	$11.18	$0.00	$44.54
4	75	$28.28	$6.97	$11.18	$0.00	$46.43
5	80	$30.16	$6.97	$11.18	$0.00	$48.31
6	85	$32.05	$6.97	$11.18	$0.00	$50.20
7	90	$33.93	$6.97	$11.18	$0.00	$52.08
8	95	$35.82	$6.97	$11.18	$0.00	$53.97

Notes:

Apprentice to Journeyworker Ratio:1:5

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2013	$48.06	$10.18	$18.15	$0.00	$76.39
BRICKLAYERS LOCAL 3 (NEWTON)	02/01/2014	$48.62	$10.18	$18.15	$0.00	$76.95
	08/01/2014	$49.52	$10.18	$18.22	$0.00	$77.92
	02/01/2015	$50.08	$10.18	$18.22	$0.00	$78.48
	08/01/2015	$50.98	$10.18	$18.29	$0.00	$79.45
	02/01/2016	$51.55	$10.18	$18.29	$0.00	$80.02
	08/01/2016	$52.45	$10.18	$18.37	$0.00	$81.00
	02/01/2017	$53.02	$10.18	$18.37	$0.00	$81.57

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ENGINEER *MARINE DRILLING*	10/01/2005	$27.29	$3.40	$4.50	$0.00	$35.19
HELPER *MARINE DRILLING*	10/01/2005	$23.97	$3.40	$3.30	$0.00	$30.67
MACHINIST *MARINE DRILLING*	10/01/2005	$27.03	$3.40	$3.90	$0.00	$34.33
OILER - MARINE DRILLING *MARINE DRILLING*	10/01/2005	$23.97	$3.40	$3.30	$0.00	$30.67
TUG DECKHAND *MARINE DRILLING*	10/01/2005	$19.14	$3.40	$3.30	$0.00	$25.84
WELDER *MARINE DRILLING*	10/01/2005	$27.03	$3.40	$3.90	$0.00	$34.33
Op Eng Marine (Dredging Work)						
BOAT OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$25.29	$5.20	$2.95	$0.00	$33.44
CERTIFIED WELDER *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$26.84	$5.20	$3.25	$0.00	$35.29
CHIEF WELDER/ CHIEF MATE *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
DERRICK / SPIDER / SPILLBARGE OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
DRAG BARGE OPERATOR / WELDER / MATE *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$26.14	$5.20	$2.95	$0.00	$34.29
ENGINEER / ELECTRICIAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
LICENSED BOAT OPERATOR *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
LICENSED TUG OPERATOR OVER 1000HP *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$32.89	$5.20	$3.25	$0.00	$41.34
MAINTENANCE ENGINEER *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$28.49	$5.20	$3.25	$0.00	$36.94
OILER - MARINE DIVISION *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$21.09	$5.20	$2.65	$0.00	$28.94
OPERATOR / LEVERMAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$32.89	$5.20	$3.25	$0.00	$41.34
RODMAN / SCOWMAN *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$21.09	$5.20	$2.65	$0.00	$28.94
SHOREMAN / DECKHAND *OPERATING ENGINEERS - MARINE DIVISION*	10/01/2011	$21.09	$5.20	$2.65	$0.00	$28.94
Rental of Equipment - East						
(2 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.55	$8.91	$0.00	$0.00	$40.46
(3 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.62	$8.91	$0.00	$0.00	$40.53
(4 & 5 AXLE) DRIVER - EQUIPMENT *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.74	$8.91	$0.00	$0.00	$40.65
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$40.34 $41.12	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$50.34 $51.12

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
BACKHOE/FRONT-END LOADER	06/01/2013	$40.34	$10.00	$0.00	$0.00	$50.34
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$0.00	$0.00	$51.12
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BULLDOZER/GRADER/SCRAPER	06/01/2013	$39.96	$10.00	$0.00	$0.00	$49.96
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$0.00	$0.00	$50.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES	06/01/2013	$41.34	$10.00	$0.00	$0.00	$51.34
OPERATING ENGINEERS LOCAL 4	12/01/2013	$42.12	$10.00	$0.00	$0.00	$52.12
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR	06/01/2013	$28.19	$10.00	$0.00	$0.00	$38.19
OPERATING ENGINEERS LOCAL 4	12/01/2013	$28.74	$10.00	$0.00	$0.00	$38.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER	08/01/2013	$56.14	$9.80	$0.00	$0.00	$65.94
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2014	$58.24	$9.80	$0.00	$0.00	$68.04
	08/01/2015	$60.34	$9.80	$0.00	$0.00	$70.14
DIVER TENDER	08/01/2013	$40.10	$9.80	$0.00	$0.00	$49.90
PILE DRIVER LOCAL 56 (ZONE 1)	08/01/2014	$41.60	$9.80	$0.00	$0.00	$51.40
	08/01/2015	$43.10	$9.80	$0.00	$0.00	$52.90
FLAGGER & SIGNALER	06/01/2013	$20.50	$7.10	$0.00	$0.00	$27.60
LABORERS - ZONE 1	12/01/2013	$20.50	$7.10	$0.00	$0.00	$27.60
	06/01/2014	$20.50	$7.10	$0.00	$0.00	$27.60
	12/01/2014	$20.50	$7.10	$0.00	$0.00	$27.60
	06/01/2015	$20.50	$7.10	$0.00	$0.00	$27.60
	12/01/2015	$20.50	$7.10	$0.00	$0.00	$27.60
	06/01/2016	$20.50	$7.10	$0.00	$0.00	$27.60
	12/01/2016	$20.50	$7.10	$0.00	$0.00	$27.60
For apprentice rates see "Apprentice- LABORER"						
FORK LIFT/CHERRY PICKER	06/01/2013	$40.34	$10.00	$0.00	$0.00	$50.34
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$0.00	$0.00	$51.12
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
GENERATOR/LIGHTING PLANT/HEATERS	06/01/2013	$28.19	$10.00	$0.00	$0.00	$38.19
OPERATING ENGINEERS LOCAL 4	12/01/2013	$28.74	$10.00	$0.00	$0.00	$38.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
HOISTING ENGINEER/CRANES/GRADALLS	06/01/2013	$40.34	$10.00	$0.00	$0.00	$50.34
OPERATING ENGINEERS LOCAL 4	12/01/2013	$41.12	$10.00	$0.00	$0.00	$51.12

Issue Date: 09/18/2013 Wage Request Number: 20130918-054 Page 37 of 40

City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *OPERATING ENGINEERS - Local 4*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.19	$10.00	$0.00	$0.00	$32.19
2	60	$24.20	$10.00	$0.00	$0.00	$34.20
3	65	$26.22	$10.00	$0.00	$0.00	$36.22
4	70	$28.24	$10.00	$0.00	$0.00	$38.24
5	75	$30.26	$10.00	$0.00	$0.00	$40.26
6	80	$32.27	$10.00	$0.00	$0.00	$42.27
7	85	$34.29	$10.00	$0.00	$0.00	$44.29
8	90	$36.31	$10.00	$0.00	$0.00	$46.31

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	$22.62	$10.00	$0.00	$0.00	$32.62
2	60	$24.67	$10.00	$0.00	$0.00	$34.67
3	65	$26.73	$10.00	$0.00	$0.00	$36.73
4	70	$28.78	$10.00	$0.00	$0.00	$38.78
5	75	$30.84	$10.00	$0.00	$0.00	$40.84
6	80	$32.90	$10.00	$0.00	$0.00	$42.90
7	85	$34.95	$10.00	$0.00	$0.00	$44.95
8	90	$37.01	$10.00	$0.00	$0.00	$47.01

Notes:

Apprentice to Journeyworker Ratio:1:6

LABORER *LABORERS - ZONE 1*	06/01/2013	$33.05	$7.10	$0.00	$0.00	$40.15
	12/01/2013	$33.80	$7.10	$0.00	$0.00	$40.90
	06/01/2014	$34.55	$7.10	$0.00	$0.00	$41.65
	12/01/2014	$35.30	$7.10	$0.00	$0.00	$42.40
	06/01/2015	$36.05	$7.10	$0.00	$0.00	$43.15
	12/01/2015	$36.80	$7.10	$0.00	$0.00	$43.90
	06/01/2016	$37.55	$7.10	$0.00	$0.00	$44.65
	12/01/2016	$38.55	$7.10	$0.00	$0.00	$45.65

Issue Date: 09/18/2013 Wage Request Number: 20130918-054 Page 38 of 40

City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate

Apprentice - *LABORER - Zone I*

Effective Date - 06/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$19.83	$7.10	$0.00	$0.00	$26.93
2	70	$23.14	$7.10	$0.00	$0.00	$30.24
3	80	$26.44	$7.10	$0.00	$0.00	$33.54
4	90	$29.75	$7.10	$0.00	$0.00	$36.85

Effective Date - 12/01/2013

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	$20.28	$7.10	$0.00	$0.00	$27.38
2	70	$23.66	$7.10	$0.00	$0.00	$30.76
3	80	$27.04	$7.10	$0.00	$0.00	$34.14
4	90	$30.42	$7.10	$0.00	$0.00	$37.52

Notes:

Apprentice to Journeyworker Ratio:1:5

OILER (OTHER THAN TRUCK CRANES,GRADALLS) *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$21.17 $21.59	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$31.17 $31.59
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$24.57 $25.06	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$34.57 $35.06
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$39.96 $40.74	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$49.96 $50.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PANEL & PICKUP TRUCKS DRIVER *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.38	$8.91	$0.00	$0.00	$40.29
POWER SHOVEL/DERRICK/TRENCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$40.34 $41.12	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$50.34 $51.12
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (CONCRETE) *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$40.34 $41.12	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$50.34 $51.12
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PUMP OPERATOR (DEWATERING, OTHER) *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$28.19 $28.74	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$38.19 $38.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
ROLLER/SPREADER/MULCHING MACHINE *OPERATING ENGINEERS LOCAL 4*	06/01/2013 12/01/2013	$39.96 $40.74	$10.00 $10.00	$0.00 $0.00	$0.00 $0.00	$49.96 $50.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
SPECIALIZED EARTH MOVING EQUIP < 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$31.84	$8.91	$0.00	$0.00	$40.75
SPECIALIZED EARTH MOVING EQUIP > 35 TONS *TEAMSTERS JOINT COUNCIL NO. 10 ZONE A*	12/01/2012	$32.13	$8.91	$0.00	$0.00	$41.04

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City of Newton Prevailing Wage - cont.

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TRACTORS/PORTABLE STEAM GENERATORS	06/01/2013	$39.96	$10.00	$0.00	$0.00	$49.96
OPERATING ENGINEERS LOCAL 4	12/01/2013	$40.74	$10.00	$0.00	$0.00	$50.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT	12/01/2012	$32.42	$9.07	$0.00	$0.00	$41.49
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A						
TREE TRIMMER	01/29/2012	$17.18	$3.37	$0.00	$0.00	$20.55
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
This classification applies only to the trimming of branches on and around utility lines.						
TREE TRIMMER GROUNDMAN	01/29/2012	$15.15	$3.37	$0.00	$0.00	$18.52
OUTSIDE ELECTRICAL WORKERS - EAST LOCAL 104						
This classification applies only to the trimming of branches on and around utility lines.						
VAC-HAUL/CATCH BASIN CLEANING	12/01/2012	$31.84	$8.91	$0.00	$0.00	$40.75
TEAMSTERS JOINT COUNCIL NO. 10 ZONE A						

Additional Apprentice Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentice ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours) unless otherwise specified.

* Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof.
** Multiple ratios are listed in the comment field.
*** APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.
**** APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

Issue Date: 09/18/2013 Wage Request Number: 20130918-054 Page 40 of 40

PP. City of Newton IHP Contract

Contract #L-5991

AGREEMENT BY AND BETWEEN THE
CITY OF NEWTON, MASSACHUSETTS AND
IRON HORSE PRESERVATION SOCIETY, INC.
REGARDING A RAILS TO TRAILS PROJECT

THIS AGREEMENT is made this 23rd day of October, 2013, by and between the City of Newton with a place of business at 1000 Commonwealth Avenue, Newton, Massachusetts 02459 acting by and through its Mayor, but without personal liability to him, hereinafter called the CITY, and IRON HORSE PRESERVATION SOCIETY, INC., a Nevada corporation, registered to do business in Massachusetts, with a principal address of 2971 Blue Grouse Drive, Reno Nevada 89509 and with a registered agent in the Commonwealth, namely Dan Keen at 1900 West Park Drive, Suite 280A, Westborough, Massachusetts 01581, hereinafter called the CONTRACTOR.

WITNESSETH, for the consideration hereinafter set forth, the parties hereto agree as follows:

ARTICLE 1 - ENGAGEMENT OF CONTRACTOR

The CITY hereby engages the CONTRACTOR, and the CONTRACTOR hereby accepts the engagement to perform certain work hereinafter described as: "PERFORMANCE OF A RAILS TO TRAILS PROJECT FOR THE CITY," hereinafter called the PROJECT.

ARTICLE 2 - SCOPE OF WORK

The terms of Exhibit A, "Scope of Work for Rails to Trails Project" (attached hereto) are hereby incorporated as part of this AGREEMENT.

ARTICLE 3 - RESPONSIBILITIES OF THE CITY

The CITY, without cost to the CONTRACTOR, shall do the following in a timely manner so as not to delay the services of the CONTRACTOR:

3.1 Designate in writing a person to act as the CITY's representative with respect to work to be performed under this AGREEMENT, such person to have complete authority to transmit instructions, receive information, interpret and define the CITY's policies and decisions with respect to materials, equipment elements and systems pertinent to the work covered by this AGREEMENT.

3.2 Through its officials and other employees who have knowledge of pertinent conditions, confer with the CONTRACTOR regarding both general and special considerations relating to the PROJECT.

3.3 Cooperate with and assist the CONTRACTOR in all additional work that is mutually agreed upon.

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City of Newton IHP Contract - cont.

Contract #L-5991

ARTICLE 4 - TIME OF PROJECT

4.1 The term of this AGREEMENT shall run from the date of Notice to Proceed for 180 consecutive calendar days unless extended by the CITY.

4.2 The CONTRACTOR will initiate work under this AGREEMENT only in accordance with the CITY's Notice to Proceed which shall be provided to the CONTRACTOR in writing.

ARTICLE 5 – COMPENSATION TO CONTRACTOR

5.1 The CONTRACTOR's sole compensation for all work on the PROJECT shall be the salvage value of the railroad track removed by the CONTRACTOR in accordance with the provisions of this AGREEMENT. The CITY makes no representations as to the salvage value of the railroad track to be removed and shall have no obligation to pay the CONTRACTOR any amount for the work performed under this AGREEMENT.

5.2 The CONTRACTOR shall not be reimbursed for outside costs such as subcontractor services, telephone or other out-of-pocket expenses unless specifically authorized by the CITY. The CITY shall not reimburse the CONTRACTOR for travel expenses under this AGREEMENT.

ARTICLE 6 – INSURANCE AND INDEMNIFICATION

6.1 Commercial General Liability:

The CONTRACTOR shall secure and maintain, for the duration of this AGREEMENT, including any supplements thereto, the following Commercial General Liability Insurance policy or policies at no cost to the CITY:

Personal Injury	$1,000,000.00 each occurrence
	$3,000,000.00 aggregate
Property Damage	$1,000,000.00 each occurrence
	$3,000,000.00 aggregate

In addition to the above-mentioned coverages, the CONTRACTOR shall carry a minimum of Two Million ($2,000,000.00) Dollars Umbrella Liability policy covering all work performed for the duration of the PROJECT.

The City of Newton and the Massachusetts Bay Transportation Authority (MBTA) shall be named as an additional insured party on the Commercial Liability policy and the Umbrella Liability policy.

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City of Newton IHP Contract - cont.

Contract #L-5991

6.2 Vehicle Liability:

The CONTRACTOR shall secure and maintain, for the duration of the PROJECT, including any supplements thereto, Vehicle Liability Insurance covering the operation of all motor vehicles, including those hired or borrowed, used by the CONTRACTOR in connection with this PROJECT, in the following amounts:

Personal Injury	$500,000.00 each person
	$1,000,000.00 aggregate
Property Damage	$300,000.00

6.3 Worker's Compensation Insurance:

The CONTRACTOR shall secure and maintain, for the duration of the PROJECT, including any supplements thereto, a Worker's Compensation Insurance policy in amounts required by Massachusetts law at no cost to the CITY.

6.4 Additional Insurance Requirements:

The insurance coverages required hereunder shall be placed with insurance companies licensed by the Massachusetts Division of Insurance to do business in the Commonwealth of Massachusetts and having a Best's rating of B+ or better. The CITY and the MBTA shall be certificate holders on all policies such that the CITY and the MBTA shall be notified no less than thirty (30) days prior to the date of cancellation or expiration of such policy(ies). CONTRACTOR shall provide the CITY and the MBTA with certificates of insurance evidencing that the required insurance coverages are in place prior to the commencement the PROJECT.

6.5 Indemnification:

CONTRATOR shall take all responsibility for the work performed hereunder and take all precautions for preventing injuries to persons and property. CONTRACTOR shall indemnify, hold harmless, and defend the CITY, its officers, employees, servants and agents from and against all claims, damage, losses and expenses including attorney's fees, arising out of the negligent acts, errors or omissions of the CONTRACTOR, any of CONTRACTOR'S subcontractors or subconsultants, anyone directly or indirectly employed by any of them or anyone for whose acts the CONTRACTOR may be liable, regardless of whether or not caused in part by a party indemnified hereunder.

ARTICLE 7 - LITIGATION AND EXTENSION OF SERVICES

7.1 Litigation and Additional Work:

In the event that the CONTRACTOR is required to prepare for or appear in any litigation in behalf of the CITY or is to make investigations or reports on matters not covered by this AGREEMENT, or is to perform other services not included herein, additional compensation

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City of Newton IHP Contract - cont.

Contract #L-5991

shall be paid the CONTRACTOR as is mutually agreed upon.

7.2 Changes in Work:

The CITY, from time to time, may require changes or extensions in the Scope of Work to be performed hereunder. Such changes or extensions, including any change in compensation, to be mutually agreed upon by and between the CITY and the CONTRACTOR, shall be incorporated into written amendments to this AGREEMENT. No agreement or understanding to modify this AGREEMENT shall be binding upon the CITY unless in writing and signed by the CITY.

ARTICLE 8 - DOCUMENTS

All documents, reports, drawings, designs, specifications, notes and other work developed in the performance of this AGREEMENT (hereinafter called "DOCUMENTS") prepared under this AGREEMENT shall be the property of the CITY and at the termination of the CONTRACTOR's services, shall be promptly turned over to the CITY.

The CITY shall have unlimited rights, for the benefit of the CITY, in the DOCUMENTS, including the right to use the same to complete or renovate the PROJECT for which they were prepared by the CONTRACTOR without additional cost to the CITY; and with respect thereto, the CONTRACTOR agrees and hereby grants to the CITY an irrevocable royalty-free license to all such data which may be covered by the CONTRACTOR's copyright and to all designs as to which the CONTRACTOR may assert any rights or establish any claims under any patent or copyright laws. The CONTRACTOR shall not be responsible for changes made in the DOCUMENTS without the CONTRACTOR's authorization, nor the CITY's use of the DOCUMENTS if such use does not involve the services of the CONTRACTOR pursuant to this AGREEMENT.

ARTICLE 9 - TERMINATION

9.1 The obligation to provide further services under this AGREEMENT may be terminated by either party upon thirty (30) days written notice in the event of substantial failure by the other party to perform in accordance with the terms hereof through no fault of the terminating party.

9.2 By written notice to the CONTRACTOR, the CITY may terminate this AGREEMENT in whole or in part at any time either for the CITY's convenience or because of the failure of the CONTRACTOR to fulfill its obligations hereunder. If any such termination shall occur without the fault of the CONTRACTOR, all compensation due to the CONTRACTOR up to the date of termination, in accordance with all terms under this AGREEMENT, shall be retained by the CONTRACTOR. If any such termination shall occur due to the failure of the CONTRACTOR, no compensation shall be due to the CONTRACTOR following such failure.

9.3 If this AGREEMENT is terminated due to the failure of the CONTRACTOR to fulfill its obligations hereunder, the CITY may take over the work and prosecute the same to completion by contract or otherwise. In such case, the CONTRACTOR shall be liable to the CITY for any

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City of Newton IHP Contract - cont.

Contract #L-5991

additional cost occasioned to the CITY thereby. These rights and remedies of the CITY are in addition to any rights and remedies provided by law or under this AGREEMENT.

ARTICLE 10 - GENERAL PROVISIONS

10.1 Warranty:

CONTRACTOR warrants that the work performed hereunder will be free from defects not inherent in the quality required or permitted and that the work will conform to the requirements of this AGREEMENT.

10.2 General Guaranty:

If at any time during the period of one (1) year from the date of completion of the PROJECT to be performed by the CONTRACTOR hereunder, any part of the work shall in the reasonable determination of the CITY require repair or replacement due to the fact that it is defective or does not conform to the requirements of this AGREEMENT, the CITY shall notify the CONTRACTOR, in writing, to make the required repairs or replacement. If the CONTRACTOR shall neglect to commence the required repairs or replacement to the satisfaction of the CITY within thirty (30) days from the date of notice by the CITY, then the CITY may employ other entities to make such repairs or replacement. The CONTRACTOR agrees, upon demand, to pay the CITY all amounts reasonably expended by the CITY to make such repairs or replacement.

10.3 Permits:

The CONTRACTOR shall secure and the CITY shall pay for all permits required for the performance of the work hereunder.

10.4 Disputes:

If at any time during the term of this AGREEMENT disputes arise between the CONTRACTOR

and the CITY, either party may request resolution of the dispute through any alternative dispute resolution procedure that the parties can agree upon, including arbitration. However, the CITY does not waive any legal remedies it may have or waive any defense to service of process.

10.5 Precedence:

The terms set out in this AGREEMENT shall control and take precedence over any inconsistent or contradictory provisions contained in any proposal, contract, purchase order, requisition, notice to proceed, or like document regarding the CONTRACTOR'S services.

10.6 The CONTRACTOR shall not assign any interest in this AGREEMENT and shall not transfer any interest in the same without the prior written consent of the CITY.

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City of Newton IHP Contract - cont.

Contract #L-5991

10.7 The CONTRACTOR represents that it has secured, at its own expense, all personnel required for the performance of the PROJECT. All personnel engaged in the PROJECT shall be fully qualified to perform the required work.

10.8 Unless expressly authorized in the Scope of Work none of the work or services covered by this AGREEMENT, except services relating to document reproduction and other minor out-of-pocket expenses, shall be subcontracted without the prior written approval of the CITY.

10.9 Severability:

If any of the terms hereof shall be finally determined to be invalid or unenforceable in whole or part, the remaining provisions hereof shall remain in full force and effect, and be binding upon the parties hereto. The parties agree to reform this AGREEMENT to replace any such invalid or unenforceable provision with a valid enforceable provision that comes as close as possible to the intention of the stricken provision.

10.10 Notices:

Any notice required under this AGREEMENT to be given by the CITY to the CONTRACTOR, or by the CONTRACTOR to the CITY shall be deemed to have been so given, whether or not received, if mailed by prepaid postage by, respectively, the CITY to the CONTRACTOR at: c/o Dan Keen, Registered Agent, 1900 West Park Drive, Suite 280A, Westborough, Massachusetts 01581, or the CONTRACTOR to the CITY at: the City of Newton Engineering Division, 1000 Commonwealth Avenue, Newton, Massachusetts 02459.

10.11 Prevailing Wage:

Wage rate requirements under this AGREEMENT, including wage rate schedules are attached hereto and incorporated herein as Exhibit B.

10.12 CONTRACTOR shall comply with all applicable provisions of the Lease Agreement between the CITY and the MBTA a copy of which is attached hereto as Exhibit C.

10.13 CONTRACTOR shall follow the provisions of Best Management Practices (BMP's) for Controlling Exposure to Soils During the Development of Rail Trails promulgated by the Massachusetts Department of Environmental Protection in March 2004, a copy of which is attached hereto and incorporated herein as Exhibit D.

10.14 CONTRACTOR's labor force shall work in harmony with other elements of labor that may be employed at or near the Project site.

10.15 Notice is hereby given that the City of Newton Minority/Women Business Enterprise plan dated December 1999 is applicable to all City of newton Contracts for materials and supplies. A copy of this plan may be obtained from the City of Newton Purchasing Department.

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City of Newton IHP Contract - cont.

Contract #L-5991

10.16 Purchases made by the CITY are exempt from Federal excise taxes. Tax exemption certificates will be furnished upon request.

10.17 All applicable federal, state and local laws, regulations and ordinances are incorporated herein by reference and the CONTRACTOR agrees to comply with the same.

10.18 During the term of the AGREEMENT, CONTRACTOR shall not discriminate on the grounds of race, color, religious creed, national origin, age or sex in employment practices , in the selection of subcontractors, if any, or in the procurement of materials and supply of equipment.

10.19 Contractor is prohibited from placing a lien on the CITY's property. This prohibition shall apply to all subcontractors and material suppliers.

10.20 This AGREEMENT shall be governed by and interpreted in accordance with the laws of the Commonwealth of Massachusetts.

IN WITNESS WHEREOF, the parties hereto have executed this AGREEMENT the day and year first above written.

CITY OF NEWTON

By: 10/22/13
David F. Turocy Date
Commissioner of Public Works

IRON HORSE PRESERVATION SOCIETY, INC.

By: 10/14/13
Joseph Hattrup, Date
Its President

APPROVED AS TO LEGAL
FORM AND CHARACTER

10/23/13
City Solicitor Date

AGREEMENT APPROVED:

By:
Setti D. Warren, Mayor, Date 10-23-13
or designee COO

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City of Newton IHP Contract - cont.

Contract #L-5991

CERTIFICATE OF AUTHORITY – CORPORATE

☐ I hereby certify that I am the Clerk/Secretary of:

IRON HORSE PRESERVATION SOCIETY corporation; and that
(insert *name* of *corporation*)

☐ is the duly elected JOSEPH HATTRUP
(insert *name* of officer who signed contract)

PRESIDENT of said corporation; and that
(insert *title* of officer)

3. on 10/14/2013 at a duly authorized meeting of the Board of
(insert date of meeting)*

Directors of said corporation, at which all the Directors were present or waived notice, it was voted that

JOSEPH HATTRUP - PRESIDENT of this corporation
(insert name and title of officer) (NOTE: Should be same as No. 2 above)

be and hereby is authorized to execute contracts and bonds in the name and on behalf of said corporation, and affix its Corporate Seal thereto, and such execution of any contract of obligation in this corporation's name on its behalf, with or without the Corporate Seal, shall be valid and binding upon this corporation; and that

☐ the above vote has not been amended or rescinded and remains in full force and effect as of the date set forth below.

ATTEST: _____
(Signature of Clerk or Secretary)

Name: SUSAN D. BRITTON
(Please print or type name of Clerk/Secretary)

DATE: 10/14/2013
(insert date Certificate signed by Clerk or Secretary)**

*This date must be ***on or before*** the date that the corporate officer signs the contract.

This date must be ***on or after* the date that the corporate officer signs the contract.

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City of Newton IHP Contract - cont.

Contract #L-5991

ATTESTATION

Pursuant to G.L. c. 62C, § 49A, the undersigned acting on behalf of the Contractor, certifies under the penalties of perjury that, to the best of the undersign's knowledge and belief, the Contractor is in compliance with all laws of the Commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting child support.*

_____ 20-3610297

Signature of Individual * Contractor's Social Security Number

or Corporate Contractor (Mandatory) (Voluntary) Identification Number-

By: _____ Date: 10/14/2013

Corporate Officer
(Mandatory, if applicable)

- The provision in the Attestation relating to child support applies only when the Contractor is an individual.

** Approval of a contract or other agreement will not be granted unless the applicant signs this certification clause.

*** Your social security number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Providers who fail to correct their non-filing or delinquency will not have a contract or other agreement issued, renewed, or extended. This request is made under the authority of GL c. 62C, § 49A

9

City of Newton IHP Contract - cont.

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 10/18/2013

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Wells Fargo Ins Svs USA IncCADOI0D08408
131 Mill Street

Grass Valley CA 95945-4701

CONTACT NAME:
PHONE (A/C, No, Ext): (530) 273-7213 FAX (A/C, No): (530) 273-8114
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A : Essex Insurance Company	39020
INSURER B :	
INSURER C :	
INSURER D :	
INSURER E :	
INSURER F :	

INSURED
Iron Horse Preservation Society

5265 Vista Blvd., Ste. F3-270

Sparks NV 89436
(775) 233-6588

COVERAGES CERTIFICATE NUMBER: Cert ID 411123 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC	Y		3DP3765	5/19/2013	5/19/2014	EACH OCCURRENCE	$ 3,000,000
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$ 50,000
							MED EXP (Any one person)	$ 1,000
							PERSONAL & ADV INJURY	$ 3,000,000
							GENERAL AGGREGATE	$ 5,000,000
							PRODUCTS - COMP/OP AGG	$ 5,000,000
								$
	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS SCHEDULED AUTOS HIRED AUTOS NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident)	$
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $						EACH OCCURRENCE	$
							AGGREGATE	$
								$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y / N (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N / A					WC STATU-TORY LIMITS OTH-ER	
							E.L. EACH ACCIDENT	$
							E.L. DISEASE - EA EMPLOYEE	$
							E.L. DISEASE - POLICY LIMIT	$
								$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

City of Newton, MA
City Hall
1000 Commonwealth Ave.

Newton Centre MA 02459

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Harry Graff

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Page 1 of 1

City of Newton IHP Contract - cont.

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CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 10/15/2013

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PRODUCER
Wells Fargo Insurance Services USA, Inc.
P.O. Box 1106

Grass Valley CA 95945

CONTACT NAME:
PHONE (A/C, No, Ext): (530) 273-7213 FAX (A/C, No): (530) 273-8114
E-MAIL ADDRESS: lynn.best@wellsfargo.com

INSURER(S) AFFORDING COVERAGE	NAIC #
INSURER A: Essex Insurance Company	
INSURER B: Continental Casualty Ins.	
INSURER C:	
INSURER D:	
INSURER E:	
INSURER F:	

INSURED
Iron Horse Preservation Society

5245 Vista Blvd. Suite F3-270

Sparks NV 89436

COVERAGES CERTIFICATE NUMBER: Cert ID 402863 REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	GENERAL LIABILITY X COMMERCIAL GENERAL LIABILITY CLAIMS-MADE X OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY PRO-JECT LOC						EACH OCCURRENCE	$
							DAMAGE TO RENTED PREMISES (Ea occurrence)	$
							MED EXP (Any one person)	$
							PERSONAL & ADV INJURY	$
							GENERAL AGGREGATE	$
							PRODUCTS - COMP/OP AGG	$
								$
	AUTOMOBILE LIABILITY ANY AUTO ALL OWNED AUTOS HIRED AUTOS SCHEDULED AUTOS NON-OWNED AUTOS						COMBINED SINGLE LIMIT (Ea accident)	$
							BODILY INJURY (Per person)	$
							BODILY INJURY (Per accident)	$
							PROPERTY DAMAGE (Per accident)	$
								$
	UMBRELLA LIAB OCCUR EXCESS LIAB CLAIMS-MADE DED RETENTION $						EACH OCCURRENCE	$
							AGGREGATE	$
								$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? Y/N Y (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	N/A		WC430705984	5/20/2013	5/20/2014	X WC STATU-TORY LIMITS OTH-ER	
							E.L. EACH ACCIDENT	$ 1,000,000
							E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
							E.L. DISEASE - POLICY LIMIT	$ 1,000,000
								$

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER

City of Newton, MA
City Hall
1000 Commonwealth Ave.

Newton Centre MA 02459

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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Page 1 of 1

City of Newton IHP Contract - cont.

COMMERCIAL GENERAL LIABILITY
Policy Number: 3DP3765

MARKEL®

ESSEX INSURANCE COMPANY

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BLANKET ADDITIONAL INSURED

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE FORM
PRODUCTS/COMPLETED OPERATIONS COVERAGE FORM
LIQUOR LIABILITY COVERAGE FORM
PROFESSIONAL LIABILITY COVERAGE FORM

Please refer to each coverage form to determine which terms are defined. Words shown in quotations on this endorsement may or may not be defined in all coverage forms.

SCHEDULE

Person or Entity: Any person or organization to whom you are obligated by valid written contract to provide such coverage.

Additional Premium: $ 500.00 (Check box if fully earned. ☒)

WHO IS AN INSURED is amended to include the person or entity shown in the Schedule above as an Additional Insured under this insurance, but only as respects negligent acts or omissions of the Named Insured and only as respects any coverage not otherwise excluded in the policy. Our agreement to accept an Additional Insured provision in a contract is not an acceptance of any other provisions of the contract or the contract in total.

When coverage does not apply for the Named Insured, no coverage or defense shall be afforded to the Additional Insured.

No coverage shall be afforded to the Additional Insured for injury or damage of any type to any "employee" of the Named Insured or to any obligation of the Additional Insured to indemnify another because of damages arising out of such injury or damage.

All other terms and conditions remain unchanged.

MEGL 0009-01 04 11 Includes copyrighted material of Insurance Services Office, Inc. with its permission. **Page 1 of 1**

City of Newton IHP Contract - cont.

EXHIBIT A

City of Newton IHP Contract - cont.

City of Newton
Upper Falls Greenway Walking Corridor

Index

Introduction	1.0
Schedule	2.0
Scope of Work	3.0
Fencing	4.0
Materials	5.0
Inspection	6.0
Compaction	7.0
Protection	8.0
Temporary Sanitary Facilities	9.0
Spur Line	10.0

1.0 Introduction

1.1 General

This specification applies to the construction of the City of Newton Upper Falls Greenway walking corridor (rail trail). This trail is approximately 4,900 linear feet in length and extends from Easy Street to the Charles River. Although the trail length measures approximately 4,900 linear feet, due to multiple rails the actual rail length measures approximately 8,000 linear feet. Other than grade changes required at Easy Street and the main access point off of Chestnut Street, the trail shall maintain the existing grade and shall follow the current track layout.

The work involves the removal of railroad tracks and ties as well as all vegetation necessary for the construction of the rail trail. All materials removed, including all vegetation, shall be legally disposed of off-site at the Contractor's expense.

Daily construction shall be between the hours of 7:00 AM and 5:00 PM Monday through Friday. Saturday work shall not begin before 8:00 AM and end at 5:00 PM

2.0 Schedule

All construction activities shall commence on or about October 7, 2013 and be completed by November 22, 2013.

City of Newton IHP Contract - cont.

3.0 Scope of Work

3.1 Erosion Control

Prior to start of work the Contractor shall install siltation control measures consisting of siltation fencing and/or straw waddles at the following locations as directed by the Engineer

a) Charles River
b) In the vicinity of Tower Road
c) *If authorized, along the spur line to Needham Street*

3.2 Clearing & Grubbing

a) Clear site of all vegetation and trees necessary for trail construction. All materials removed shall be disposed of properly at no cost to the City.
b) Trees and underbrush for "rail only" removal where a trail is NOT to be constructed shall not be removed. Contractor shall take all measures necessary to allow vegetation to remain in these areas
c) Areas where vegetation is disturbed and are not to receive stone dust as part of the trail construction, shall be covered with a minimum of 4-inches of Loam. Loam shall be graded and hand raked to a level and smooth surface blending into adjacent surfaces, and seeded
d) Burning or burying cleared and grubbed materials is not permitted

3.3 Trail Construction - General

a) Existing rails and ties shall be removed, temporarily stockpiled and removed from the site. Location of stockpiled materials shall be approved by the City.
b) Trail bed shall be graded and compacted to ninety-five (95%) minimum Standard Proctor Density. Contractor must receive permission from the City of Newton prior to placement of stone dust material
c) Stone dust shall be applied and compacted per specifications. Contractor must hire an independent testing firm, at no cost to the City, to conduct compaction tests to confirm that material meets or exceeds 95% Proctor compaction

3.4 Trail Construction - Specific

If during construction the rail trail is shifted from the main line to a side track, the area spanned between the rails shall receive the following treatment:

a) Excavate all unsuitable material (as determined by Engineer)
b) Install and compact Processed Gravel to bring grade up to the base elevation of stone dust
c) Apply stone dust as required/specified

City of Newton IHP Contract - cont.

Station 0+00 to 0+30 – remove single rail and all ties, rough grade and apply 4" of stone dust to top of crown (typical profile). Area immediately to the west of the 10-foot wide stone dust trail Contractor to remove vegetation, excavate top soil, grade level, compact and apply 4" minimum of base course Processed Gravel (MA Highway M2.01.4). Processed gravel shall be compacted and either a 4" layer of stone dust shall be applied or a wooden deck constructed. All areas must be made accessible

Station 0+30 to 6+70 – remove single rail and all ties, rough grade and apply 4" of stone dust to top of crown (typical profile)

Station 6+70 to 7+60 (this section has double rail) - Remove main rail and ties, grade from west to east, apply 4" of stone dust. To the west of the main trail excavate top and subsoil to a depth as directed by Engineer. Install geotextile fabric beneath both the rail trail and the adjacent excavated area. Install rip-rap stone in the adjacent area as directed by Engineer. Remove rails from adjacent track to the east and any railroad ties that pose a hazard or as directed by Engineer.

Station 7+60 to 11+20 – remove rails and ties on main line, grade and apply 4" stone dust. Remove rails from adjacent track and any railroad ties that pose a hazard or as directed by Engineer

Station 11+20 to 11+75 (Oak Street crossing) – remove rails and ties, install bituminous asphalt patch across Oak Street. Patch shall meet City of Newton Standard Specifications. Contractor is responsible for Police Details as required

Station 11+75 to 14+00 (this section has double rail) – remove main rails and ties, grade and apply 4" of stone dust. Remove rails from adjacent track and any railroad ties that pose a hazard or as directed by Engineer

Station 14+00 to 15+70 (this section has 3 rails) – remove main rails and ties, grade and apply 4" of stone dust. Remove rails and ties from adjacent track on the west and remove rails from adjacent track on the east and any railroad ties that pose a hazard or as directed by Engineer

Station 15+70 to 18+40 (this section has 3 rails) – remove main rails and ties, grade and apply 4" of stone dust. Remove both adjacent rails and railroad ties that pose a hazard or as directed by Engineer. At Station 16+40 Contractor shall remove brush and debris from existing hole, fill and compact with clean granular material to grade

Station 18+40 to 21+40 (3 to 4 rails this section) – remove main rails and ties, grade and apply 4" of stone dust. Remove rails and ties from adjacent track to the east. Remove rails from adjacent rails to the west and any railroad ties that pose a hazard or as directed by Engineer

City of Newton IHP Contract - cont.

Station 21+40 to 24+00 (this section has 2 rails) – remove main rails and ties, grade and install 4" of stone dust. Remove rails from adjacent track and any railroad ties that pose a hazard or as directed by Engineer

Station 24+00 to 26+00 (2 rails) – remove main rails and ties, install 4" minimum of stone dust. Remove rails and ties from adjacent track, grade and cover with 4" of loam

Station 26+00 to 32+00 (double rails) – remove main rails and ties, grade and apply 4" of stone dust. Remove rails from adjacent track and any railroad ties that pose a hazard or as directed by Engineer

Station 32+00 to 33+00 (double rails merge to one) – remove main rails and ties, grade and install 4" of stone dust. Remove rails and ties from adjacent track, grade and install 4" of loam

Station 33+00 to 34+50 (single rail) – remove main rails and ties, grade and install 4" of stone dust

Station 34+50 to 35+60 (double rails) – remove main rails and ties, grade and install 4" of stone dust. Remove rails from adjacent track (to Avalon) and any railroad ties that pose a hazard or as directed by Engineer

Station 35+60 to 49+00 (single rail) – remove main rails and tracks, grade and install 4" of stone dust. Grade end of trail at Easy Street as directed by Engineer

4.0 Fencing

Contractor will be responsible for wooden fencing to be installed in the area of the Charles River. Type of fencing and extent to be determined by the Engineer. All fencing must meet current State Building Code Regulations as they may apply

5.0 Materials

a) Processed Gravel (Ma. Hwy. M2.01.4)
b) Medium Coarse Stone Dust (Ma. Hwy. M2.01.5)

6.0 Inspections

a) Upon completion of rough grading and compaction of subgrade, obtain approval from the City before proceeding with placement of stone dust material

City of Newton IHP Contract - cont.

b) Contractor must secure the services of a qualified testing agency, at no cost to the City, to test both the base material and final stone dust surface for proper compaction. The number of compaction tests required shall be determined by Engineer. Said test result must be submitted to the Engineer.

7.0 Compaction

a) Compact sub-grade uniformly and adequately under all surfaces to receive stone dust to a minimum of 95% compaction pursuant to the Standard Proctor Density test
b) Compact stone dust surface to specified slopes and to a minimum compaction of 95% per the Standard Proctor Density test

8.0 Protection

a) Contractor is responsible to maintain a secure work zone to prevent unauthorized personnel from entering the work zone
b) Protect existing trees as directed prior to clearing and grubbing
c) Protect existing buildings and private property from damage
d) Contractor is responsible for all damage to underground structures
e) Install adequate signage to provide notification to persons entering the work zone

9.0 Temporary Sanitary Facilities

a) Contractor must provide on-site portable waste facilities for workers. Location of facilities shall be determined by the City of Newton
b) Facilities shall be maintained as needed or as directed by the City

10.0 Spur Line - Alternate (if authorized)

If the City obtains permission to remove the rails and ties from the spur line between the main right-of-way and Needham Street, the following activities will be required:

a) Install construction fencing and/or straw waddles between the rail line and the adjacent river. The Engineer will determine the location of each product
b) Contact and obtain permission from the City's Senior Environmental Planner to proceed with rail and tie removal
c) Clear and grub areas necessary for the removal of the rails and ties. Properly dispose of all materials
d) Remove the rails and ties. Grade and compact the base, install 4" of Processed Gravel and compact as required

City of Newton IHP Contract - cont.

EXHIBIT B

City of Newton IHP Contract - cont.

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

DEVAL L. PATRICK
Governor
TIMOTHY P. MURRAY
Lt. Governor

JOANNE F. GOLDSTEIN
Secretary
HEATHER E. ROWE
Director

Prevailing Wage Rates

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

Awarding Authority: City of Newton
Contract Number: RW 09182013
City/Town: NEWTON
Description of Work: Remove and Dispose of Railroad Rails and Treads from Charles River, Needham Street to Easy Street

Job Location: Various Locations

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the "Wage Request Number" on all pages of this schedule.
- Awarding authorities must request an updated wage schedule from the Department of Labor Standards ("DLS") if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. Once a contractor has been selected by the awarding authority, the wage schedule shall be made a part of the contract for that project. The wage schedule must be posted in a conspicuous place at the work site during the life of the project in accordance with M.G.L. c. 149, § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project regardless of whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Training (DAT). Apprentices must keep his/her apprentice identification card on his/her person during all work hours on the project. If an apprentice rate is listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **If an apprentice rate is not listed on the prevailing wage schedule for the trade in which an apprentice is registered with the DAT, the apprentice must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F "rental of equipment" contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports directly to the awarding authority and keep them on file for three years. Each weekly payroll report must contain: the employee's name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.

Issue Date: 09/18/2013 Wage Request Number: 20130918-054

City of Newton IHP Contract - cont.

EXHIBIT C

City of Newton IHP Contract - cont.

ALTERNATIVE TRANSPORTATION CORRIDOR LEASE AGREEMENT

BY AND BETWEEN

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

AND

THE CITY OF NEWTON

AUGUST 2013

[ONLY FOR RIGHTS-OF-WAY NOT IN ACTIVE USE]

City of Newton IHP Contract - cont.

EXHIBIT D

City of Newton IHP Contract - cont.

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
ONE WINTER STREET, BOSTON, MA 02108 617-292-5500

MITT ROMNEY
Governor

KERRY HEALEY
Lieutenant Governor

ELLEN ROY HERZFELDER
Secretary

ROBERT W. GOLLEDGE, Jr.
Commissioner

Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails

This document summarizes **Best Management Practices ("BMPs")** that should be considered before, during, and after former railroad lines are converted to recreation trails. These BMPs have been developed to eliminate or minimize potential exposures to residual oil or hazardous materials commonly found along railroad rights-of-way being converted to rail trails. This document also identifies locations and conditions for which the application of BMPs alone may not be sufficiently protective of public health and the environment.

These BMPs have been developed specifically for situations where a municipality has acquired a property interest in a rail corridor from the Massachusetts Bay Transportation Authority (MBTA) in order to convert the corridor to a rail trail[1], This fact sheet is relevant to municipalities: (1) with specific knowledge of a release of oil or hazardous materials through testing or other means and/or (2) without specific knowledge of a release, that seek to prevent the exposure of persons to oil or hazardous materials that may be present in such corridor until a responsible person conducts response action under MGL Chapter 21E.

Background Information

The waxing and waning of railroad activity in Massachusetts over the past century has left the Commonwealth a legacy of under-utilized rights-of-way that may be redeveloped for new rail service (such as the Amtrak Downeaster and the Greenbush line) or recreational trails (such as the Minuteman Trail or the Mass Central Rail-Trail).

When active, these railroad lines were important transportation corridors serving the citizens and industries of Massachusetts. Now many communities are actively seeking to convert former railroad lines to create new links -- trails that link:

- commuter's homes to workplaces;
- children's schools to the playgrounds;
- tourists' curiosity to the region's history; and
- communities to their neighbors.

[1] More specifically, only for those situations addressed under Chapter 46 of the Acts of 2003

This information is available in alternate format. Call Debra Doherty, ADA Coordinator at 617-292-5565. TDD Service - 1-800-298-2207.

DEP on the World Wide Web: http://www.mass.gov/dep
Printed on Recycled Paper

GG. Millis Commuter Rail Extension Feasibility Study Exec Summary

Millis Commuter Rail Extension Feasibility Study

Author
Thomas J. Humphrey

Contributing Analyst
Sanjay Kaul

Graphics
Kenneth A. Dumas

Cover Design
Jane M. Gillis

Cover photograph:
Millis, Mass., station on former New York & New England Railroad Woonsocket Line, 1972.
Photo by Thomas J. Humphrey.

The preparation of this document was supported by Massachusetts Bay Transportation Authority Contract X1PS02.

Central Transportation Planning Staff
Directed by the Boston Metropolitan Planning Organization. The MPO is composed of state and regional agencies and authorities, and local governments.

Draft – March 1998

Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.

EXECUTIVE SUMMARY

Rail passenger service to Millis was last operated in 1967. This service used a branch line that diverged from the present Needham commuter rail route at Needham Junction and ran through the towns of Dover and Medfield. At present, most residents of towns on the former Millis route who use commuter rail drive to stations in nearby towns on other lines. Residents of Millis, Medfield, and Dover have recently expressed strong interest in reinstitution of commuter rail service on the Millis Line and have requested that the MBTA examine the feasibility of such service. This report presents the results of the feasibility study, which was performed for the MBTA by the Central Transportation Planning Staff (CTPS).

Project Description

The study analyzed a commuter rail extension to Millis on the same alignment used until 1967. The following operating strategy alternatives were examined: 1) running Millis trains through to Boston with stops at all intermediate stations; 2) running peak period express service between Millis and Boston with limited stops on the Needham Line; and 3) combining Millis Line trains with Needham Heights trains at Needham Junction. The operation of diesel multiple-unit (DMU) cars was also analyzed.

The map on page ES-3 depicts the route of the Millis Line. The ridership demand and land use analyses indicate that in addition to a terminal in Millis, the extension should include one station each in Medfield and Dover. Cost calculations were based on a Millis terminal at the former Clicquot Station site west of Union Street. Identification of specific station locations would require further study. The distance from Needham Junction to the Clicquot site would be about 9.5 miles. Other potential station and terminal sites are discussed in the main body of the report. Based on rail distance from South Station, a Millis station would be in fare Zone 5. A Medfield station would be in Zone 4, and a Dover station would be in Zone 3.

Ridership Potential

The towns of Dover, Medfield, and Millis do not currently receive direct commuter rail service. Because of the close proximity of the Millis Line to other existing commuter rail lines, a Millis extension would, for the most part, only attract riders from the towns it directly served.

Ridership projections for a typical weekday at 1996 travel levels are shown in Table ES-1. Combining Millis Line trains with Needham Heights trains at Needham Junction with either through cars (Alternative 3) or connecting service would reduce ridership significantly compared with running separate through trains, because of the increased trip times resulting from passenger transfers or coupling and uncoupling cars.

Local and express service (Alternatives 1&2) would attract new transit riders at existing stations on the Needham Line as a result of more frequent headways and reduced travel

Millis Commuter Rail Study ES-1 CTPS

Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.

times. Similar ridership increases at existing Needham Line stations could be achieved by increasing service frequency or adding express service without a Millis extension.

The predominant source of ridership on all MBTA commuter rail lines is work trips to Boston and Cambridge. These account for 85% of the total ridership on existing South Side Commuter Rail lines. Based on the shares of work trips captured by these lines from communities at comparable distances from Boston, and taking into account relative travel times by rail and highway, a Millis extension could be expected to capture up to 75% of the work trips to downtown Boston from Medfield, Millis, and Medway. From Dover, the maximum share would be 60%. Because of competition with the Framingham/Worcester Line, the extension would capture under 15% of downtown Boston work trips from Sherborn.

Table ES-1
Millis Extension Alternatives
Estimated Weekday Inbound Riders by Category

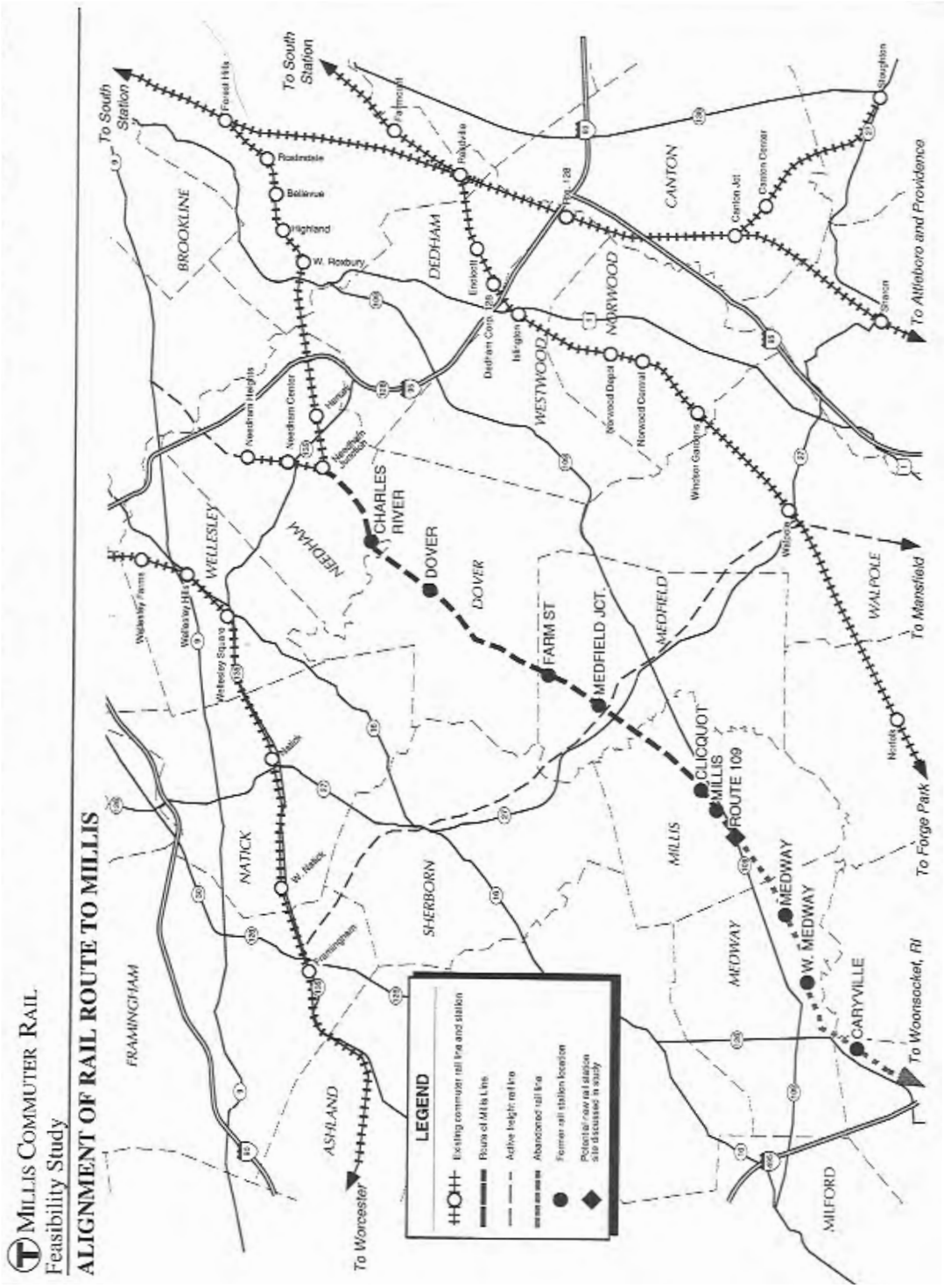
Ridership Category	Local Service Only	Peak Express/ Off-peak Local	Combined Millis and Needham Heights Trains
New Transit Users at Extension Stations	425	545	365
New Transit Users at Needham Line Stations	425	470	105
Total New Transit Users (1996 travel levels)	850	1,015	470
Existing Transit Users Diverted to Extension	785	815	785
Total Boardings on Extension (1996 levels)	1,210	1,360	1,150
Total New Transit Users (year 2020 travel levels)	990	1,185	565

Ridership projections utilized the most recent available figures for work travel to Boston and Cambridge by town of origin from the 1990 U.S. Census. Adjustments were made to obtain both year 1996 and year 2020 ridership levels. Allowances were also added for other destinations and trip purposes.

Overall Boston/Cambridge employment was essentially the same in 1996 as in 1990. It was therefore concluded that forecasts based on 1996 journey-to-work data, had it been available, would not have differed significantly from the 1990 forecasts.

Millis Commuter Rail Study ES-2 CTPS

Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.



Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.

Projections indicate that total employment in the city of Boston will show a net increase of about 5% between 1990 and 2020. During this same period, the Millis extension service area is expected to show population growth of 27%. Growth in individual towns in the service area is projected to range from 17% in Millis to 46% in Medway.

Assuming that commuter rail ridership would grow at the same rate as population in the service area, the year 2020 ridership projections would be as shown on Table ES-1. It is unlikely that commuter rail ridership from the service area would grow at a much greater rate than population. Increased suburban employment opportunities could result in Boston work trips, and hence commuter rail ridership, growing more slowly than population.

Capital Cost Estimates

Estimated capital costs for a Millis extension to Clicquot are summarized in Table ES-2. It should be noted that these are based on a preliminary examination of the facilities needed rather than on detailed engineering studies. The extension would use a rail line that is still used for freight service, but the track is in poor condition and would need to be entirely rebuilt to make it suitable for passenger service. New rolling stock would have to be purchased for this service, as the present commuter rail fleet is fully utilized.

Table ES-2
Summary of Capital Costs
for Millis Extension

Item	All Local Service	Peak Express/Off-Peak Local	Combined Millis and Needham Trains Push-Pull	Combined Millis and Needham Trains DMU
Total Infrastructure Cost	$62,945,000	$64,000,000	$61,505,000	$61,505,000
Total Equipment Cost	$48,550,000	$48,550,000	$31,590,000	$47,490,000
Total Capital Cost	$111,495,000	$112,010,000	$93,095,000	$108,995,000
Capital Cost Per New Transit Rider (year 2020)	$112,621	$94,523	$164,770	$192,912

Operating Cost and Revenue Estimates

Operating costs for a Millis extension would be determined primarily by the length of the route and the number of train trips operated each day. For each alternative, costs were calculated as the difference between combined operating costs for Needham and Millis trains with the extension and costs for present Needham Line service alone. Costs for combined trains were calculated both for push-pull trains and for DMUs.

Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.

Table ES-3 summarizes the incremental revenues and operating costs and revenue-to-cost ratios for the three service alternatives considered. (Costs are shown for service operating Monday through Saturday only, to provide the most direct comparison with existing Needham Line service.) In 1996 the ratio of revenue to operating cost for the existing MBTA commuter rail system as a whole calculated by methods comparable to those used for this study was about 42%. The annual operating cost for the Needham Line calculated by the same method was $4,990,000, and it had a revenue-to-cost ratio of about 50%.

Table ES-3
Cost and Revenue Comparisons
for Millis Extension Service Alternatives

Item	All Local Service	Peak Express/ Off-Peak Local	Combined Millis and Needham Trains Push-Pull	Combined Millis and Needham Trains DMU
Annual Operating Cost Increase	$7,730,000	$7,730,000	$2,855,000	$2,710,000
Incremental Fare Revenue	$1,100,000	$1,300,000	$670,000	$670,000
Revenue-to-cost ratio	14.2%	16.8%	23.5%	24.7%
New Transit Riders (year 1996)	850	1,015	470	470

Environmental Impacts of Millis Extension

Impacts on Air Quality

Based on the present travel modes of the expected users of Millis rail service, and including new ridership on the Needham Line resulting from operation of Millis service, express service from Millis would reduce automobile vehicle miles of travel (VMT) by 37,870 per day. With local service only, the reduction would be 31,945. With Millis and Needham Heights trains joined east of Needham Junction, the VMT reduction would be 23,625 per day. Taking into account increased emissions from additional diesel locomotives or DMUs, the net impacts on air quality would be as shown in Table ES-4.

Other Environmental Impacts

A Millis extension would not have any other significant adverse impacts on the environment. Bridges and other segments near water would be provided with appropriate drainage systems to prevent brake dust and oil from trains from entering waterways. Parking lots would likewise have drainage systems that would capture pollutants from automobiles.

Millis Commuter Rail Study ES-5 CTPS

Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.

Table ES-4
Millis Extension
Net Change in Average Weekday VMT and Emissions

	All Local	Express/Local	Combined Trains Push-Pull	Combined Trains DMU
VMT Reduction	31,945	37,867	23,625	23,625
CO change	-287.2 kg	-346.6 kg	-192.4 kg	-232.1 kg
NOx change	+298.8 kg	+288.8 kg	+285.6 kg	+32.1 kg
VOC change	-18.1 kg	-23.7 kg	-8.8 kg	-20.5 kg
PM change	+4.6 kg	+4.6 kg	+2.9 kg	+1.1 kg

Development along most of the right-of-way of the extension is relatively light, and few cultural resources would be impacted. About 110 houses are currently within 200 feet of the segment between Needham Junction and Clicquot. More development is likely to occur near the line in the future, however. Abutters to part of the existing Needham Line are likely to be impacted by the increased number of trains.

At Dover Center two churches and the Town Hall are within 300 feet of the right-of-way. Otherwise, no community or cultural resources are sufficiently close to the right-of-way to be impacted by an extension to Clicquot.

A Millis extension would not reduce traffic significantly on any highway. The maximum absolute reduction would occur on the Mass. Turnpike east of Route 128, where auto diversions in the peak half hour would equal less than 3% of the capacity of the road. The maximum percentage reduction would occur on Route 109 east of Medfield, where traffic would be reduced by up to 15% in the peak half hour.

Peak auto arrival rates at stations on a Millis extension would be much lower than those at all existing stations on the outer end of the Franklin Line, now used by the largest number of riders from the Millis extension service area. In the final minutes prior to departure of the most heavily patronized train, auto arrivals at the busiest station would average about 11 per minute, and these would not all arrive from the same direction.

An extension from Needham Junction to Clicquot would have 10 grade crossings of public roads. None of these crossings appear to be heavily traveled.

Conclusions

A summary of the ridership and cost analysis results for the Millis commuter rail extension alternatives is shown in Table ES-5. An extension to Millis from Needham Junction would be feasible from an operations standpoint, but would produce very limited benefits for the costs involved. The highest ratio of incremental revenue to incremental operating cost for any of the alternatives shown would equal slightly more than half that for the present MBTA commuter rail system as a whole.

Millis Commuter Rail Extension Feasibility Study Exec Summary - cont.

Most of the alternatives would have relatively high capital cost per new weekday transit rider. For an extension to Millis with peak-period express service, the capital cost per new transit rider shown in Table ES-5 ($94,523) is similar to that for the Newburyport extension, currently under construction ($93,055).[1]

Table ES-5
Summary of Performance Measures for
Millis Extension from Needham Junction to Clicquot

Item	All-Local Service	Peak Express/ Off-Peak Local	Combined Millis and Needham Trains Push-Pull	Combined Millis and Needham Trains DMU
Total Weekday Inbound Riders at extension stations (year 1996)	1,210	1,360	1,150	1,150
New Inbound Transit Riders at New stations (year 1996)	425	545	365	365
New Inbound Transit Riders at Existing Stations (year 1996)	425	470	105	105
Total New Transit Riders (year 2020)	990	1,185	565	565
Annual Operating Cost	$7,730,000	$7,730,000	$2,855,000	$2,710,000
Incremental Fare Revenue (year 1996)	$1,100,000	$1,300,000	$670,000	$670,000
Incremental Revenue/Operating Cost	14.2%	16.8%	23.5%	24.7%
Total Capital Cost	$111,495,000	$112,010,000	$93,095,000	$108,995,000
Capital Cost/New Rider (year 2020)	$112,621	$94,523	$164,770	$192,912
Capital Cost/Kg of Weekday VOC Reduction	$6,159,945	$4,726,160	$10,578,977	$5,316,829

[1]The most recent estimated capital cost per new transit rider for the Worcester extension, which was the most cost-effective commuter rail extension examined in the PMT, is $45,732.

Millis Commuter Rail Study ES-7 CTPS

HH. Rail Trail Projects Town Comparisons

Towns	Area (sq miles)	Population	Trail Length (miles)	Entity	Funding
Dover	15.4	5589	3.7	Town Committee	
Needham	12.7	28886	2.2	BCRT/town	
Medfield	14.6	12024	1.2	BCRT/town	
Concord	25.9	17668	3.5	Bruce Freeman Trail System	90% federal & 10% local town funding. Local group raised $25k. Concord spent $200k, balance in CPA grant $100k
Danvers	14.1	25212	4.3	Danvers Rail Trail Advisory Committee est 2009	IHP funding approach, IHP paid for signage
Holliston	19.1	13547	6-7mi	Part of the Upper Charles Trail & Holliston Trails Committee (subcom. of Conservation Com.)	Gov't Grants (DCR) primarily
Malden	5.1	59450	3	Town committee, office of town planner	funded through a bond based in part on meals tax, chapter 90 funds and funds from bikes to the sea org
Stow	18.1	6590	3	Town Committee appointed by selectmen	CPA funding for purchase -
Sudbury	24.9	17659		Town Committee appointed by selectmen	
Wayland	15.9	12994	3	Friends of Wayland Rail Trail	DCR - lease 99 yrs w MBTA - funding shortage causing need for phased approach and private funding Cost estimated at $1m per mile
Wellesley	10.5	27982		Wellesley Trails Comm - thru the Natural Resources Commission	
Weston	17.3	11261	2.8	Conservation Commission and Weston Forrest & Trail Association	DCR
Wachusetts Greenways			21 miles of a 104 mile trail system	private/public partnership. Tree removal by volunteer group	Bond bill, endowment fund, had to purchase right of ways, Mass highway work shops. Cost $100-200k per mile
Oakham	21.5	1902			
Rutland	36.4	7973			
Princeton	35.8	3353			
Sterling	31.6	7808			
Holden	36.2	1741			
W Boylston	13.8	7669			
Hardwick				Quabbin Land Trust	

Rail Trail Projects Town Comparisons - cont.

Towns	Surface	Crossings	Terrain	Connections	Contractor	Status
Dover		3		Medfield - Needham would require bridge work		
Needham						
Medfield						
Concord	asphalt - decided at town meeting 10 feet of paved with 2 foot shoulders on each side	Major crossing of route 2, 5 street crossings and a tunnel	woodlands, west concord center	Acton & Weston		scheduled for completion 2021 some areas complete
Danvers	Stonedust	11 grade crossings, 12 foot wide bridge	woodlands, commercial areas and neighborhoods	Wenham, Topsfield Fair grounds, Middleton Square, schools, Endicott Street allows access to Peabody	IHP -signed 2010, Kiwanis club clean up,	complete
Holliston	Stonedust in sections (c.3,000')/ recycled asphalt and earth	Approx 12, 2 major routes	Wetlands, neighborhoods, industrial park	Milford townline (paved) and Sherborn	Volunteer individual and one contractor donating services	Some sections complete
Malden	recycled asphalt	11 street crossings		everett, malden & saugus	Charles Contracting won bid for $600k which includes salvage value of steel	complete
Stow	hard packed but would like to pave it	2 crossings	woodlands primarily	maynard	working through the state for contractor options	open
Sudbury		7 crossings				
Wayland	paved or stonedust	crosses over RT 128	utlities sharing space	Weston and Waltham	TBD thru DCR process	on hold pending funding for DCR
Wellesley	packed earth/gravel					
Weston	dirt	3 major crossings - 2 at underpasses	follows Nstar power line right of way	Wayland, Sudbury and connects to Bruce Freeman	TBD thru DCR process. Work currently being performed by volunteers. It is a walking path at this stage and clearing is done by volunteers	basic walking path - dirt
Wachusetts Greenways	thin layer of stone dust on top of 1.5 inch recycled asphalt required by DCR	8 bridges and 2 tunnels - tunnel cost $300k under Rte 56	woodlands primarily	see list of towns below	put out to bid - through the DCR	open since mid 1990s
Oakham						
Rutland						
Princeton						
Sterling						
Holden						
W Boylston						
Hardwick	2" stone dust on half mile completed ($7,000)					

Rail Trail Projects Town Comparisons - cont.

Towns	Surface	Crossings	Terrain	Connections	Contractor	Status
Dover		3		Medfield - Needham would require bridge work		
Needham						
Medfield						
Concord	asphalt - decided at town meeting 10 feet of paved with 2 foot shoulders on each side	Major crossing of route 2, 5 street crossings and a tunnel	woodlands, west concord center	Acton & Weston		scheduled for completion 2021 some areas complete
Danvers	Stonedust	11 grade crossings, 12 foot wide bridge	woodlands, commercial areas and neighborhoods	Wenham, Topsfield Fair grounds, Middleton Square, schools, Endicott Street allows access to Peabody	IHP -signed 2010, Kiwanis club clean up,	complete
Holliston	Stonedust in sections (c.3,000')/ recycled asphalt and earth	Approx 12, 2 major routes	Wetlands, neighborhoods, industrial park	Milford townline (paved) and Sherborn	Volunteer individual and one contractor donating services	Some sections complete
Malden	recycled asphalt	11 street crossings		everett, malden & saugus	Charles Contracting won bid for $600k which includes salvage value of steel	complete
Stow	hard packed but would like to pave it	2 crossings	woodlands primarily	maynard	working through the state for contractor options	open
Sudbury		7 crossings				
Wayland	paved or stonedust	crosses over RT 128	utlities sharing space	Weston and Waltham	TBD thru DCR process	on hold pending funding for DCR
Wellesley	packed earth/gravel					
Weston	dirt	3 major crossings - 2 at underpasses	follows Nstar power line right of way	Wayland, Sudbury and connects to Bruce Freeman	TBD thru DCR process. Work currently being performed by volunteers. It is a walking path at this stage and clearing is done by volunteers	basic walking path - dirt
Wachusetts Greenways	thin layer of stone dust on top of 1.5 inch recycled asphalt required by DCR	8 bridges and 2 tunnels - tunnel cost $300k under Rte 56	woodlands primarily	see list of towns below	put out to bid - through the DCR	open since mid 1990s
Oakham						
Rutland						
Princeton						
Sterling						
Holden						
W Boylston						
Hardwick	2" stone dust on half mile completed ($7,000)					

II.Rail Trail Spec Policy & Ends

Z Choice Pollution Liability

ZURICH®

This policy provides coverage on a discovery and/or claims-made and reported basis depending upon the insuring agreements specifically listed as provided in Item 5 of the Declarations. A "pollution event" must be first "discovered" and/or a "claim" must be first made against an "insured" during the "policy period" and such "discovery" or "claim" must be reported to us in writing during the "policy period" or during an applicable extended reporting period. Notice of a "potential claim" is not a "claim" and does not trigger coverage under the policy.

This policy has certain unique provisions and requirements that may be different from other policies the "insured" may have purchased. Coverage is provided only if the word YES appears in the column marked PROVIDED in the schedule set forth in Item 5 of the Declarations. The payment of "claim expenses", including defense costs, reduces the Limits of Liability set forth in Item 3 of the Declarations. If the applicable Limits of Liability are exhausted, we shall not be liable for "claim expenses" or for any "loss", "cleanup costs", "natural resource damages" or "other loss" which would otherwise be covered under this policy. Read the entire policy carefully including any endorsements thereto to determine rights, duties, and what is and is not covered.

Throughout this policy, the words we, us and our refer to the company providing this insurance as identified in the Declarations. Words and phrases that appear in quotation marks have special meaning. Refer to DEFINITIONS (Section III).

In consideration of the payment of premium and the "named insured's" undertaking to pay the Deductible as described herein, in reliance upon the statements made during the application process and in the Application all of which are made a part hereof, and subject to the Limits of Liability of this insurance as set forth in Item 3 of the Declarations, and the exclusions, conditions and other terms of this policy, we agree with the "named insured" as follows:

I. INSURING AGREEMENTS

THESE COVERAGES ONLY APPLY IF AND TO THE EXTENT SPECIFICALLY LISTED AS PROVIDED IN ITEM 5 OF THE DECLARATIONS

COVERAGE A: CLEANUP COSTS – EXISTING POLLUTION EVENT

1. <u>On-Site</u>

   (a) First Party Discovery

   We will pay "cleanup costs" to the extent resulting from an "existing pollution event" on, at or under a "covered location", if that "existing pollution event" is first "discovered" during the "policy period" and the "discovery" is reported to us in writing during the "policy period" or any applicable extended reporting period.

   (b) Third Party Liability

   We will pay "cleanup costs" that an "insured" is legally obligated to pay as a result of a "claim" resulting from an "existing pollution event" on, at, or under a "covered location", provided the "claim" is first made against the "insured" during the "policy period", and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

   Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "cleanup costs" attributable to any irritant, contaminant or pollutant that is outside the boundaries of a "covered location".

2. <u>Off-Site</u>

   (a) First Party Discovery

   We will pay "cleanup costs" to the extent resulting from an "existing pollution event" that migrates beyond the boundaries from a "covered location", if that "existing pollution event" is first "discovered" during the "policy

Rail Trail Spec Policy & Ends - cont.

period” and the "discovery" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Third Party Liability

We will pay “cleanup costs” that an “insured” is legally obligated to pay as a result of a "claim" resulting from an “existing pollution event” that migrates beyond the boundaries from a “covered location”, provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "cleanup costs" attributable to any irritant, contaminant or pollutant that is on, at or under a "covered location".

COVERAGE B: BODILY INJURY OR PROPERTY DAMAGE – EXISTING POLLUTION EVENT

1. On-Site

(a) Bodily Injury

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "bodily injury":

(i) sustained by a person while within the boundaries of a "covered location"; and

(ii) resulting from an "existing pollution event" on, at or under such "covered location";

provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Property Damage

We will pay "loss" that an “insured” is legally obligated to pay as a result of a “claim” for "property damage":

(i) to property within the boundaries of a "covered location"; and

(ii) resulting from an “existing pollution event” on, at or under such "covered location";

provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "loss" attributable to any irritant, contaminant or pollutant that is outside the boundaries of a "covered location".

2. Off-Site

(a) Bodily Injury

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "bodily injury":

(i) sustained by a person while beyond the boundaries of a "covered location", and

(ii) resulting from an “existing pollution event” that migrates beyond the boundaries from such "covered location";

provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Property Damage

We will pay "loss" that an “insured” is legally obligated to pay as a result of a “claim” for "property damage":

(i) to property beyond the boundaries of a "covered location"; and

(ii) resulting from an “existing pollution event” that migrates beyond the boundaries from such "covered location";

provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Rail Trail Spec Policy & Ends - cont.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "loss" attributable to any irritant, contaminant or pollutant that is on, at or under a "covered location".

COVERAGE C: CLEANUP COSTS – NEW POLLUTION EVENT

1. On-Site

(a) First Party Discovery

We will pay “cleanup costs” to the extent resulting from a “new pollution event” on, at or under a “covered location”, if that "new pollution event" is first "discovered" during the “policy period” and the "discovery" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Third Party Liability

We will pay “cleanup costs” that an “insured” is legally obligated to pay as a result of a "claim" resulting from a "new pollution event” on, at, or under a “covered location”, provided the “claim” is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "cleanup costs" attributable to any irritant, contaminant or pollutant that is outside the boundaries of a "covered location".

2. Off-Site

(a) First Party Discovery

We will pay “cleanup costs” to the extent resulting from a “new pollution event” that migrates beyond the boundaries from a “covered location”, if that "new pollution event" is first "discovered" during the “policy period” and the "discovery" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Third Party Liability

We will pay “cleanup costs” that an “insured” is legally obligated to pay as a result of a "claim" resulting from a “new pollution event” that migrates beyond the boundaries from a “covered location", provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "cleanup costs" attributable to any irritant, contaminant or pollutant that is on, at or under a "covered location".

COVERAGE D: BODILY INJURY OR PROPERTY DAMAGE – NEW POLLUTION EVENT

1. On-Site

(a) Bodily Injury

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "bodily injury":

(i) sustained by a person while within the boundaries of a "covered location"; and

(ii) resulting from a “new pollution event” on, at or under such "covered location";

provided the "claim" is first made against the "insured" during the “policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Property Damage

We will pay "loss" that an “insured” is legally obligated to pay as a result of a “claim” for "property damage":

(i) to property within the boundaries of a "covered location"; and

(ii) resulting from a “new pollution event” on, at, or under such "covered location";

Rail Trail Spec Policy & Ends - cont.

provided the "claim" is first made against the "insured" during the "policy period", and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "loss" attributable to any irritant, contaminant or pollutant that is outside the boundaries of a "covered location".

2. Off-Site

(a) Bodily Injury

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "bodily injury":

(i) sustained by a person while beyond the boundaries of a "covered location"; and

(ii) resulting from a "new pollution event" that migrates beyond the boundaries from such "covered location";

provided the "claim" is first made against the "insured" during the "policy period", and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

(b) Property Damage

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "property damage":

(i) to property beyond the boundaries of a "covered location"; and

(ii) resulting from a "new pollution event" that migrates beyond the boundaries from such "covered location";

provided the "claim" is first made against the "insured" during the "policy period", and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "loss" attributable to any irritant, contaminant or pollutant that is on, at or under a "covered location".

COVERAGE E: NATURAL RESOURCE DAMAGES

1. Existing Pollution Event

We will pay "natural resource damages" that an "insured" is legally obligated to pay as a result of a "claim" for injury to or destruction of "natural resources" resulting from an "existing pollution event" on, at, under or that migrates beyond the boundaries from a "covered location", provided the "claim" is first made against the "insured" during the "policy period" and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

2. New Pollution Event

We will pay "natural resource damages" that an "insured" is legally obligated to pay as a result of a "claim" for injury to or destruction of "natural resources" resulting from a "new pollution event" on, at, under or that migrates beyond the boundaries from a "covered location", provided the "claim" is first made against the "insured" during the "policy period" and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

II. DEFENSE

We shall have the right and duty to assume the adjustment, defense and settlement of any "claim" to which an insuring agreement specifically listed as provided in Item 5 of the Declarations applies. "Claim expenses" reduce the applicable Limits of Liability set forth in Item 3 of the Declarations as described in LIMITS OF LIABILITY AND DEDUCTIBLE (Section VI.).

If permitted by applicable law, we shall have the right to appoint one legal counsel to represent and/or defend one or more of the "insureds" who are or may be involved in a "claim" to which this insurance applies. In the event an "insured" is entitled by law to select independent counsel to represent and/or defend an "insured" at our expense, the attorney's fees and all other litigation expenses we must pay to that counsel are limited to "reasonable legal costs". Furthermore, an "insured" may at any time waive any right it may have to select independent counsel.

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Our duty to adjust, defend and settle any and all “claims”, pending and future, to which an insuring agreement specifically listed as provided in Item 5 of the Declarations applies, ends when the remaining applicable Limits of Liability have been tendered into court or have been exhausted by payment of "loss", "cleanup costs", "natural resource damages" or "other loss".

III. DEFINITIONS

A. "Bodily injury" means any physical injury, sickness, disease, mental anguish or emotional distress sustained by any person, including death resulting therefrom.

B. "Claim" means a written demand or written notice received by the “insured” alleging liability or responsibility on the part of the “insured". "Claim" does not include a "potential claim" that was reported in a prior policy period as described in CLAIM PROVISIONS (Section VII., B. NOTICE OF POTENTIAL CLAIM), that has become a "claim" during the "policy period".

C. "Claim expenses" means:

1. Fees charged by an attorney designated by:
   a. Us; or
   b. The “insured” with our prior written consent, provided such fees are "reasonable legal costs"; and
2. All other fees, costs and expenses resulting from the adjustment, defense, settlement and appeal of a “claim” if incurred by us, or by or on behalf of the “insured” with our written consent, including interest on the full amount of any judgment that accrues after entry of the judgment and before we have paid, offered to pay (including an offer of judgment), or deposited in court the amount available for the judgment under the policy.

"Claim expenses” does not include the salaries or expenses of regular employees of ours or the “insured”.

D. "Cleanup costs" means:

1. Reasonable and necessary costs, charges and expenses incurred in the investigation, removal, remediation (including associated monitoring), neutralization or immobilization of contaminated soil, surface water, groundwater, or other contamination including "emergency expense", but excluding any costs, charges or expenses:
   (a) incurred by the “insured” to confirm "discovery" (except as specifically provided for in Section III. D.4. below); or
   (b) to achieve regulatory standards at a "covered location" that are stricter than those necessary for the actual or intended use of such location as set forth in the Application or in the Schedule of Covered Locations endorsement.
2. Where real property or improvements thereto are damaged in the course of performing the activities described in Section III., D.1. above, the lesser of the actual cost to repair, or the actual cash value of, such real property or improvements (as determined based upon the condition of the property or improvements thereto immediately prior to such damage) but excluding any:
   (a) damage caused by the underlying "pollution event"; or
   (b) costs, charges or expenses for improvements or betterments, including, but not limited to, those arising from compliance with any law that was not applicable to (including by operation of any grandfather provision contained in any such law) or not enforced against the property before it was so damaged; and
3. "Claim expenses" in connection with a "claim" for "cleanup costs"; or
4. With respect to "discovery", only those "reasonable legal costs" incurred with our prior written consent.

"Cleanup costs" does not include "loss" for "property damage", "natural resource damages" or any other compensation for injury to or destruction of "natural resources".

E. "Covered location" means, and is limited to, that property listed in the Schedule of Covered Locations endorsement to the extent therein specifically described, including, without limitation, by street address, lot and block reference, metes and bounds, or by a combination of these or any other substantially equivalent land description methods, current as of the effective date of coverage for any such property.

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F. **"Delimitation date"** means the date set forth in Item 6 of the Declarations or in the Schedule of Covered Locations endorsement as applicable.

G. **"Discovered"** or **"discovery"** means discovery by a "responsible insured" of a "pollution event" in amounts or concentrations that exceed allowable levels or concentrations established under "governmental authority".

H. **"Emergency expense"** means costs, charges and expenses incurred to avoid an actual imminent and substantial endangerment to the public health or welfare or the environment.

I. **"Existing pollution event"** means a "pollution event" that commenced on or after the "retroactive date" and prior to the "delimitation date".

J. **"Fungus"** or "fungi" means any:

1. Form or type of mold, mushroom or mildew,
2. Other fungal structure, and
3. Volatile organic compounds, mycotoxins, allergenic proteins or other substances or gases produced by or arising out of any mold, mushroom, mildew, fungal structure or "spores".

K. **"Governmental authority"** means applicable federal, state, or local statutes, regulations, ordinances or orders.

L. **"Insured"** means:

1. The "named insured"; and
2. Any current or former principal, partner, officer, director, employee, member or manager (in the case of a limited liability company) or leased personnel of a "named insured", while acting within the scope of their employment or written agreement with such "named insured".

M. **"Insured contract"** means a contract or agreement listed in a Schedule of Insured Contracts endorsement to this policy, if any.

N. **"Loss"** means:

1. Compensatory damages, whether awarded by a court in a judgment or paid in settlement for:
   (a) "Bodily injury" which may include costs for medical monitoring but only when such medical monitoring is a direct result of physical injury; or
   (b) "Property damage" which may include diminution in property value and stigma damage to property, but only when such diminution in value or stigma damage is a direct result of physical injury to such property; and
2. "Claim expenses" in connection with a "claim" for Section III., N.1.(a) and N.1.(b) above.

"Loss" does not include "other loss".

O. **"Microbial substance"** means any substance that reproduces through release of "spores" or the splitting of cells including but not limited to bacteria, viruses, "fungus(i)", protozoa, chlamydiae, or rickkettsaie, whether or not the substance is living.

P. **"Named insured"** means the person or entity set forth in Item 1 of the Declarations, and any other person or entity listed in a Named Insured endorsement to the policy, if any.

Q. **"Natural resources"** means land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any State or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

R. **"Natural resource damages"** means the sum of:

1. Reasonable and necessary direct costs, including such costs of assessment and replacement required by applicable "governmental authority" to restore the "natural resources" to their baseline condition as they existed prior to the "pollution event";
2. "Use value" of injury to or destruction of "natural resources" between the time of a "pollution event" and restoration of the "natural resources" to the extent injured by the "pollution event"; and

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3. "Claim expenses" incurred in connection with a "claim" for injury to or destruction of "natural resources".

"Natural resource damages" does not include "cleanup costs" or "loss" for "property damage".

S. **"New pollution event"** means a "pollution event" that first commences on or after the "delimitation date".

T. **"Other loss"** has the meaning given in a Choice Coverage endorsement to this policy, if any. "Other loss" does not include "loss".

U. **"Policy period"** means the period set forth in Item 2 of the Declarations or:

1. Any shorter period arising from:
   (a) Cancellation or termination of this policy; or
   (b) With respect to a specific "covered location" the deletion of such "covered location" from this policy by us upon the "named insured's" written request; or
2. As otherwise expressly provided in an endorsement.

V. **"Pollution event"** means the discharge, dispersal, release, or escape of any solid, liquid, gaseous or thermal irritant, contaminant or pollutant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals, and waste into or upon land, or any structure on land, the atmosphere, or any watercourse or body of water including groundwater.

W. **"Potential claim"** means a "new pollution event" that an "insured" reasonably expects may result in a "claim".

X. **"Property damage"** means:

1. Physical injury to or destruction of tangible property including the resulting loss of use thereof; or
2. Loss of use of tangible property that has not been physically injured or destroyed.

"Loss" for "property damage" does not include "cleanup costs", "natural resource damages" or any other compensation for injury to or destruction of "natural resources".

Y. **"Reasonable legal costs"** means attorneys fees, costs, charges, and all other litigation expenses in connection with the defense of a "claim" or negotiation of cleanup standards in connection with "discovery", limited to rates we actually pay to counsel we retain in the ordinary course of business in the defense of similar "claims" or negotiation of similar matters in the community where the "claim" arose or is being defended or the "discovery" was made or is being negotiated; provided that we shall pay such rates and amounts only to the extent that and so long as they are evidenced to be reasonable and necessary attorney fees, costs, charges, and expenses. We may exercise the right to require that such counsel have certain minimum qualifications with respect to legal competency including experience in defending "claims" or negotiating in connection with a "discovery" similar to the one pending against or involving an "insured" and to require such counsel to have errors and omissions insurance coverage. It is a condition precedent to our obligation to pay any "reasonable legal costs" that an "insured" agree and be responsible for counsel responding to our requests for information regarding the "claim", "discovery" or any other matter in a timely and comprehensive manner.

Z. **"Responsible insured"** means a "named insured's" principal, partner, director, officer, member or manager (in the case of a limited liability company), or employee with responsibility for compliance, environmental or legal affairs, or risk management.

AA. **"Retroactive date"** means the date set forth in Item 7 of the Declarations, or any applicable endorsement, which is the earliest date that a "pollution event" can commence for coverage to be provided under the policy. If no entry appears or the words NOT APPLICABLE or N/A appear in the corresponding space of Item 7 of the Declarations then a "retroactive date" shall not apply.

BB. **"Spore"** or **"spores"** means any reproductive body produced by or arising out of any "fungus(i)".

CC. **"Termination of coverage"** means, for the purpose of EXTENDED REPORTING PERIODS (Section V.), the effective date of:

1. Cancellation or nonrenewal of this policy by the "named insured", or cancellation or nonrenewal of this policy by us other than for fraud or material misrepresentation, change in use of, or operations conducted at, the "covered location", or nonpayment of premium; or

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2. Deletion of a “covered location” from this policy by us upon the "named insured's" written request but only with respect to such “covered location".

DD. "Underground storage tank" means any tank in existence at a "covered location" as of the inception date of the policy or installed thereafter, including associated underground piping connected thereto, that has at least ten (10) percent of its volume, or any associated piping, below the ground.

EE. “Use value” means the value of the "natural resources" to the public attributable to the direct use of the services provided by such "natural resources", provided, however, that no aesthetic or historic use shall be considered in the determination of such value.

IV. EXCLUSIONS

This insurance does not apply to "claims", “cleanup costs”, “loss”, "natural resource damages" or "other loss" based upon, arising out of, or to the extent comprised of:

A. Asbestos and Lead

Any asbestos-containing material or lead-based paint which are or were part of any fixtures, buildings or improvements on, at or under the “covered location". However, this exclusion does not apply to "cleanup costs" to the extent attributable to asbestos-containing materials or lead-based paint in the soil or groundwater.

B. Contractual Liability

Any liability assumed by an “insured” under any contract or agreement. However, this exclusion does not apply to liability:

1. For “cleanup costs”, “loss”, "natural resource damages" or "other loss" that would have attached to an "insured" by operation of law in the absence of such contract or agreement; or
2. That is specifically assumed in an "insured contract" but only to the extent that any indemnity or contractual liability assumed thereby is consistent with liability expressly covered under, and not otherwise excluded from coverage by, this policy.

C. Financial Assurance

Any obligation to demonstrate financial assurance or financial responsibility, or to meet any financial assurance or financial responsibility requirements under any federal, state or local law. However, this exclusion does not apply to any such obligation to the extent specifically provided in an endorsement to this policy, if any.

D. Fines, Penalties and Punitive Damages

Any fines, penalties, or punitive, exemplary or multiple damages.

E. Known Pollution Event

Any “pollution event” known to a “responsible insured” prior to the effective date of the applicable insuring agreement listed as provided in Item 5 of the Declarations of this policy, unless such “pollution event” was disclosed to us in writing and listed on a Known Pollution Event Schedule and/or Disclosed Documents endorsement and provided that such "pollution event" is not otherwise excluded under the policy.

F. Known Underground Storage Tanks

Any “underground storage tank", whether active, inactive or abandoned, known to any “responsible insured” unless listed on a Scheduled Underground Storage Tank endorsement to this policy, if any.

G. Maintenance, Upgrades, Improvements or Installations

Any costs, charges or expenses for maintenance, upgrade or improvement of, or installation of any control to, any property or processes on, at, within or under a “covered location” even if such maintenance, upgrade, improvement or installation is required:

1. By "governmental authority"; or
2. As a result of "cleanup costs", “loss”, "natural resource damages" or "other loss" otherwise covered under the policy.

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H. Microbial Substance

Any "microbial substance".

I. Naturally Occurring Substance

Any naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena. However, this exclusion does not apply to the extent that an "insured" demonstrates that the naturally occurring substance:

1. Exceeds amounts or concentrations naturally present on, at, under or surrounding the “covered location", and
2. Was the result of a discharge, dispersal, release or escape of such naturally occurring substance.

J. Owned Property

"Property damage" to property that is owned or rented by or leased to, the "insured".

K. Related Persons and Organizations

Any “claim” made:

1. By an “insured” against any other “insured"; or
2. Against an “insured” by an organization or individual:
   a. That wholly or partially controls, owns, operates or manages an “insured"; or
   b. That is wholly or partially controlled, owned, operated or managed by the “insured”.

L. War

1. War, including undeclared or civil war;
2. Warlike action by a military force, including action in hindering or defending against an actual or expected attack, by any government, sovereign or other authority using military personnel or other agents; or
3. Insurrection, rebellion, revolution or usurped power, or action taken by any government, sovereign or other authority in hindering or defending against any of these.

M. Wrongful Acts or Deliberate Non-Compliance

Any:

1. Knowingly wrongful act, or
2. Deliberate non-compliance with any "governmental authority", administrative complaint, notice of violation, notice letter, or instruction of any governmental agency or body,

by or at the direction of a “responsible insured".

N. Workers’ Compensation and Injury as a Consequence of Employment

1. Any obligation of the “insured” that is owed, in whole or in part, under a workers compensation, disability benefits, unemployment compensation or any similar law;
2. Injury to any "insured" if such injury occurs during and in the course of employment;
3. Injury to the spouse, child, parent, brother or sister of any "insured" as a consequence of such "insured's" employment; or
4. Any obligation of an “insured” for indemnity or contribution to another because of “loss” or "other loss" arising out of such injury in the course of employment.

V. EXTENDED REPORTING PERIODS

A. RENEWAL OF COVERAGE

Provided that the "named insured" has renewed this policy, the "named insured" shall be entitled to a provisional extended reporting period of sixty (60) days (at no additional charge) within which to report:

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1. "Discovery" during the final thirty (30) days of the "policy period", such provisional extended reporting period to commence upon the date of "discovery"; or
2. A "claim" that is first made against the "insured" during the final thirty (30) days of the "policy period", such provisional extended reporting period to commence upon the date the "claim" is made against the "insured".

Any "discovery" or "claim" reported to us in writing during the provisional extended reporting period shall be deemed to have been made during the "policy period" and shall be subject to the remaining Limits of Liability for the "policy period", if any.

B. TERMINATION OF COVERAGE

Only with respect to "claims" seeking payment of "cleanup costs", “loss", "natural resource damages" or "other loss" to which an insuring agreement specifically listed as provided in Item 5 of the Declarations applies, the "named insured" shall be entitled to:

1. An automatic extended reporting period of sixty (60) days (at no additional charge) upon "termination of coverage".
2. Purchase an optional extended reporting period of up to three (3) years in duration commencing when the automatic extended reporting period ends, provided the "named insured":
   (a) makes a written request to us for such optional extended reporting period within sixty (60) days after "termination of coverage"; and
   (b) pays the additional premium when due. The charge for such optional extended reported shall not exceed one hundred percent (100%) of the total premium for the policy as set forth in Item 8 of the Declarations plus any additional premium described in an endorsement to the policy, if any.

   At the commencement of any such optional extended reporting period, the entire premium shall be considered earned, and in the event the optional extended reporting period is terminated before its expiration for any reason, we shall not return any portion of the premium paid. If such additional premium is paid when due, the optional extended reporting period may not be canceled by us, provided that all other terms and conditions of the policy are met.
3. Any “claim” first made against the "insured" and reported to us in writing during the automatic extended reporting period or, as applicable, the optional extended reporting period shall be deemed to have been made and reported on the last day of the “policy period” and coverage shall apply under this policy provided that:
   (a) The “pollution event” commenced on or after the "retroactive date" and before the end of the “policy period"; and
   (b) The "named insured" has not purchased any other insurance to replace coverage provided by this policy; and
   (c) The “claim” is otherwise covered under the terms and conditions of this policy; and
   (d) The "cleanup costs", "loss", "natural resource damages" or "other loss" resulting from such "claim" will be subject to the remaining Limits of Liability for this policy, if any; and
   (e) Notwithstanding CONDITIONS (Section VIII.), OTHER INSURANCE, and Section V., B.3 (b), above, the insurance provided for a "claim" first reported during the automatic extended reporting period or the optional extended reporting period is excess over any other valid and collectible insurance available under policies in force during the automatic or optional extended reporting periods.

VI. LIMITS OF LIABILITY AND DEDUCTIBLE

A. EACH POLLUTION EVENT LIMIT

Subject to the Aggregate Policy Limit, the most we will pay for all “cleanup costs”, “loss”, "natural resource damages" or "other loss" arising out of the same, continuous or repeated "pollution event" or series of related "pollution events" is the Each Pollution Event Limit set forth in Item 3 of the Declarations.

We shall not be obligated to pay any “cleanup costs”, “loss”, "natural resource damages" or "other loss", or undertake or continue the defense of any “claim", pending or future, after the Each Pollution Event Limit has been tendered into court or exhausted by payments for “cleanup costs”, “loss”, "natural resource damages" or "other loss".

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B. AGGREGATE POLICY LIMIT OF LIABILITY

The most we will pay for all “cleanup costs”, “loss” and "other loss" to which this insurance applies is the Aggregate Policy Limit set forth in Item 3 of the Declarations.

C. SUB-LIMIT OF LIABILITY/AGGREGATE SUB-LIMIT

If a sub-limit of liability is shown in Item 5 of the Declarations corresponding with a specific insuring agreement or in an endorsement to this policy, then, subject to the Each Pollution Event Limit and Aggregate Policy Limit set forth in Item 3 of the Declarations and the corresponding Aggregate Sub-Limit, such sub-limit of liability is the most we will pay for all "cleanup costs", "loss", "natural resource damages" or "other loss" as applicable, arising from the same, continuous or repeated "pollution event" or series of related "pollution events" to which the specific insuring agreement or endorsement applies. The corresponding Aggregate Sub-Limit is the most we will pay for all "cleanup costs", "loss", "natural resource damages" or "other loss", as applicable, under the terms of the insuring agreement or endorsement to which that Aggregate Sub-Limit corresponds.

The sub-limit of liability is not in addition to and will erode the Each Pollution Event Limit and the Aggregate Policy Limit set forth in Item 3 of the Declarations. If the Each Pollution Event Limit and/or Aggregate Policy Limit has been reduced to an amount which is less than the sub-limit of liability corresponding with a specific insuring agreement or in an endorsement, the lesser of the remaining Aggregate Policy Limit or remaining Each Pollution Event Limit is the most that will be available for payment of "cleanup costs", "loss", "natural resource damages" or "other loss" as applicable, to which to which that insuring agreement or endorsement applies.

D. DEDUCTIBLE

We will pay “cleanup costs”, “loss”, "natural resource damages" or "other loss" to which this insurance applies in excess of the Deductible set forth in Item 4 or Item 5 (corresponding with an insuring agreement specifically listed as provided) of the Declarations or as set forth in an endorsement to this policy, if any. The Deductible is the "named insured's" obligation and applies to all "cleanup costs”, “loss”, "natural resource damages", and "other loss" arising from the same, continuous or repeated "pollution event" or series of related “pollution events". The Deductible does not erode the Limits of Liability. We may advance payment for “cleanup costs”, “loss”, "natural resource damages" or "other loss" within the Deductible. The "named insured" shall promptly reimburse us for advancing any element of such “cleanup costs”, “loss”, "natural resource damages" or "other loss" paid by us within the Deductible.

If an "insured" agrees with us to use non-binding mediation to resolve a “claim” for which a defense has been provided and such “claim” is resolved thereby, the Deductible shall be reduced by 50% for that “claim” only, subject to a maximum reduction of $25,000.

E. MULTIPLE INSUREDS OR CLAIMANTS, MULTIPLE COVERAGES, MULTIPLE POLICY PERIODS, CLAIMS ARISING FROM POTENTIAL CLAIMS, AND CLAIMS REPORTED IN THE EXTENDED REPORTING PERIOD

1. MULTIPLE INSUREDS OR CLAIMANTS

The inclusion of more than one “insured” in the "discovery" of a "pollution event" or in the making of a “claim” regarding the same “pollution event” shall not increase the Limits of Liability set forth in Item 3 of the Declarations. Nor shall the "discovery" of a "pollution event" or the making of “claims” by more than one person or organization increase the Limits of Liability stated in the Declarations.

2. MULTIPLE COVERAGES

If the same, continuous or repeated "pollution event" or series of related "pollution events" is covered under more than one insuring agreement specifically listed as provided in Item 5 of the Declarations, only a single Each Pollution Event Limit shall apply to all “cleanup costs”, “loss”, "natural resource damages" or "other loss" arising from such "pollution event" or series of related "pollution events". Furthermore, if more than one Deductible is applicable, only the highest Deductible shall apply to all “cleanup costs”, “loss”, "natural resource damages", or "other loss" arising from such "pollution event" or series of related "pollution events".

3. MULTIPLE POLICY PERIODS

If we or an affiliate have issued pollution liability coverage to the "named insured" for the "covered location" in one or more consecutive and uninterrupted policy periods, and:

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(a) a "pollution event" or series of related "pollution events" that is first reported to us in accordance with all of the terms and conditions of this policy takes place over the "policy period" and one or more subsequent policy periods; and/or

(b) a "claim" for "cleanup costs", "loss", "natural resource damages" or "other loss" is first made against the "insured" during the "policy period" and reported to us in accordance with all of the terms and conditions of this policy; and/or

(c) a "pollution event" is first "discovered" during the "policy period" and reported to us in accordance with all of the terms and conditions of this policy;

all "claims", "cleanup costs", "loss", "natural resource damages", and "other loss" arising out of the same, continuous or repeated "pollution event" or series of related "pollution events" whether reported during the "policy period" or during a subsequent policy period shall be subject to the Limits of Liability and Deductible corresponding with this policy.

4. CLAIMS ARISING FROM POTENTIAL CLAIMS

A "potential claim" which subsequently becomes a "claim" shall be subject to the Limits of Liability corresponding to the policy period in effect when the “potential claim” was reported to us in accordance with CLAIMS PROVISIONS (Section VII., Paragraph B. NOTICE OF POTENTIAL CLAIM).

5. CLAIMS REPORTED IN THE EXTENDED REPORTING PERIOD

The extended reporting periods shall not serve to increase or reinstate the Limits of Liability set forth in Item 3 of the Declarations. The Limits of Liability shall be those that remain at the end of the “policy period".

VII. CLAIM PROVISIONS

A. NOTICE OF DISCOVERY OR CLAIM

In the event of a "discovery" or “claim", the “insured” shall give written notice to us as soon as possible containing particulars sufficient to identify an “insured” and reasonably obtainable information including:

1. The time, place, location, and a detailed explanation of the “pollution event” including, as applicable, the date of "discovery" or the date the "insured" received the “claim";
2. The names and addresses of any injured parties and available witnesses;
3. Any and all investigative or engineering reports, data or information about the “pollution event", "cleanup costs", "loss", "natural resource damages" or "other loss"; and
4. Any and all other relevant information about the "pollution event", “claim”, “cleanup costs”, “loss”, "natural resource damages" or "other loss".

If a “claim” is made against an “insured", the “insured” shall immediately forward to us every demand, notice, summons, complaint, order or other process or legal papers received by an “insured” or its representatives.

B. NOTICE OF POTENTIAL CLAIM

If during the “policy period” the “insured” first becomes aware of a "potential claim", the “insured” may provide written notice to us containing particulars sufficient to identify an “insured” and providing all of the following information:

1. The cause of the "new pollution event" if known or suspected, including any potential cause;
2. The time, place, location, and details of the "new pollution event" including how and when the “insured” first became aware of the “potential claim";
3. The names and addresses of any actually or potentially injured parties or damaged property, and available witnesses, if and to the extent reasonably available;
4. Any and all investigative or engineering reports, data or information about the “potential claim", and any other information containing "cleanup costs", “loss”, "natural resource damages" or "other loss" that may result; and
5. Any other relevant information about the “potential claim", "cleanup costs", “loss”, "natural resource damages" or "other loss".

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If all of the foregoing information is provided to us in writing during the "policy period" and the "potential claim" subsequently becomes a “claim” made against the “insured” and reported to us during any renewal policy, any applicable extended reporting period, or within five (5) years after the later of the end of any such policy or extended reporting period, such "claim" shall be deemed, for the purposes of this insurance, to have been made on the date on which written notice of the “potential claim” was first received by us and shall be subject to the terms, conditions and Limits of Liability applicable to the policy in effect as of such date.

We may elect to investigate any "potential claim" which is reported to us. Any costs associated with the investigation of a "potential claim" prior to a "claim" being made will not be considered "claim expenses". These costs shall not be applied towards reducing the applicable Deductible, and are in addition to the Limits of Liability and shall be borne by us.

C. NOTICE TO US

All "discovery", “claims” and "potential claims” shall be reported to us in writing at the address shown in Item 9 of the Declarations.

D. SETTLEMENT

The “insured” shall not settle any “claim” without our written consent. If we recommend a settlement, the “insured” shall have the opportunity to concur, such concurrence not to be unreasonably withheld or denied. If we recommend a settlement that is acceptable to a claimant for a total amount in excess of the applicable Deductible and the “insured” refuses to concur with such settlement, then our liability for “cleanup costs", "loss", "natural resource damages", and “other loss” shall be limited to that portion of the recommended settlement and the "claim expenses" incurred as of the date of the “insured’s” refusal, which exceed the Deductible and fall within the Limit of Liability.

E. VOLUNTARY PAYMENTS, ADMISSIONS OR ASSUMPTIONS OF LIABILITY

No costs, charges or expenses shall be incurred or paid or liability admitted or assumed by an “insured” without our written consent, which shall not be unreasonably withheld, delayed or denied.

Notwithstanding the foregoing, an “insured” may incur such “emergency expense” as reasonably necessary to prevent or mitigate "cleanup costs”, “loss”, "natural resource damages" or "other loss", provided the “insured” provides written notice to us within ninety-six (96) hours after any portion of such "emergency expense" is incurred.

VIII. CONDITIONS

A. APPRAISAL

If we and the "insured" disagree as to the value of real property or improvements thereto in connection with "cleanup costs" (Section III. DEFINITIONS, paragraph D.2) or the amount of "other loss" for Coverages H, I, and J (only if specifically listed as provided in Item 5 of the Declarations), either party may make written demand for an appraisal of the value of the property or the amount of "cleanup costs" or "other loss". In this event, each party will select a competent and impartial appraiser. The two appraisers will select an umpire. If they cannot agree, either may request that selection be made by a judge of a court having jurisdiction. The appraisers will state separately the value of the property and amount of "cleanup costs" or "other loss". If they fail to agree, they will submit their differences to the umpire. A decision agreed to by any two will be binding. Each party will:

1. Pay its chosen appraiser; and
2. Bear the other expenses of the appraisal and umpire equally.

If there is an appraisal, we retain our right to deny coverage for "cleanup costs" or "other loss" as applicable.

B. ASSIGNMENT

Assignment of interest under this policy shall not bind us unless and until our consent is endorsed thereon, which consent shall not be unreasonably withheld, delayed or denied.

C. AUDIT AND INSPECTION

We shall be permitted upon reasonable prior notice to audit the “insured’s” books and records at any time during the “policy period” and within three (3) years after the final termination of this policy, as far as they relate to the subject matter of the policy and any "cleanup costs", "loss", "natural resource damages" or "other loss" for which

Rail Trail Spec Policy & Ends - cont.

payment may be made under the policy. We shall also be permitted, upon reasonable prior notice, to inspect, sample and monitor on a continuing basis any “covered location” and operations conducted thereon. Neither our right to make inspections, sample and monitor, nor the actual undertaking thereof, nor any report thereon shall constitute an undertaking, on behalf of us or others, to determine or warrant that a “covered location” or operation is safe, healthful or conforms to acceptable engineering practice or is in compliance with any law, rule or regulation. We will not manage or exercise control over any “covered location” or operation.

D. BANKRUPTCY

Bankruptcy or insolvency of an “insured” will not relieve us of our obligations to an "insured" under this policy nor increase our obligations including, but not limited to, those with respect to any Deductible amount. However, if we have advanced any payment for “cleanup costs", “loss", "natural resource damages" or "other loss" within the Deductible pursuant to LIMITS OF LIABILITY AND DEDUCTIBLE (VI., paragraph D), then any such payments to the extent not reimbursed to us shall reduce the Limits of Liability. Furthermore, this condition shall not impair our ability to assert any defense on behalf of an "insured".

E. CANCELLATION

This policy may be canceled by the "named insured" by surrender to us or by mailing to us written notice stating when thereafter cancellation shall be effective.

This policy may be canceled by us by mailing to the "named insured" at the address set forth in Item 1 of the Declarations, a notice stating when thereafter such cancellation shall be effective. We may cancel this policy for the following reasons only:

1. Fraud or material misrepresentation;
2. Any “insured’s” material failure to comply with the terms, conditions or contractual obligations under this policy including failure to pay the Deductible when due;
3. A material change in use of, or operations conducted at, any "covered location"; or
4. Nonpayment of premium.

The mailing of notice as aforesaid shall be sufficient proof of notice. The time of surrender or the effective date and hour of cancellation stated in the notice shall become the end of the “policy period”. Delivery of such written notice either by the "named insured" or by us shall be equivalent to mailing. Notice of pending cancellation will be provided not less than: (a) sixty (60) days prior to the effective date of cancellation for any “insured’s” failure to comply with the terms, conditions or contractual obligations under this policy including failure to pay the Deductible when due, or change in use of, or operations conducted at the "covered location" that materially increases risks to which this insurance applies; (b) thirty (30) days prior to the effective date of cancellation for fraud or material misrepresentation; and (c) ten (10) days prior to the effective date of cancellation for nonpayment of premium.

If we cancel, subject to any minimum earned premium that may apply, the return premium will be calculated on a pro rata basis. If the "named insured" cancels, subject to any minimum earned premium that may apply, there may be no return premium or the return premium may be less than pro rata.

F. CHANGES

The terms of this policy shall not be waived or changed, except by endorsement issued to form a part of this policy.

G. CHOICE OF LAW

In the event an “insured” and we dispute the meaning, interpretation or operation of any term, condition, definition or provision of this policy resulting in litigation, arbitration or other form of dispute resolution, the “insured” agrees with us that the law of the State of New York shall apply without giving effect to any conflicts or choice of law principles. In the event the “insured” agrees with us to resolve the dispute by arbitration, any such arbitration shall be in accordance with the Commercial Arbitration Rules of the American Arbitration Association in effect when such agreement is reached.

H. COOPERATION

The “insured” agrees with us to assist and cooperate in the fulfillment of the policy's terms, including the investigation, adjustment, defense or settlement of any “claim" or in connection with the "discovery" of any

Rail Trail Spec Policy & Ends - cont.

"pollution event". Such cooperation may include participating at meetings; testifying at hearings, depositions and trials; and securing evidence. The “insured” shall be allowed $250 per day but no more than $5,000 in total allowable expenses for compensation to its principals, partners, officers, directors, employees or members or managers for personally attending any such meetings, hearings or depositions at our request. These allowable expenses shall not reduce the applicable Limits of Liability and Deductible set forth in Item 3 of the Declarations.

In addition, all "insureds" shall cooperate with us in the pursuit of any coverage that may be available from other insurers and/or under other insurance policies for "claim expenses", "cleanup costs", "loss", "natural resource damages" or "other loss", covered under this policy.

I. DECLARATIONS

By acceptance of this policy, the "named insured" agrees that the statements in the Declarations, and those made during the application process and in the Application are its agreements and representations, that this policy is issued in reliance upon the truth of such statements and representations and that this policy embodies all agreements existing between the "named insured" and us relating to this insurance.

J. HEADINGS

The descriptions in the headings of this policy are solely for convenience and form no part of the policy terms and conditions.

K. OTHER INSURANCE

1. The insurance provided under this policy is primary insurance, except as otherwise provided in connection with any extended reporting period, or where stated in an endorsement to apply in excess of, or contingent upon the absence of, other insurance. When this insurance is primary and the “insured” has other insurance which is stated to be applicable to the “cleanup costs”, “loss”, "natural resource damages" or "other loss" on an excess basis, the amount of our liability under this policy shall not be reduced by the existence of such excess insurance.
2. When this insurance is excess, we shall have no duty to defend the "insured" against any "claim" if any other insurer has a duty to defend the "insured" against such "claim". If no other insurer defends, we will undertake to do so, but we will be entitled to the insured's rights against all those other insurers. When this insurance is excess over other insurance, we will pay only our share of the amount of “cleanup costs”, “loss”, "natural resource damages" or "other loss" if any, that exceeds the sum of:
   a. The total amount that all such other insurance would pay for the “cleanup costs”, “loss”, "natural resource damages" or "other loss" in the absence of this insurance; and
   b. The total of all deductible and self-insured amounts under all that other insurance.
3. When both this insurance and other insurance apply to the “cleanup costs”, “loss”, "natural resource damages" or "other loss" on the same basis, whether primary, excess or contingent, we shall not be liable under this policy for a greater proportion of the “cleanup costs", "natural resource damages" " or "other loss" than the amount set forth in Item 3 of the Declarations or the amount resulting from the following contribution methods, whichever is lesser:
   a. Contribution by equal shares - Under this approach each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the “cleanup costs”, “loss”, "natural resource damages" or "other loss" remains, whichever occurs first; or
   b. Contribution by limits - each insurer’s share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

L. SEPARATION OF INSUREDS

Except with respect to the Limits of Liability and any rights and duties specifically assigned to the "named insured" set forth in Item 1 of the Declarations, this insurance applies:

1. As if each "named insured" were the only "named insured"; and
2. Separately to each “insured” against whom a “claim” is made.

Misrepresentation, concealment, breach of condition or violation of any duty under this policy by one “insured” shall not prejudice the interest of coverage for another “insured” under this policy, except where an "insured" is a

Rail Trail Spec Policy & Ends - cont.

parent, subsidiary, or affiliate of the "named insured" set forth in Item 1 of the Declarations. For purposes of the immediately preceding sentence, an "affiliate" is any company or entity that is in control of, controlled by, or under common control with the "named insured". "Control" (including the terms "controlled by" and "under common control with") as used herein includes, but is not limited to, the possession, directly or indirectly and whether acting alone or in conjunction with others, of the authority to direct or cause the direction of the management or policies of a company or entity. A voting interest of twenty five percent (25%) or more creates a rebuttable presumption of control.

M. SOLE AGENT

The "named insured" set forth in Item 1 of the Declarations shall act on behalf of all “insureds” for all purposes, including but not limited to the payment of Deductible, payment or return of premium, receipt and acceptance of any endorsement issued to form a part of this policy, giving and receiving notice of cancellation or nonrenewal, and the exercise of the rights provided in EXTENDED REPORTING PERIODS (Section V.)

N. SUBROGATION

In the event of any payment under this policy, we shall be subrogated to all of an “insured’s” rights of recovery against any person or organization, including any rights to contribution from any other insurer. An “insured” shall execute and deliver instruments and papers and do whatever else is necessary to secure such rights. No “insured” shall do anything to impair, prejudice or waive such rights.

Any recovery obtained through subrogation, after expenses incurred in such subrogation are deducted by the party bearing the expense, shall be applied proportionately to the "insured" and us for actual payments as a result of judgment, settlement or defense of a “claim", or "cleanup costs" with respect to the "discovery" of a "pollution event".

O. THIRD PARTY BENEFICIARIES

No third party beneficiaries are created as a result of this policy. This policy creates no rights by or on behalf of any third parties. We have no obligation under this policy to any third party whatsoever and specifically we have no obligation to make payment to anyone except the "insured".

Rail Trail Spec Policy & Ends - cont.

Our duty to adjust, defend and settle any and all “claims”, pending and future, to which an insuring agreement specifically listed as provided in Item 5 of the Declarations applies, ends when the remaining applicable Limits of Liability have been tendered into court or have been exhausted by payment of "loss", "cleanup costs", "natural resource damages" or "other loss".

III. DEFINITIONS

A. "Bodily injury" means any physical injury, sickness, disease, mental anguish or emotional distress sustained by any person, including death resulting therefrom.

B. "Claim" means a written demand or written notice received by the “insured” alleging liability or responsibility on the part of the “insured". "Claim" does not include a "potential claim" that was reported in a prior policy period as described in CLAIM PROVISIONS (Section VII., B. NOTICE OF POTENTIAL CLAIM), that has become a "claim" during the "policy period".

C. "Claim expenses" means:

1. Fees charged by an attorney designated by:
   a. Us; or
   b. The “insured” with our prior written consent, provided such fees are "reasonable legal costs"; and
2. All other fees, costs and expenses resulting from the adjustment, defense, settlement and appeal of a “claim” if incurred by us, or by or on behalf of the “insured” with our written consent, including interest on the full amount of any judgment that accrues after entry of the judgment and before we have paid, offered to pay (including an offer of judgment), or deposited in court the amount available for the judgment under the policy.

"Claim expenses” does not include the salaries or expenses of regular employees of ours or the “insured”.

D. "Cleanup costs" means:

1. Reasonable and necessary costs, charges and expenses incurred in the investigation, removal, remediation (including associated monitoring), neutralization or immobilization of contaminated soil, surface water, groundwater, or other contamination including "emergency expense", but excluding any costs, charges or expenses:
   (a) incurred by the “insured” to confirm "discovery" (except as specifically provided for in Section III. D.4. below); or
   (b) to achieve regulatory standards at a "covered location" that are stricter than those necessary for the actual or intended use of such location as set forth in the Application or in the Schedule of Covered Locations endorsement.
2. Where real property or improvements thereto are damaged in the course of performing the activities described in Section III., D.1. above, the lesser of the actual cost to repair, or the actual cash value of, such real property or improvements (as determined based upon the condition of the property or improvements thereto immediately prior to such damage) but excluding any:
   (a) damage caused by the underlying "pollution event"; or
   (b) costs, charges or expenses for improvements or betterments, including, but not limited to, those arising from compliance with any law that was not applicable to (including by operation of any grandfather provision contained in any such law) or not enforced against the property before it was so damaged; and
3. "Claim expenses" in connection with a "claim" for "cleanup costs"; or
4. With respect to "discovery", only those "reasonable legal costs" incurred with our prior written consent.

"Cleanup costs" does not include "loss" for "property damage", "natural resource damages" or any other compensation for injury to or destruction of "natural resources".

E. "Covered location" means, and is limited to, that property listed in the Schedule of Covered Locations endorsement to the extent therein specifically described, including, without limitation, by street address, lot and block reference, metes and bounds, or by a combination of these or any other substantially equivalent land description methods, current as of the effective date of coverage for any such property.

Rail Trail Spec Policy & Ends - cont.

F. **"Delimitation date"** means the date set forth in Item 6 of the Declarations or in the Schedule of Covered Locations endorsement as applicable.

G. **"Discovered"** or **"discovery"** means discovery by a "responsible insured" of a "pollution event" in amounts or concentrations that exceed allowable levels or concentrations established under "governmental authority".

H. **"Emergency expense"** means costs, charges and expenses incurred to avoid an actual imminent and substantial endangerment to the public health or welfare or the environment.

I. **"Existing pollution event"** means a "pollution event" that commenced on or after the "retroactive date" and prior to the "delimitation date".

J. **"Fungus"** or "fungi" means any:

1. Form or type of mold, mushroom or mildew,
2. Other fungal structure, and
3. Volatile organic compounds, mycotoxins, allergenic proteins or other substances or gases produced by or arising out of any mold, mushroom, mildew, fungal structure or "spores".

K. **"Governmental authority"** means applicable federal, state, or local statutes, regulations, ordinances or orders.

L. **"Insured"** means:

1. The "named insured"; and
2. Any current or former principal, partner, officer, director, employee, member or manager (in the case of a limited liability company) or leased personnel of a "named insured", while acting within the scope of their employment or written agreement with such "named insured".

M. **"Insured contract"** means a contract or agreement listed in a Schedule of Insured Contracts endorsement to this policy, if any.

N. **"Loss"** means:

1. Compensatory damages, whether awarded by a court in a judgment or paid in settlement for:
   (a) "Bodily injury" which may include costs for medical monitoring but only when such medical monitoring is a direct result of physical injury; or
   (b) "Property damage" which may include diminution in property value and stigma damage to property, but only when such diminution in value or stigma damage is a direct result of physical injury to such property; and
2. "Claim expenses" in connection with a "claim" for Section III., N.1.(a) and N.1.(b) above.

"Loss" does not include "other loss".

O. **"Microbial substance"** means any substance that reproduces through release of "spores" or the splitting of cells including but not limited to bacteria, viruses, "fungus(i)", protozoa, chlamydiae, or rickkettsaie, whether or not the substance is living.

P. **"Named insured"** means the person or entity set forth in Item 1 of the Declarations, and any other person or entity listed in a Named Insured endorsement to the policy, if any.

Q. **"Natural resources"** means land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any State or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

R. **"Natural resource damages"** means the sum of:

1. Reasonable and necessary direct costs, including such costs of assessment and replacement required by applicable "governmental authority" to restore the "natural resources" to their baseline condition as they existed prior to the "pollution event";
2. "Use value" of injury to or destruction of "natural resources" between the time of a "pollution event" and restoration of the "natural resources" to the extent injured by the "pollution event"; and

Rail Trail Spec Policy & Ends - cont.

Amendment of Cancellation

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice Pollution Liability Insurance – Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions and conditions of the policy, that CONDITIONS (Section VIII), Condition E., is deleted and replaced with the following:

E. CANCELLATION

This policy may be canceled by the "named insured" by surrender to us or by mailing to us written notice stating when thereafter cancellation shall be effective.

This policy may be canceled by us by mailing to the "named insured" at the address set out in Item 1 of the Declarations, a notice stating when thereafter such cancellation shall be effective. We may cancel this policy for the following reasons only:

1. Fraud or material misrepresentation;
2. Any "insured's" material failure to comply with the terms, conditions or contractual obligations under this policy including failure to pay the Deductible when due;
3. A material change in use of or operations conducted at any "covered location"; or
4. Nonpayment of premium.

The mailing of notice as aforesaid shall be sufficient proof of notice. The time of surrender or the effective date and hour of cancellation stated in the notice shall become the end of the "policy period". Delivery of such written notice either by the "named insured" or by us shall be equivalent to mailing. Notice of pending cancellation will be provided not less than: (a) _____ ( ) days for any "insured's" failure to comply with the terms, conditions or contractual obligations under this policy including failure to pay the Deductible when due, or change in use of, or operations conducted at the "covered location" that materially increases risks to which this insurance applies; (b) thirty (30) days for fraud or material misrepresentation; and (c) ten (10) days for nonpayment of premium.

If we cancel, subject to any minimum earned premium that may apply, the return premium will be calculated on a pro rata basis. If the "named insured" cancels, subject to any minimum earned premium that may apply, there may be no return premium or the return premium may be less than pro rata.

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

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Rail Trail Spec Policy & Ends - cont.

Nuclear Exclusion

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice Pollution Liability - Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions, and conditions of the policy, that the following is added to EXCLUSIONS (Section IV.):

Nuclear

1. Any coverage for "cleanup costs," or "loss", "natural resource damages" or "other loss" and including any applicable "claim expenses:"
   a. With respect to which an "insured" under the policy is also an "insured" under a nuclear energy liability policy issued by Nuclear Energy Liability Insurance Association, Mutual Atomic Energy Liability Underwriters, Nuclear Insurance Association of Canada or any of their successors, or would be an "insured" under any such policy but for its termination upon exhaustion of its limit of liability; or
   b. Resulting from the "hazardous properties" of "nuclear material" and with respect to which (a) any person or organization is required to maintain financial protection pursuant to the Atomic Energy Act of 1954, or any law amendatory thereof, or (b) the "insured" is, or had this policy not been issued would be, entitled to indemnity from the United States of America, or any agency thereof, under any agreement entered into by the United States of America, or any agency thereof, with any person or organization.
2. Under any liability coverage, "cleanup costs," "loss", "natural resource damages" or "other loss" including any applicable "claim expenses" resulting from "hazardous properties" of "nuclear material," if:
   a. The "nuclear material" (i) is at any "nuclear facility" owned by or operated by or on behalf of, an "insured" or (ii) has been discharged or dispersed therefrom;
   b. The "nuclear material" is contained in "spent fuel," or "waste" at any time possessed, handled, used, processed, stored, transported or disposed of, by or on behalf of an "insured"; or
   c. The "cleanup costs," "loss," "bodily injury" or "property damage" arises out of the furnishing by an "insured" of services, materials, parts or equipment in connection with the planning, construction, maintenance, operation or use of any "nuclear facility," but if such facility is located within the United States of America, its territories or possessions or Canada, this exclusion (3) applies only to "property damage" to such "nuclear facility" and any property thereat.

STF-EPC-143-A CW (11/07)
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Rail Trail Spec Policy & Ends - cont.

As used in this exclusion:

"Hazardous properties" includes radioactive, toxic or explosive properties.

"Nuclear material" means "source material," "special nuclear material" or "by-product material."

"Source material," "special nuclear material," and **"by-product material"** have the meanings given them in the Atomic Energy act of 1954 or in any law amendatory thereof.

"Spent fuel" means any fuel element or fuel component, solid or liquid, which has been used or exposed to radiation in a "nuclear reactor."

"Waste" means any waste matter (a) containing "by-product material" other than the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its "source material" content, and (b) resulting from the operation by any person or organization of any "nuclear facility" included under the first two paragraphs of the definition of "nuclear facility."

"Nuclear facility" means:

a. Any "nuclear reactor";

b. Any equipment or device designed or used for (1) separating the isotopes of uranium or plutonium, (2) processing or utilizing "spent fuel," or (3) handling, processing or packaging "waste";

c. Any equipment or device used for the processing, fabricating or alloying of "special nuclear material" if at any time the total amount of such material in the custody of the "insured" at the premises where such equipment or device is located consists of or contains more than 25 grams of plutonium or uranium 233 or any combination thereof, or more than 250 grams of uranium 235;

d. Any structure, basin, excavation, premises or place prepared or used for the storage or disposal of "waste";

and includes the site on which any of the foregoing is located, all operations conducted on such site and all premises used for such operations.

"Nuclear reactor" means any apparatus designed or used to sustain nuclear fission in a self-supporting chain reaction or to contain a critical mass of fissionable material. "Property damage" for the purposes of this endorsement, includes all forms of radioactive contamination of property.

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

STF-EPC-143-A CW (11/07)
Page 2 of 2

Rail Trail Spec Policy & Ends - cont.

Schedule of Covered Locations

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice Pollution Liability - Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions, and conditions of the policy, that the following are "covered location(s)" for purposes of Section III. Definitions, paragraph E.:

	Covered Location Description	Use Description	Retroactive Date	Delimitation Date

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

STF-EPC-150-A CW (08/12)
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Rail Trail Spec Policy & Ends - cont.

Broad Named Insured

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice Pollution Liability - Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions and conditions of the policy, that DEFINITIONS, Section III., paragraph P. "named insured" is deleted and replaced with the following:

P. "Named insured" means:

1. The person or entity set forth in Item 1 of the Declarations;
2. Any company in which the person or entity listed in Item 1 of the Declarations has an ownership interest of more than 50% during the "policy period"; and
3. Any other person or entity listed in a Named Insured endorsement to the policy, if any.

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

STF-EPC-177-A CW (04/08)
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Rail Trail Spec Policy & Ends - cont.

Fines & Penalties Endorsement

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice Pollution Liability - Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions, and conditions of the policy, that EXCLUSIONS (Section IV.) paragraph D. Fines, Penalties and Punitive Damages is deleted and replaced as follows:

D. Fines, Penalties and Punitive Damages

Any fines, penalties, or punitive, exemplary or multiple damages. However, this exclusion does not apply to civil fines or penalties, or to punitive, exemplary or multiple damages to the extent such damages:

1. Are insurable by law, and
2. Result from a "claim" wherein we are obligated to pay "loss" under the terms and conditions of the policy.

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

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Rail Trail Spec Policy & Ends - cont.

Z Choice Coverage F: Non-Owned Disposal Sites (Blanket)

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice® Pollution Liability- Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions and conditions of the policy, that the following changes are made to the policy solely with respect to coverage under this endorsement and solely with respect to waste and/or materials generated at the following "covered locations" and subject to any applicable "retroactive date":

Covered Location	Retroactive Date

I. INSURING AGREEMENTS (Section I.), is amended to include the following BUT ONLY IF AND TO THE EXTENT COVERAGE F IS SPECIFICALLY LISTED AS PROVIDED IN ITEM 5 OF THE DECLARATIONS

COVERAGE F: NON-OWNED LOCATIONS

1. <u>On-Site</u>

(a) Bodily Injury

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "bodily injury":

(i) sustained by a "third party" while within the boundaries of a "non-owned location"; and

(ii) resulting from a "pollution event" on, at or under such "non-owned location";

provided the "claim" is first made against the "insured" during the "policy period" and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

(b) Property Damage

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "property damage":

(i) to "third party" property within the boundaries of a "non-owned location"; and

(ii) resulting from a "pollution event" on, at or under such "non-owned location";

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Rail Trail Spec Policy & Ends - cont.

provided the "claim" is first made against the “insured” during the "policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(c) Third Party Cleanup Costs

We will pay “cleanup costs” that an "insured" is legally obligated to pay as a result of a "claim" resulting from a "pollution event” on, at, or under a “non-owned location”, provided the “claim” is first made against the "insured" during the "policy period" and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "loss" or "cleanup costs" attributable to any irritant, contaminant or pollutant that is outside the boundaries of a "non-owned location".

2. Off-Site

(a) Bodily Injury

We will pay "loss" that an "insured" is legally obligated to pay as a result of a "claim" for "bodily injury":

(i) sustained by a "third party" while beyond the boundaries of a "non-owned location"; and

(ii) resulting from a “pollution event” that migrates beyond the boundaries from such "non-owned location";

provided the "claim" is first made against the “insured” during the "policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(b) Property Damage

We will pay "loss" that an “insured” is legally obligated to pay as a result of a “claim” for "property damage":

(i) to "third party" property beyond the boundaries of a "non-owned location"; and

(ii) resulting from a “pollution event” that is migrating beyond the boundaries from such "non-owned location";

provided the "claim" is first made against the “insured” during the "policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

(c) Third Party Cleanup Costs

We will pay “cleanup costs” that an "insured" is legally obligated to pay as a result of a "claim" resulting from a "pollution event” that migrates beyond the boundaries from a “non-owned location” provided the “claim” is first made against the "insured" during the "policy period", and the "claim" is reported to us in writing during the “policy period” or any applicable extended reporting period.

Unless covered under any other insuring agreement specifically listed as provided in Item 5 of the Declarations, we shall have no obligation to pay any "loss" or "cleanup costs" attributable to any irritant, contaminant or pollutant that is on, at or under a "non-owned location".

II. The following are added to DEFINITIONS (Section III.) solely with respect to coverage provided by this endorsement:

"Non-owned location" means a location that is neither partially nor wholly owned or operated by an "insured" or any subsidiary or affiliate company of an "insured" that, at the time of any treatment, recycling, reclamation, storage or disposal of any waste, products and/or materials generated from a "covered location" scheduled in this endorsement, is:

1. Licensed and/or certified by "governmental authority" to accept waste, products and/or materials generated from a "covered location" scheduled in this endorsement; and
2. Not listed on the CERCLA Information System (CERCLIS) as defined in the Code of Federal Regulations, 40 CFR Part 300.5 (revised as of July 1, 2000) or any state or local equivalent.

“Third party” means any person or entity other than an owner, operator, contractor or sub-contractor of the "non-owned location" or their employees.

STF-EPC-192-B CW (03/11)
Page 2 of 3

Rail Trail Spec Policy & Ends - cont.

III. The following is added to Section IV. EXCLUSIONS solely with respect to coverage provided by this endorsement:

Products Liability

Goods or products designed, manufactured, sold, handled, distributed, or supplied by the “insured” or by others trading under their name or under license from the “insured".

IV. CONDITIONS (Section VIII.), Condition K., Other Insurance, is replaced with the following solely with respect to coverage provided by this endorsement:

K. OTHER INSURANCE – When other insurance is available to the “insured” for “loss” or "cleanup costs" under the terms and conditions of this policy and this endorsement, our obligation to the “insured” shall be as follows:

1. The coverage provided by this policy and this endorsement shall apply as excess insurance over any other valid and collectible insurance, be it primary or excess. Notwithstanding the foregoing, this excess insurance shall operate as primary insurance as a result of the receivership, insolvency, or inability to pay of any insurer with respect to both the duty to indemnify and the duty to defend but shall not apply as primary insurance to the “insured” while acting as a self-insured for any coverage.
2. Where this insurance is excess insurance, we will pay only our share of the amount of “loss” or "cleanup costs" if any, that exceeds the total amount of all such valid and collectible insurance.

The “insured” shall promptly, upon our request, provide us with copies of all policies potentially applicable to liability covered by this endorsement.

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

STF-EPC-192-B CW (03/11)
Page 3 of 3

Rail Trail Spec Policy & Ends - cont.

Massachusetts BRAC Program Endorsement

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice Pollution Liability – Claims Made and Reported Coverage

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions and conditions of the policy, that the following modifications shall apply to the policy:

I. DEFINITIONS (Section III), paragraphs D. "cleanup costs" and K. "governmental authority" are deleted and replaced with the following:

D. "Cleanup costs" means:

1. Reasonable and necessary costs, charges and expenses incurred in the investigation, removal, remediation, in-situ treatment, neutralization or immobilization of contaminated soil, surface water, groundwater, or other contamination including associated monitoring and "emergency expense", but excluding any costs, charges or expenses:

   (a) incurred by the "insured" to confirm "discovery" (except as specifically provided for in Section III. D.4. below); or

   (b) to achieve regulatory standards at a "covered location" that are stricter than those necessary for the actual or intended use of such location as set forth in the Application or in the Schedule of Covered Locations endorsement.

2. Where real property or improvements thereto are damaged in the course of performing the activities described in Section III., D.1. above, the lesser of the actual cost to repair, or the actual cash value of, such real property or improvements (as determined based upon the condition of the property or improvements thereto immediately prior to such damage) but excluding any:

   (a) damage caused by the underlying "pollution event"; or

   (b) costs, charges or expenses for improvements or betterments, including, but not limited to, those arising from compliance with any law that was not applicable to (including by operation of any grandfather provision contained in any such law) or not enforced against the property before it was so damaged; and

3. "Claim expenses" in connection with a "claim" for "cleanup costs"; or

4. With respect to "discovery", only those "reasonable legal costs" incurred with our prior written consent.

"Cleanup costs" does not include "loss" for "property damage", "natural resource damages" or any other compensation for injury to or destruction of "natural resources".

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Page 1 of 3

Rail Trail Spec Policy & Ends - cont.

K. "Governmental authority" means applicable federal, state, or local statutes, regulations, ordinances or orders, including, but not limited to the Massachusetts General Law Chapter 21E and the Licensed Site Professional system of the Massachusetts Contingency Plan, as embodied in 3310 CMR 40.000, provided however, in no event, shall "governmental authority" include any Licensed Site Professional that:

1. Is an "insured"; or
2. Has any investment or ownership interest in the "covered location" prior to or during the "policy period".

II. DEFINITIONS (Section III) is amended to add the following paragraph FF. Licensed Site Professional:

FF. "Licensed Site Professional" means a professional duly acting pursuant to Massachusetts General Law Chapter 21E and the regulations at 310 CMR 40,000 et. seq., (the Massachusetts Contingency Plan).

III. EXCLUSIONS (Section IV), paragraph B. Contractual Liability is deleted and replaced with the following:

B. Contractual Liability

Any liability assumed by an "insured" under any contract or agreement. However, this exclusion does not apply to liability:

1. For "cleanup costs", "loss", "natural resource damages", or "other loss" that would have attached to an "insured" by operation of law in the absence of such contract or agreement; or
2. That is specifically assumed in an "insured contract" but only to the extent that any indemnity or contractual liability assumed thereby is consistent with liability expressly covered under, and not otherwise excluded from coverage by, this policy; or
3. For "claims" by the Massachusetts Business Development Corporation against the "named insured" under any loan agreement between the Massachusetts Business Development Corporation and the "named insured."

IV. CONDITIONS (Section VIII), paragraphs B. Assignment and G. Choice of Law are deleted and replaced with the following:

B. ASSIGNMENT

It is hereby agreed that this policy may be assigned with our prior written consent, which consent shall not be unreasonably withheld or delayed. Assignment of interest under this policy shall not bind us unless and until our consent is endorsed thereon.

G. CHOICE OF LAW/ARBITRATION

It is hereby agreed that all questions regarding the interpretation of the terms of this policy and all questions, claims or disputes relating to performance hereunder, including our failure to pay any amount claimed to be due hereunder, shall be governed and construed in accordance with the laws of the Commonwealth of Massachusetts, without giving effect to any choice of law provisions or rule that would cause the application of the domestic laws of any other jurisdiction.

It is hereby understood and agreed that all disputes or differences which may arise under or in connection with this policy, whether arising before or after termination of this policy, shall be submitted to the American Arbitration Association in accordance with its then prevailing commercial arbitration rules. By agreement between the "insured" and us, the Massachusetts Office of Dispute Resolution instead may be designated and used in accordance with its then prevailing arbitration rules. The arbitrators shall be chosen in the manner and within the time frames provided by such rules. Any party may commence such arbitration proceeding in Boston, Massachusetts. The arbitrators shall give due consideration to the general principles of the laws of the Commonwealth of Massachusetts in effect for the construction and interpretation of the provisions of this policy. The written decision of the arbitrators shall be provided to both parties and shall be binding on them. Each party shall bear equally the expenses of arbitration.

Rail Trail Spec Policy & Ends - cont.

V. CONDITIONS (Section VIII) is amended to add the following paragraphs P, Duties of the Insured in the Event of a Pollution Event and Q. Sale or Transfer of the Covered Location:

DUTIES OF THE INSURED IN THE EVENT OF A POLLUTION EVENT

It is hereby agreed that the "named insured" shall have the right, subject to our approval which cannot be unreasonably withheld or delayed, to select the clean-up strategy and Licensed Site Professional or other contractors in connection with any "pollution event" or to perform work giving rise to "cleanup costs" to which this policy applies.

SALE OR TRANSFER OF THE COVERED LOCATION

It is hereby agreed that, in the event that control of a remedial plan, if any, is relinquished by the “named insured,” with our prior written consent, which consent shall not be unreasonably withheld or delayed, or the "covered location" is sold or ownership or operational control is transferred by the "named insured" during the "policy period" and/or prior to the completion of any of the activities giving rise to "cleanup costs" for a "pollution event" to which this policy applies, this policy shall remain in full force and effect, subject to its terms and conditions, provided that:

1. We receive written notification at least thirty (30) days prior to the effective date of such sale or transfer and we consent to the sale or transfer, our consent not to be unreasonably withheld; and
2. The new owner or operator of the "covered location" fully complies with all applicable conditions, duties and obligations set forth in this policy

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

STF-EPC-193-A CW (06/08)
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Rail Trail Spec Policy & Ends - cont.

Z Choice Coverage E: Natural Resource Damages

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Z Choice™ Pollution Liability - Claims Made and Reported Coverage

Covered Location	Retroactive Date	Delimitation Date

In consideration of the payment of premium and the Deductible by the "named insured" and in reliance upon the statements made in the application process and in the Application all of which are made a part hereof, we agree, subject to all the terms, exclusions, and conditions of the policy, that the following modifications shall apply to the policy solely with respect to coverage provided by this endorsement and only for the "covered locations" scheduled above.

I. INSURING AGREEMENTS (Section I.) is amended to include the following BUT ONLY IF AND TO THE EXTENT COVERAGE E IS SPECIFICALLY LISTED AS PROVIDED IN ITEM 5 OF THE DECLARATIONS:

COVERAGE E: INJURY TO OR DESTRUCTION OF NATURAL RESOURCES

1. Existing Pollution Event

   We will pay "other loss" that an "insured" is legally obligated to pay as a result of a "claim" for injury to or destruction of "natural resources" resulting from an "existing pollution event" on, at, under or that migrates beyond the boundaries from a "covered location", provided the "claim" is first made against the "insured" during the "policy period" and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

2. New Pollution Event

   We will pay "other loss" that an "insured" is legally obligated to pay as a result of a "claim" for injury to or destruction of "natural resources" resulting from a "new pollution event" on, at, under or that migrates beyond the boundaries from a "covered location", provided the "claim" is first made against the "insured" during the "policy period" and the "claim" is reported to us in writing during the "policy period" or any applicable extended reporting period.

STF-EPC-198-A CW (01/09)
Page 1 of 2

Rail Trail Spec Policy & Ends - cont.

II. The following are added to DEFINITIONS (Section III) solely with respect to coverage provided by this endorsement:

"**Other loss**" means the sum of:

1. Reasonable and necessary direct costs, including such costs of assessment associated with action necessary to restore the "natural resources" to their baseline condition as they existed prior to the "pollution event"; and
2. The "use value" between the time of a "pollution event" and restoration of the "natural resources" to the extent injured by the "pollution event"; and
3. "Claim expenses" incurred in connection with a "claim" for injury to or destruction of "natural resources".

"Other loss" does not include "cleanup costs" or "loss".

"**Use value**" means the value of the "natural resources" to the public attributable to the direct use of the services provided by such "natural resources", provided, however, that no aesthetic or historic use shall be considered in the determination of such value.

ALL OTHER TERMS, EXCLUSIONS, AND CONDITIONS OF THE POLICY APPLY AND REMAIN UNCHANGED.

STF-EPC-198-A CW (01/09)

Rail Trail Spec Policy & Ends - cont.

Important Notice

Service of Suit and In Witness Clause

ZURICH®

Service of Suit

In the event an action or proceeding arises under the contract, it is agreed that the Company, at your request, will submit to the jurisdiction of a court of competent jurisdiction within the United States. Nothing in this condition constitutes or should be understood to constitute a waiver or limitation of the right to arbitration as set forth herein or to commence an action in any court of competent jurisdiction in the United States to remove an action to a United States District Court or to seek a transfer of a case to another court as permitted by the laws of the United States or any state in the United States. It is further agreed that service of process in such suit may be made upon Illinois Corporation Service Company, 801 Adlai Stevenson Drive, Springfield, IL 62703. In any suit instituted against the Company upon this policy, the Company will abide by the final decision of such court or of any appellate court in the event of an appeal.

Further, pursuant to any statute of any state, territory, or district of the United States which makes provision therefore, the Company hereby designates the Superintendent, Commissioner or Director of Insurance, other officer specified for that purpose in the statute, or his successors in office as its true and lawful attorney upon whom may be served any lawful process in any action, suit, or proceeding instituted by or on behalf of the Insured of any beneficiary hereunder arising out of this policy of insurance and hereby designates the above named Illinois Corporation Service Company as the entity to whom the said officer is authorized to mail such process or a true copy thereof.

In Witness Clause

In return for the payment of premium, and subject to the terms of this policy, coverage is provided as stated in this policy.

IN WITNESS WHEREOF, this Company has executed and attested these presents and, where required by law, has caused this policy to be countersigned by its duly Authorized Representative(s).

Nancy D. Mueller — President

Corporate Secretary

QUESTIONS ABOUT YOUR INSURANCE? Your agent or broker is best equipped to provide information about your insurance. Should you require additional information or assistance in resolving a complaint, call or write to the following (please have your policy or claim number ready):

Zurich in North America
Customer Inquiry Center
1400 American Lane
Schaumburg, Illinois 60196-1056
1-800-382-2150 (Business Hours: 8am - 4pm [CT])
Email: info.source@zurichna.com

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Page 1 of 1

Rail Trail Spec Policy & Ends - cont.

Insured Name:

Reference Number:
Effective Date:

ZURICH

THIS DISCLOSURE IS ATTACHED TO AND MADE PART OF YOUR POLICY.

DISCLOSURE OF IMPORTANT INFORMATION RELATING TO TERRORISM RISK INSURANCE ACT

SCHEDULE*

Premium attributable to risk of loss from certified acts of terrorism for lines of insurance subject to TRIA:

*Any information required to complete this Schedule, if not shown above, will be shown in the Declarations.

A. Disclosure of Premium

In accordance with the federal Terrorism Risk Insurance Act ("TRIA"), as amended, we are required to provide you with a notice disclosing the portion of your premium, if any, attributable to the risk of loss from terrorist acts certified under that Act for lines subject to TRIA. That portion of premium attributable is shown in the Schedule above. The premium shown in the Schedule above is subject to adjustment upon premium audit, if applicable.

B. Disclosure of Federal Participation in Payment of Terrorism Losses

The United States Government may pay a share of insured losses resulting from an act of terrorism. The federal share equals 85% of that portion of the amount of such insured losses that exceeds the insurer retention. The insurer retention equals 20% of the insurer's prior calendar year direct earned premium associated with lines of insurance subject to TRIA. TRIA is scheduled to expire on December 31, 2014.

C. Disclosure of $100 Billion Cap on All Insurer and Federal Obligations

If aggregate insured losses attributable to terrorist acts certified under TRIA exceed $100 billion in a Program Year (January 1 through December 31) and an insurer has met its deductible under the program, that insurer shall not be liable for the payment of any portion of the amount of such losses that exceeds $100 billion, and in such case insured losses up to that amount are subject to pro rata allocation in accordance with procedures established by the Secretary of Treasury.

D. Availability

As required by TRIA, we have made available to you for lines subject to TRIA coverage for losses resulting from acts of terrorism certified under TRIA with terms, amounts and limitations that do not differ materially from those for losses arising from events other than acts of terrorism.

E. Definition of Act of Terrorism under TRIA

TRIA defines "act of terrorism" as any act that is certified by the Secretary of the Treasury, in concurrence with the Secretary of State and the Attorney General of the United States:

1. to be an act of terrorism;
2. to be a violent act or an act that is dangerous to human life, property or infrastructure;
3. to have resulted in damage within the United States, or outside of the United States in the case of an air carrier (as defined in section 40102 of Title 49, United States Code) or a United States flag vessel (or a vessel based principally in the United States, on which United States income tax is paid and whose insurance coverage is subject to regulation in the United States), or the premises of a United States mission; and
4. to have been committed by an individual or individuals as part of an effort to coerce the civilian population of the United States or to influence the policy or affect the conduct of the United States Government by coercion.

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Page 1 of 2

Rail Trail Spec Policy & Ends - cont.

No act may be certified as an "act of terrorism" if the act is committed as part of the course of a war declared by Congress (except for workers' compensation) or if losses resulting from the act, in the aggregate for insurance subject to TRIA, do not exceed $5,000,000.

U-GU-630-C CW (12/07)
Page 2 of 2

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Rail Trail Spec Policy & Ends - cont.

Cap On Losses From Certified Acts Of Terrorism

ZURICH®

Policy No.	Eff. Date of Pol.	Exp. Date of Pol.	Eff. Date of End.	Producer	Add'l Prem.	Return Prem.

Named Insured and Mailing Address: **Producer:**

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

This endorsement modifies insurance provided under the following:

Agribusiness Pollution Liability Insurance Policy - Claims Made and Reported Coverage
Environmental Cleanup and Liability Insurance Policy - Claims Made and Reported Coverage
Environmental Impairment Liability Insurance Policy - Claims Made and Reported Coverage
Environmental Services Package Policy
Excess Environmental Insurance Policy - Claims Made and Reported Coverage
Healthcare Pollution Liability Insurance Policy - Claims Made and Reported Coverage
Public Entity Pollution Liability - Claims Made and Reported Coverage
Real Estate Environmental Liability Insurance Policy - Claims Made and Reported Coverage
Remediation Stop Loss
Z Choice Pollution Liability
Lender Environmental Collateral Protection and Liability Insurance Policy - Claims Made and Reported Coverage
Lender Environmental Collateral Protection and Liability Insurance Outstanding Loan Balance - Claims Made and Reported Coverage
Follow Form Excess Liability Policy
Follow Form Excess Liability Policy - Claims Made and Reported Coverage
Commercial Umbrella Liability Policy
Commercial Umbrella Liability Policy - Claims Made and Reported Coverage

A. Cap on Losses From Certified Terrorism Losses

"Certified act of terrorism" means an act that is certified by the Secretary of the Treasury, in concurrence with the Secretary of State and the Attorney General of the United States, to be an act of terrorism pursuant to the federal Terrorism Risk Insurance Act ("TRIA"). The Terrorism Risk Insurance Act provides that the Secretary of Treasury shall certify an act of terrorism:

1. to be an act of terrorism;
2. to be a violent act or an act that is dangerous to human life, property or infrastructure;
3. to have resulted in damage within the United States, or outside of the United States in the case of an air carrier (as defined in section 40102 of Title 49, United States Code) or a United States flag vessel (or a vessel based principally in the United States, on which United States income tax is paid and whose insurance coverage is subject to regulation in the United States), or the premises of a United States mission; and

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Rail Trail Spec Policy & Ends - cont.

4. to have been committed by an individual or individuals as part of an effort to coerce the civilian population of the United States or to influence the policy or affect the conduct of the United States Government by coercion.

   No act may be certified as an act of terrorism if the act is committed as part of the course of a war declared by Congress (except for workers' compensation) or if losses resulting from the act, in the aggregate for insurance subject to TRIA, do not exceed $5,000,000.

   If aggregate insured losses attributable to one or more "certified acts of terrorism" exceed $100 billion in a Program Year (January 1 through December 31) and we have met our insurer deductible under the Terrorism Risk Insurance Act, we shall not be liable for the payment of any portion of the amount of such losses that exceeds $100 billion, and in such case insured losses up to that amount are subject to pro rata allocation in accordance with procedures established by the Secretary of Treasury.

B. Application of Other Exclusions

The terms and limitations of a terrorism exclusion or any other exclusion, or the inapplicability or omission of a terrorism exclusion or any other exclusion, do not serve to create coverage which would otherwise be excluded, limited or restricted under this policy.

ALL OTHER TERMS AND CONDITIONS OF THE POLICY SHALL APPLY AND REMAIN UNCHANGED.

JJ. Town of Needham EPC - 04-30-13

Town of Needham
Z Choice Pollution Liability
Premium Quotation

April 30, 2013

Brad Niziak
Miniter Group
Brad@miniter.com

RE: Town of Needham – Sub ID - 14189449
Z Choice Liability Insurance

Dear Brad:

We are pleased to present this premium quotation for Z Choice Pollution Liability insurance prepared exclusively on your behalf for Town of Needham. This premium quotation describes the coverages, terms, and conditions offered by Zurich. Please review these carefully as they may differ from the specifications in the submission.

We at Zurich understand the rigorous environmental liability regulations and other environmental challenges that confront your clients. For more than fifteen years, we have kept pace with the changing needs of these clients and we continue to offer tailored solutions. We work hand-in-hand with you to maximize your client's environmental liability coverage and we offer customized responses, risk management solutions, and specialized services to address unique and challenging environmental risks. We appreciate the opportunity to work with you in delivering these solutions and services.

The commission payable is 15%. Commissions are not paid on taxes, fees or surcharges. This proposal is not inclusive of any applicable surplus fees or charges. In order to bind coverage, please provide a written order, indicating the options desired.

This quotation expires 8/1/2013. Thank you for the opportunity to work with you on this account. Please do not hesitate to contact me if you have any questions.

Sincerely,

Mark J. Brazell
Sr. Underwriter
Zurich North America
617-570-8815
Mark.brazell@zurichna.com

If you want to learn more about the compensation Zurich pays agents and brokers, visit: http://www.zurichnaproducercompensation.com or call the following toll-free number: (866) 903-1192. This notice is provided on behalf of Zurich American Insurance Company and its underwriting subsidiaries.

02/08 Edition
Page 1 of 6

Town of Needham EPC - 04-30-13 - cont.

The following are the applicable terms, conditions, and coverages of thisPremium quotation:

Client Information	
Named Insured:	Town of Needham
Address:	1471 Highland Ave Needham, MA 02492

Policy Information	
Company:	Steadfast Insurance Company (Non-Admitted)
Policy Form:	Z Choice Pollution Liability STF-EPC- 100-B CW(03/08)
Delimitation Date:	Policy Inception
Policy Period:	TBD to Five years from Inception

Covered Locations	
Address/Description	Retroactive Date
Approximately 3.0 miles of former Rail and/or Rail Right of Way. Formal description to be agreed upon prior to binding.	N/A

Limits of Liability, Deductible, Policy Term and Premium				
Option #	**Limits of Liability** Each Pollution Event Limit/Aggregate Policy Limit ($US)	**Deductible** Each Pollution Event ($US)	**Term** (Years)	**Premium** ($US)
1	$3,000,000/$3,000,000	$25,000	5	$33,250

Premium Modifications	
TRIA:	The premium includes a 1% additional charge applicable to coverage under the Terrorism Risk Insurance Program Reauthorization Act of 2007. Please refer to the attached Disclosure of Premium Notice.
Commission:	15%

Surplus Lines Filings	
	Insurance offered through Steadfast Insurance Company (Steadfast) or, for insureds domiciled in Delaware, Zurich American Insurance Company of Illinois (ZAI) must be placed by a surplus lines producer licensed in the jurisdiction where the policy is issued. The surplus lines producer shall be responsible for complying with all applicable regulatory requirements including the remittance of the premium tax.

Page 2 of 6

Town of Needham EPC - 04-30-13 - cont.

NOTE: If the word YES appears in the PROVIDED column corresponding with an insuring agreement listed below, it means that such coverage is included in this quotation. If the word NO appears or the space is blank or blacked out or a coverage part is not listed it means that such coverage is not included in this quotation. Sub-limits and separate deductibles may apply as reflected below.

Insuring Agreements/Coverages	PROVIDED	SUB-LIMIT/ AGGREGATE	SEPARATE DEDUCTIBLE
A: Cleanup Costs – Existing Pollution Event			
1.(a) On-Site First Party Discovery	NO	NO	NO
1.(b) On-Site Third Party Liability	YES	NO	NO
2.(a) Off-Site First Party Discovery	NO	NO	NO
2.(b) Off-Site Third Party Liability	YES	NO	NO
B: Bodily Injury or Property Damage – Existing Pollution Event			
1.(a) On-Site Bodily Injury	YES	NO	NO
1.(b) On-Site Property Damage	YES	NO	NO
2.(a) Off-Site Bodily Injury	YES	NO	NO
2.(b) Off-Site Property Damage	YES	NO	NO
C: Cleanup Costs – New Pollution Event			
1.(a) On-Site First Party Discovery	NO	NO	NO
1.(b) On-Site Third Party Liability	NO	NO	NO
2.(a) Off-Site First Party Discovery	NO	NO	NO
2.(b) Off-Site Third Party Liability	NO	NO	NO
D: Bodily Injury or Property Damage – New Pollution Event			
1.(a) On-Site Bodily Injury	NO	NO	NO
1.(b) On-Site Property Damage	NO	NO	NO
2.(a) Off-Site Bodily Injury	NO	NO	NO
2.(b) Off-Site Property Damage	NO	NO	NO
E: Natural Resource Damages			
1. Existing Pollution Event	YES	NO	NO
2. New Pollution Event	NO	NO	NO
F: Non-Owned Locations			
1.(a) On-Site Bodily Injury	YES	NO	NO
1.(b) On-Site Property Damage	YES	NO	NO
1.(c) On-Site Cleanup Costs	YES	NO	NO
2.(a) Off-Site Bodily Injury	YES	NO	NO
2.(b) Off-Site Property Damage	YES	NO	NO
2.(c) Off-Site Cleanup Costs	YES	NO	NO
G: Transportation of Materials			
1. Bodily Injury	YES	NO	NO
2. Property Damage	YES	NO	NO
3. Cleanup Costs	YES	NO	NO
H: Suspension of Operations			
1. Existing Pollution Event	NO	NO	NO
2. New Pollution Event	NO	NO	NO
I: Suspension of Tenant Occupancy			
1. Existing Pollution Event	YES	NO	NO
2. New Pollution Event	NO	NO	NO
J: Delay In Construction			
1. Existing Pollution Event	NO	NO	NO
2. New Pollution Event	NO	NO	NO

Town of Needham EPC - 04-30-13 - cont.

Insuring Agreements/Coverages (Continued)	PROVIDED	SUB-LIMIT/ AGGREGATE	SEPARATE DEDUCTIBLE
K: Fungus/Spore Event			
1. Bodily Injury	NO	NO	NO
2. Property Damage	NO	NO	NO
3. Third Party Cleanup Costs	NO	NO	NO
L: Lead Release Incident			
1. Bodily Injury	NO	NO	NO
2. Property Damage (Time Element)	NO	NO	NO
3. Cleanup Costs (Time Element)	NO	NO	NO
M: Asbestos Release Incident			
1. Bodily Injury	NO	NO	NO
2. Property Damage (Time Element)	NO	NO	NO
3. Cleanup Costs (Time Element)	NO	NO	NO
N: Financial Assurance	NO	NO	NO
O: Contractor's Pollution Liability	NO	NO	NO

Policy Modifications

The Policy will be modified as follows:

1. STF-ENVL-1445 - Exclusion of Certified Acts of terrorism – **Should the insured elect not to purchase terrorism coverage then a 1% reduction in premium will be applied.**
2. STF-EPC-104 - Coverage G: Transportation of Materials (Insured and TP carrier) Endorsement
3. STF-EPC-119 - Amendment of Cancellation Endorsement – **90 days**
4. STF-EPC-143 - Nuclear Exclusion Endorsement
5. STF-EPC-150 - Schedule of Covered Locations Endorsement – **See Above Covered Location Section**
6. STF-EPC-177 - Broad Named Insured Endorsement
7. STF-EPC-187 - Fines and Penalties Endorsement
8. STF-EPC-192 - Coverage F: Non-Owned Disposal Sites (Blanket) Endorsement – **See Schedule of Covered Locations Endorsement**.
9. STF-EPC-193 - Massachusetts BRAC Program Endorsement
10. STF-EPC-198 – Coverage E: Natural Resource Damages
11. STF-EPC-207 - Minimum Earned Premium - **25% at inception and 100% at year 2**.
12. STF-EPC-251 – Governmentally Mandated Cleanup Costs
13. STF-GU-199 - Important Notice
14. U-GU-630 – Disclosure of Important Information Relating to terrorism Risk Insurance Act
15. U-GU-767-A CW (01/08) Cap on Losses from Certified Acts of Terrorism Endorsement – **Will Not Apply if STF-ENVL-1445 is selected. Please advise prior to binding**.

Town of Needham EPC - 04-30-13 - cont.

Conditions of Premium Quotation

Our receipt, review, and acceptance of all of the following information is required prior to binding, unless stated otherwise (terms, conditions, and pricing subject to change):

1. Completed, signed original Z Choice Pollution Liability Application(s) to be executed by an authorized representative of the "named insured(s)."
2. Subject to review and approval of the following::
   - Proposed construction details and plans (i.e. anticipated cut and fill requirements)
   - How the insured plans to manage the development of the trails (i.e. Covering/capping potentially contaminated soil)?
   - Confirmation that MA DEP's Best Management Practices for Controlling Exposure to Soil during the Development of Rail Trails will be followed
3. Name, address, license number, and license expiration date of the person making the Surplus Lines filing.

Services built to respond:

Risk Engineering – Zurich's experience and extensive resources are the foundation on which we build risk engineering consulting and risk management options to help mitigate emerging risks like pollution and the more traditional liability risks.

Zurich's Spill Reporting Online System – An innovative online system for emergency spills or releases available to current Zurich environmental customers at **no additional cost**.

Claims Service – The Environmental Claims group at Zurich consists of a team of experienced claim professional with legal and/or technical backgrounds. Prompt reporting of claims helps us manage them more effectively which ultimately results in lower costs for the insured. Zurich makes it easy to file environmental claims directly to us, 24 hours a day, 7 days a week through:

Phone: 1-800-987-3373
Fax: 1-866-255-2962
E-mail: USZ_Zurich_Environmental@zurichna.com

Legal Bill Review Services

ZSC/Legal Bill Review Services utilize a rules-based software program provided by an outside vendor and a dedicated staff of legal professionals and support staff to verify the accuracy of electronically submitted legal bills presented under the policy for payment in an effort to control your overall claim costs.

Town of Needham EPC - 04-30-13 - cont.

April 30, 2013

Brad Niziak
Miniter Group
Brad@miniter.com

Reference: Town of Needham

Dear Brad:

This proposal is provided by Steadfast Insurance Company, a qualified surplus lines insurer. It is the responsibility of the surplus lines producer to ensure that this policy will be issued in accordance with applicable state requirements governing the placement of surplus lines insurance. These requirements include, but are not limited to, remittance of surplus lines taxes and, in some jurisdictions, filing of declination affidavits with the appropriate state insurance department or surplus lines stamping office.

To enable us to effect coverage in a timely manner, please complete, sign and return this letter to the undersigned as soon as possible.

Thank you for your cooperation.

Surplus Lines Producer Name: _____

Address: _____

City : _____ State: _____ Zip: _____

License # _____ State _____

Name of Individual Licensee (if applicable): _____

Phone:_____

Additional States of Exposure (if applicable): _____

New Hampshire Tax ID # (if applicable) _____

New Jersey SLA # (if applicable) _____
(state assigned 5 digit number to all SL licensees)

Signature _____ Date _____

Thank you,
Zurich North America
Commercial Markets - Environmental

Page 6 of 6

KK. RTC Feasibility Study Update - Town Meeting 5-5-13

"Recreational Path Feasibility Study Update"
Presented by Dover Rail Trail Committee
Town Meeting, 5/6/13

Context

Opportunity to Convert the 3.7-Mile Unused Rail Corridor in Dover to a Recreational Path

Working Assumptions:

- Appropriate for walking, running, casual bike riding, and skiing
- Not paved
- Preserve Town's rural character
- Local control
- Limited cost to the Town

Dover Rail Trail Committee Working on a Feasibility Study to Understand Pros/Cons of the Path

- Ad-hoc committee formed in 2011
- At May 2012 Town Meeting, voters approved up to $5,000 for miscellaneous expenses related to the Feasibility Study

RTC Feasibility Study Update - Town Meeting 5-5-13 - cont.

Feasibility Study – Key Questions

1. ***Is it feasible for Dover to convert the unused rail corridor into a Recreational Path?***
   - Includes financial, environmental, legal, public safety, citizen interest, and community / abutter impact
2. ***If yes, then what are the Committee's recommendations for the range of elements involved in creating the Path?***
   - *Considers what would be an appropriate Recreational Path for Dover and how it would be constructed, managed, and maintained*

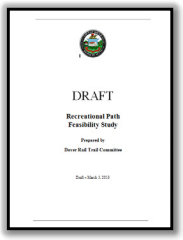
With the help of interested Dover citizens, the Committee identified over 80 items for review and study

Status Update

Rail Trail Committee Activities

- Regular meetings with public attendance
- Community engagement (open meetings, email list, web page, abutter mailings)
- Engagement of Town officials (ConCom, Public Safety, etc.)
- Research of other town activities and best practices
- Knowledge sharing with Needham and Medfield on similar issues

Status as of May 2013


DRAFT

Recreational Path Feasibility Study

Prepared by

Dover Rail Trail Committee

Draft - March 2, 2013

- Draft 30-page Feasibility Study, with some remaining questions and issues to explore
- Available on Dover website since March

RTC Feasibility Study Update - Town Meeting 5-5-13 - cont.

Key Feasibility Study Findings

1 Surface	• Preserve rural character – NOT paved
2 Usage	• Daytime walking, running, biking, skiing
3 Charles River Bridge	• Excluded from Dover's Path
4 Public Safety	• No material increase in public safety risk
5 Parking	• Sufficient public parking capacity exists
6 Friends Group	• Will help with maintenance and support
7 Governance	• Standing committee to provide oversight

Warrant Article Request

The Committee Has Identified Five Key Items That Require Additional Research and Professional Expertise

1. Right-of-Way Review
2. MBTA Lease Terms
3. Engineering Analysis
4. Construction Contracting
5. Environmental Review

- Warrant Article request to fund sufficient due diligence on key items, i.e., hiring external professional expertise
- If approved, the Committee will work toward completion of the Feasibility Study in time for the May 2014 Town Meeting, as appropriate

LL. Dover Rail Trail Committee Minutes July 10th, 2013

Rail Trail Committee Minutes
July 10, 2012

Member attendees: Tim Holiner, Carol Lisbon, Matthew Schmid, Kate Cannie, Mark Howe

Guests:, Martha Bolin, Elaine Rosenburg, Chief McGowan, Gerry Clark, Mike Francis (TTOR)

Meeting was called to order at 10:05 a.m.

1. Minutes of 6/12/12 were approved.

2. Mike Francis, TTOR

    a. The Committee thanked Mike for sharing his experiences and expertise.
    b. TTOR has 4 properties in Dover – Noanet (600 acres), Peters (90 acres), Powisset (100 acres) and Chase (80 acres) with a total of approx. 25 miles of trails. Hale has another 600 acres in Dover with another 15 miles of trails. TTOR assumes about 30,000 visits/yr with 30% from Dover.
    c. Trail maintenance: "soil stabilizer" used by Charles River Greenway slowly turns to asphalt due to traffic and heat. Different trail surfaces are better than others depending upon shared use decisions- impacts ease-of-use, speed. Slightly peak trail in center so gradual run-off to sides will prevent erosion of path. TTOR uses signage to safety notifications: approaching hazardous area, warning signs re: inherent danger of being in a trail.
    d. Shared use: DOGS: a few dog v. dog issues/yr. with rules that dogs be in sight and in control or on leash, pickup after dog, and dogs not allowed to approach people or wildlife. No snowmobiles or motorized vehicles allowed. Noanet has a mountain bike permit program with Hale. Noticed fewer mt. bikes over past few years with a few complaints/year. General comment: shared use at Noanet works with very few problems.

Dover Rail Trail Committee Minutes July 10th, 2013 - cont.

e. Rules: Hours dawn to dusk. Trash: carry in/carry out (CICO) in all TTOR and DCR properties. Trash not an issue- occasional bits around trail head, parking area if any. Portapotties at access point in Caryl Park parking lot; optional; no real need for them.
f. ADA: check baseline requirements for trails and 5 criteria approved by DOJ for assessing shared used bans.
g. Parking: Noanet needs about 45 spots (15 @ Caryl, 30 on Powisset)for their census. Look at area beyond lot for signage, boulders, etc. when designating areas.
h. Abutters: abutters are frequent users of Noanet as evidenced by informal trails to homes. TTOR does not get abutter complaints. Signage used to mark boundaries of TTOR property and remind trail users to respect private property.
i. Public Safety: TTOR receives very few complaints of any sort throughout the year. Chief McGowan mentioned a few campfire complaints this Spring and less than a handful of emergency response situations. Noanet has no call boxes as cell phones are in use. Chief stated he could use this as an opportunity to create a bike patrol (as resources permit) which serves to increase interaction with citizens as well but with no additional resources required.
j. Mike stated that he has found users of TTOR properties in Dover to be very respectful in all aspects- to trash, abutter concerns, trails in general. Suburban demographic indicates appreciation of open space.

3. Updates

a. Mark Howe met with Joe Hattrup of IHP. Sample contracts from 4 towns available-all 1-2 pages. T-base is not as comfortable as stone dust to walk on and will eventually harden, but does have less erosion. Stone dust is used on trails more often in rural areas like Dover with less traffic. Edges can be designed to limit erosion. Can address railings on steeper slope areas, signage, etc. Can do about 1 mile/month. $350/ton of steel is minimum price for business plan to work. Ties removed and sent to hazardous waste disposal down

Dover Rail Trail Committee Minutes July 10th, 2013 - cont.

Contracts sent to Dover's Town Counsel. Need to access IHP and Dover agreement on contract expansion.

b. Matt Schmid still developing "like" town list. It was suggested that he look at towns with recreational paths, not just those who converted a rail bed into a path.

c. Kate cannie has been in touch with Elaine Rosenburg. They will schedule a series of meetings (3) with abutters at different times of day so all have an opportunity to attend. Goal is to provide an open forum to get all concerns out in open. Kate to compare email list and abutter lists, given communication to abutters over past month.

4. Actions :
   a. Mary McLaughlin to follow-up with Wellesley Trails for a possible visit
   b. Mary McLaughlin to explore feasibility of an active "Friends of" organization with BCRT Dover list (from Tad) and other Dover groups
   c. Mark Howe to interface with IHP. IHP now working with 14th MA town. **7/10: COMPLETE**
   d. Matt Schmid to identify 8-12 "like" towns to be used for comparisons and research.
   e. Kate Cannie to arrange a meeting with abutters to further explore issues. **7/10: Kate and Elaine Rosenburg working together to set-up 3 meetings at different times of day for abutter input. Kate to assess email list coverage of abutters.**
   f. Carol Lisbon to schedule a visit to the RTC by:
      i. Mike Francis, TTOR. **7/10: COMPLETE**
      ii. Dover Chief of Police, Fire/EMT, Highway
   g. Carol Lisbon to schedule RTC visit to
      i. Council on Aging
      ii. Board of Health
   h. Tim Holiner to schedule RTC visit to ConCom for Request for Determination
   i. Tim Holiner to continue study and write-up on surface options.

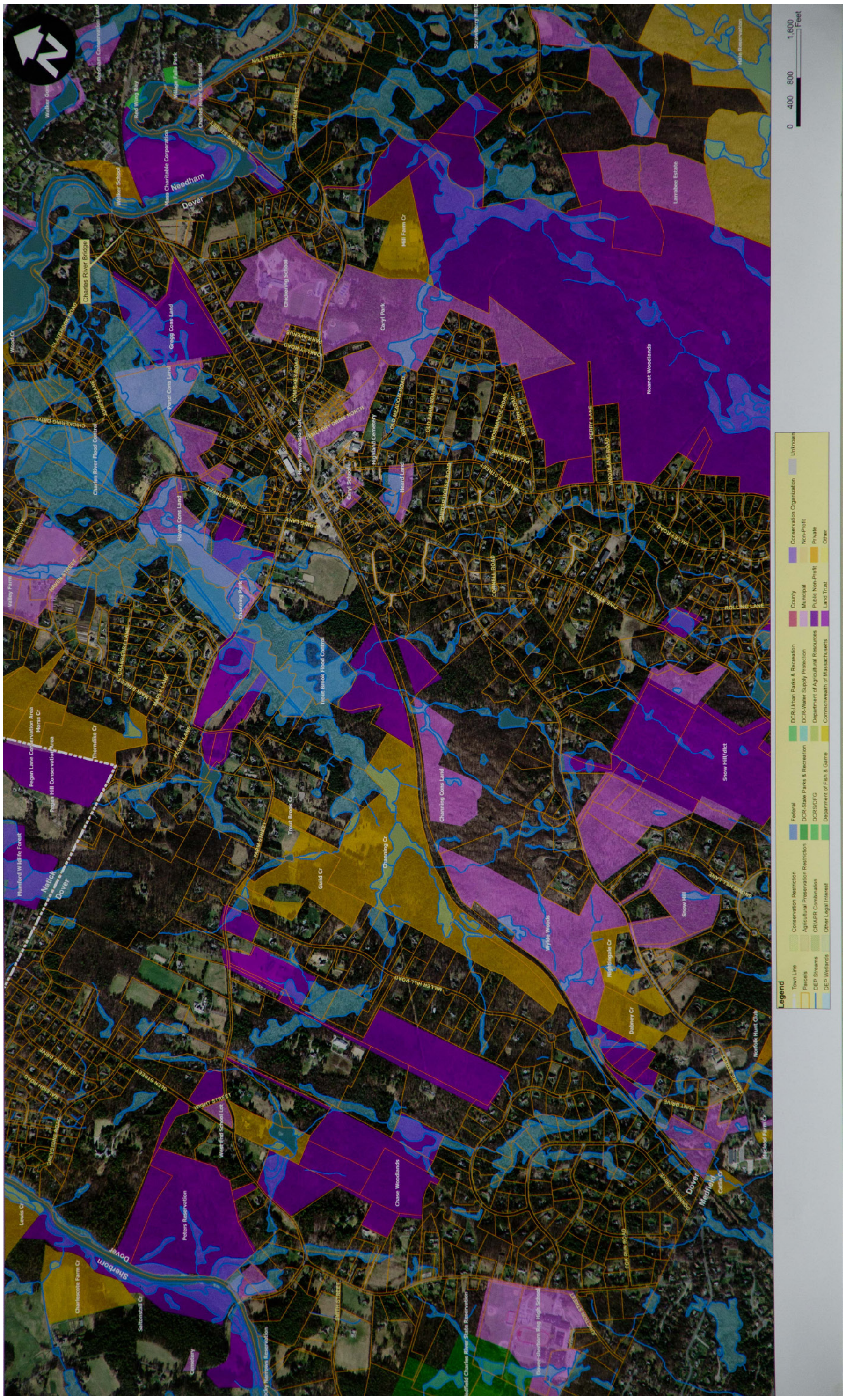
Dover Rail Trail Committee Minutes July 10th, 2013 - cont.

j. Carol Lisbon to work with Town Counsel on MBTA lease and insurance options. **7/10: Town Counsel review in process along with IHP contracts. Kate Cannie to attend 7/11 MBTA meeting.**
k. Kate Cannie : ADA/shared use regs with DCR, Mass Audubon, TTOR progress on guidelines.
l. Matt Schmid: schedule field trips
m. Explore Charles River bridge barrier issues

5. Next meetings: 7/24, 8/7, 8/21, 9/18, 10/2, 10/16, 10/30, 11/13, 11/27/, 12/11
   Open hearing 10/9, 12/18

Respectfully submitted,
Carol Lisbon

MM. Map



NN. DCR Guidelines

Department of Conservation and Recreation

Trails Guidelines and Best Practices Manual

The Metacomet-Monadnock trail to Mt. Norwottock

The health and happiness of people across Massachusetts depend on the accessibility and quality of our green infrastructure - our natural resources, recreational facilities, and great historic landscapes. The Department of Conservation and Recreation (DCR) provides vital connections between people and the environment with over 3,000 miles of trails and 145 miles of paved bikeways and rail trails. Consistent and clearly defined trail policies, procedures, and program guidelines can provide inspiration and direction to managing, enhancing, and developing a successful and sustainable trail system for Massachusetts.

DCR Trails Guidelines and Best Practices Manual **Updated March, 2012**

DCR Guidelines - cont.

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DCR Trails Guidelines and Best Practices Manual **Updated March, 2012**

DCR Guidelines - cont.

Implementation Schedule (Revised March, 2012)

The initial edition of the DCR Tails Guidelines and Standards Manual was completed, approved and distributed at the 2008 DCR Trail School.

The Manual was reviewed and revised by the DCR Trail Team in January of 2010 and 2012, and will continue to be reviewed and revised every two years.

Some elements of the Manual will require years to fully implement. The following table proposes a timeline for implementation.

Element	Implementation Date	Comments
Trail Regulations	2012	DCR CMRs continue to be reviewed and should be completed in 2012
Trail Team	January 1, 2008	DCR Trail Team was established in January 2008 and meets approximately 3 times each year.
Trail Planning and Development Standards	October 21, 2008	Trail planning and development guidelines and standards for different uses and classes of trail were complete in the 2008 edition
Complete Trail Inventory	2012	The trail inventory is a critical milestone in trail management and is on track for completion in 2012
Implementation of Trail Maintenance Standards	2013	Maintenance standards implementation for all trails is dependant on staffing levels and DCR priorities; however, maintenance standards will establish a benchmark for basic levels of trail management.
Trail Signage	- 2008 for new trails and new signs - 2012 for main intersections -Full implementation by 2015, all parks and trails	Implementation should follow the prioritization outlined in the Signage section
Maps	Unknown	Final standards to be developed in cooperation with DCR Graphics and GIS staff
Partners and Volunteers	2012	Procedures for engaging partners and volunteers in trail maintenance or development will be finalized in 2012

DCR Trails Guidelines and Best Practices Manual **Updated March, 2012**

DCR Guidelines - cont.

Definitions

Compaction
The downward force that compresses soil caused by trail use.

- Heavier modes of travel and higher amounts of trail use cause greater compaction.
- Some compaction is desirable to harden tread and reduce displacement, but
- Highly compacted soils cause trail tread to sink, reducing natural infiltration and the ability for soils to drain.

Displacement
The sideways movement of soils caused by inevitable kicking, grinding, and acceleration of feet, hooves and wheels.

- Amount of displacement is a function of grade and force exerted on tread.
- The steeper the grade the faster soil particles move downhill.
- Displacement tends to increase erosion by loosening soil particles.
- Reduce displacement by limiting trail grade or modes of travel.

Erosion
The movement of soil caused by the forces of water or sometimes wind moving with enough force to transport soil particles. Erosion is a natural process, so expect it and learn how to accommodate it.

Grade
The slope of the trail. Measured as a percentage, it is the rise of the trail divided by the horizontal distance of that rise.

- Percent grade formula = rise over run multiplied by 100.
- The steeper the grade, the more likely it is to erode.
- Avoid the shortest route down a hill (fall line) and flat areas that do not drain.
- Generally, average trail grade of 10% or less is most sustainable.
- Half rule – a trail's grade should not exceed half the grade of the side slope that the trail traverses. *For example if the side slope is 30% the trail grade should not exceed 15%.*

Trails
Trails are designated, marked and signed routes that people use recreationally for such activities as walking, running, hiking, biking, horseback riding, off-highway vehicle use, snowmobile riding, cross-country skiing and snowshoeing. Other special uses include wheelchairs or similar "mobility devices," carriages, dogsleds, and in-line skaters. Trails may or may not serve other, non-recreational forest purposes such as forest management, fire control, and emergency access. Other special types of trails include accessible trails, water trails, historic trails, educational, or interpretive trails.

Trail System
A Trail System is the sum of all of the recreationally used, designated, and marked routes in and connecting to a continuous area - park, forest, reservation or management unit. Trail systems are usually managed cohesively.

Trail Corridor
A Trail Corridor contains the traveled pathway (tread), and surrounding land that protects and enhances the trail experience. Trail Corridors are often associated with long-distance trails traveling through diverse landscapes and multiple land owners. For example, the Appalachian Trail, a long-distance trail of 2174 miles that traverses the

DCR Guidelines - cont.

peaks and valleys from Georgia to Maine, is protected by a corridor with an average of 500 feet on each side. This corridor protects the footpath as well as the natural setting of the trail experience.

Tread Watershed
The trail tread between a local high point (crest) and local low point (dip), plus the land area that drains into this tread segment.

- Tread watershed is a function of topography and location of trail on the landscape.
- The larger the tread watershed, the more water it collects from rain or snow and the greater potential for erosion.
- Small tread watersheds help limit how much water reaches and stays on the trail.
- Design trails to reduce the length of the tread watershed – take advantage of rolling contours and build in grade reversals.

Tread Texture
The composition of soil, rock and other tread materials.

- Knowing tread texture helps you to predict how a tread accommodates physical forces in wet and dry conditions.
- The most erosion-resistant treads have a well-compacted mix of all textures including gravel and larger particles.
- More soil separates (clay, silt, sand, loam, gravel, stones…) the tread has, the stronger it is.

Tread Width
The cleared traveled surface.

- Varies depending on trail types and allowed uses.
- On multi-use trails, clear tread for maximum width standard.
- However, the wider the tread, the more surface exposure and potential to generate run-off and tread erosion.

The following definitions are drawn generally from the USDA Forest Service Trail Planning and Management Fundamentals (See Appendix A for more detail).

Trail Type
Is the fundamental trail category (only one per tail segment) that indicates the predominant trail surface or trail foundation, and the general mode of travel.

Four fundamental trail types within DCR include:

- ***Standard Natural Surface Trail:*** The predominant surface is ground, and the trail is designed and managed for ground-based travel.
- ***Paved Surface Trail:*** The surface is paved, and the trail design and managed for multiple uses including mechanized wheeled uses. (This type is added to the Forest Service definitions).
- ***Snow Trail:*** The foundation is snow, and the trail is designed and managed for snow-based travel.
- ***Water Trail:*** The foundation is water, and the trail is designed and managed for water-based trail use. There may be portage segments of water trails.

The DCR Road and Trail Inventory classified roads / trails along the following types:

- ***Administrative Road:*** A road accessible to DCR administrative vehicles, but not open to the public.

DCR Guidelines - cont.

- ***Forest Way / Trail:*** A route that potentially serves as both a trail and as access for forest management activities.
- ***Trail:*** A pathway that is used for recreational trail use.

Trail Class
Is the prescribed level of trail development, representing the intended design and management standards of the trail. Five trail class categories are defined in terms of tread, obstacles, constructed elements, signs and typical recreation experience:

- *Class 1 Trails:* Minimal/undeveloped trails
- *Class 2 Trails:* Simple/minor development trails
- *Class 3 Trails:* Developed/improved trails
- *Class 4 Trails:* Highly developed trails
- *Class 5 Trails:* Fully developed trails

These general categories are used to identify applicable trail design, management, and maintenance standards and appropriate managed uses. Section III includes a more detailed table of trail classes and their management attributes. Appendix E includes tables on trail design parameters by class and use.

Trail Condition
The DCR Road and Trail Inventory has classified all roads and trails by "condition" as good, fair or poor. "Good" trails have no or only very minor maintenance needs. "Fair" trails have management and maintenance needs of a typical nature. "Poor" trails have areas of significant trail damage and repair needs.

Managed Use
Managed Uses are the modes of travel that are actively managed and appropriate, considering the design and management of the trail. There may be multiple Managed Uses for any given trail segment. Managed Use represents a *management decision or intent* to accommodate or encourage a specific type of trail use.

Designed Use
Designed Use is the intended use that controls the design of the trail, and determines the subsequent maintenance standards for the trail. There is only one designed use of any given trail segment. Of the multiple Managed Uses of a trail, the Designed Use is the single use that drives the design and maintenance standards. The Designed Use is often the Managed Use that requires the highest level of development. Types include:

- Walking
- Hiking
- Mountain Biking
- Equestrian
- OHV
- Snowmobile
- Cross-country Ski
- Snowshoe
- On-road bike
- Accessible Trails
- Paddling
- Motorized water craft

Design Parameters
Design Parameters are the technical specifications for trail construction and maintenance, based on the Designed Use and Trail Class. The national Trail Design Parameters represent a standardized set of commonly expected construction and maintenance specifications based on Designed Use and Trail Class. Design Parameters include technical specifications regarding:

- Tread Width
- Surface
- Grade
- Turns
- Cross-Slope
- Clearing

DCR Guidelines - cont.

Section I: Introduction

Trail Policy and Program Mission

The Mission of the Department of Conservation and Recreation (DCR) is *to protect, promote and enhance our common wealth of natural, cultural and recreational resources.*

The DCR's Trails Program seeks to provide a safe, quality recreation experience for a diverse range of trail users while practicing sound stewardship of the Commonwealth's natural and cultural resources. This "Trails Guidelines and Best Practices Manual" meets this responsibility by providing a consistent set of trail management policies, guidelines, procedures, and best practices in sustainable trail development.

Specific goals of this document are to:

- Promote state-wide consistency in how trails are classified, planned, designed, developed, managed, and maintained
- Enhance the management of our trails to serve the diverse needs and capabilities of visitors
- Ensure that trail experiences are safe and enjoyable
- Reduce costs through the use of practical and sustainable methods for developing and maintaining trails

Importance of Trails

Trails contribute significantly to the Commonwealth's health, economy, resource protection, and education.

- **Trails connect people to the natural environment:** place to place, person to person, and neighbor to neighbor. Trails connect us to scenic landscapes, natural wonders, and cultural resources.
- **They make our communities more livable:** improving the economy through tourism and civic improvement, and building support for land protection and stewardship.
- **Trails provide opportunities for multiple-use recreation:** promoting physical activity to improve fitness and mental health. They provide access for other recreational opportunities such as hunting or rock-climbing.
- **They enhance educational opportunities:** providing opportunities to improve and test skills, to be challenged, or to learn about our natural or cultural environment. Trails present opportunities for observation, enjoyment, and exploration.
- **Trails strengthen each of us:** offering opportunities for solitude, contemplation, and inspiration. To some, trails provide a sense of freedom, personal accomplishment, self-reliance, and self-discovery.
- **Trails can even help protect rare habitats and sensitive resources:** by concentrating use on designated, sustainable pathways.

For the DCR, trails are the intersection of conservation and recreation. They are one of our most used facilities. They deserve a high level of attention.

Striving for Sustainable Trails

Trails offering a rich and enjoyable experience don't just happen. Creating a sense of place and a sequence of events that add interest and offer challenge are essential to good trail design.

DCR Guidelines - cont.

Moreover, the placement of any trail on the landscape has an ecological impact. The challenge is to keep impacts to a minimum while providing the desired experience. To be sustainable, a trail must serve the needs of users for generations to come, while preserving the sense of place and protecting the quality of the surrounding environment.

Sustainable trails begin with thoughtful planning, good design, and meticulous layout. Many of our trails suffer from lack of planning and poor design. Many are user created pathways, or leftover routes from historic farm roads and logging activities that are not appropriate for long-term recreational use. Improperly planned and constructed trails need frequent maintenance, can require significant investment in time and money, and still may not meet the needs of the user or protect the surrounding natural resources. A sustainable trail will require little rerouting and minimal maintenance over extended periods of time. A successfully designed trail will entice visitors back time and again.

To be successful, a trail must be designed to be physically, ecologically, and economically sustainable.

Physical Sustainability
Designing trails to retain their structure and form over years of use and under forces of humans and nature is a key factor in sustainability. Trail use promotes change, so trails must be designed in anticipation of change to ensure that they remain physically stable with appropriate maintenance and management.

Ecological Sustainability
Minimizing the ecological impacts of trails, and protecting sensitive natural and cultural resources is fundamental in sustainable trail design and development.

Economic Sustainability
For any trail, the implementing agency or advocacy group must have the capacity to economically support it over its life cycle. Developing and committing to a long-term maintenance strategy is a critical aspect of a successful trail program.

Promoting Stewardship

Instilling users and the public with a sense of ownership and responsibility for stewardship of trails is a key element of a sustainable trail system.

Education and Information
Education and information can and should be an integral part of any strategy to improve the quality of outdoor recreation experiences, and must be expanded and tailored to encompass a wide variety of age groups, learning abilities and special needs. Information, especially emphasizing the appreciation and careful stewardship of natural resources, will help to ensure the public's long-term enjoyment of, and support for, conservation and recreation.

Partnerships and Volunteerism
Trails, in particular, offer a powerful avenue for encouraging volunteerism and stewardship in our parks. People love to volunteer on trails, and trail management can greatly benefit from volunteers. User groups can help create, maintain, restore, or close trails. Friends groups can raise money and advocate for funding. Individuals and organizations can adopt trails. However, for volunteerism to be effective, it must be guided, directed, and managed (see Section III for a further discussion).

DCR Guidelines - cont.

Past Trail Practices with the Agency

DCR was created by the merger of two separate agencies. As such, different operations divisions have, in the past, undertaken trail design, development, management, and maintenance using differing standards. For example, Urban Parks, given their location in the Boston metropolitan region and the types of uses that they see, have never allowed motorized trail recreation. They are also not actively managed for forest products. Urban Parks tend to have a greater number of hard surfaced trails and may have experienced some different management issues, such as levels of trail use and vandalism. On the other hand, the State Parks, may have a larger percentage of natural surface trails, and lower levels of use. Some state parks allow various types of motorized trail use. Most facilities in State Parks are managed for forestry, and they have had to accommodate some different kinds of recreational uses such as hunting. Water Supply lands are primarily managed to provide clean water, and trails and recreational uses are secondary and restricted in some areas.

In addition, these divisions operated and in some cases, continue to operate with different sets of regulations, with different sets of resources and under different management frameworks. The result, from the trails management point of view, is that a variety of trail designation, marking, and management standards are currently in place across the agency.

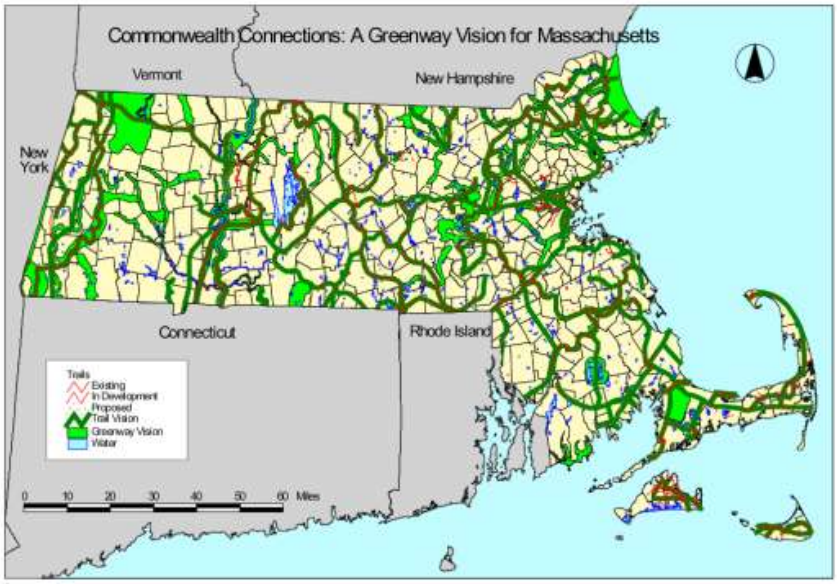
This can be confusing for users and staff alike. This document establishes a consistent set of trail guidelines and standards which DCR can apply across divisions, regions and facilities. However, these guidelines also provide flexibility that can accommodate different recreational settings, resources, and mandates.

Consistency with other plans and regulations

Trails are not just recreational facilities, they are an integral component of our forests, parks, reservations and the communities within which they are located. Planning, developing, and managing a trail system must therefore be consistent with the mission, goals, plans, and regulations of our department, surrounding communities, and the Commonwealth.

> **Massachusetts Greenway and Trail Vision:** ***Commonwealth Connections*** is a vision for a coordinated network of greenways and trails in Massachusetts, and includes specific steps for making this vision a reality. It was developed in 2001 by DCR in partnership with the Appalachian Mountain Club, the National Park Service and a broad group of stakeholders from across Massachusetts.

DCR Guidelines - cont.



Commonwealth Connections reflects the collective priorities of the greenway and trail community. The plan includes seven statewide recommendations and regional priorities for securing the Greenway Vision that can help shape the future of trails in Massachusetts. *Commonwealth Connections* is available at http://www.mass.gov/dcr/stewardship/greenway/connections.htm.

Resource Management Plans (RMP)s
Resource Management Planning forms the framework for land management based upon an inventory and assessment of environmental and recreational resources, an identification of the unique characteristics of a property or management unit, the development of management goals and objectives, and recommendations to guide the short and long-term actions. Management plans include guidelines for operations and land stewardship, provide for the protection of natural and cultural resources, and ensure consistency between recreation, resource protection, and sustainable forest management.

Trail development and management should be consistent with the agency's RMPs. For facilities where an RMP does not currently exist, trail development and management should be consistent with this guidelines manual.

Specific Trails Plans (see Section II of this manual) may also be developed prior to, as a part of, or following an RMP. Such trails plans should consider available environmental, cultural, social and recreational information; may recommend significant changes to existing trail systems; and will guide trail development and management at that facility.

Reserves, Parklands and Woodlands
DCR is in the process of designating all of its facilities as Reserves, Parklands or Woodlands. For each of these designations, DCR has developed guidelines for management. Designations and guidelines are available at http://www.mass.gov/dcr/ld/landscapedesignations.htm.

DCR Guidelines - cont.

Recreation Opportunity Spectrum
A model for decision-making, the Recreation Opportunity Spectrum (ROS) recognizes that land managers provide "experiences" to users not simply "activities" such as hiking, camping, or boating. A recreation experience is determined not only by the activity itself but, more importantly by the environment or "setting" within which the activity takes place, and this setting is defined by physical attributes such as topography and vegetation; social attributes such as visitor volumes and behaviors; and management attributes such as the fees, facility maintenance, signage, or staffing. It is the combination of these factors that truly determine the quality and character of the recreational experience.

The ROS recognizes that the DCR system encompasses settings ranging from primitive to highly developed/urban. Accordingly, we provide and should manage for a "spectrum" of recreational experiences.

ROS Class	Primitive	Semi-primitive	Semi-developed Natural	Developed Natural	Urban
Setting	Setting appears unmodified environment of large size. Evidence of other users is minimal. Area free from management controls.	A medium to large natural appearing environment. Interaction between users is low. Management controls are subtle.	Area is natural appearing, but sights and sounds of people and interactions with others are moderate. May include more developed areas.	Area is substantially modified. Interaction with others is moderate to high. Includes facilities designed for many people.	Substantially developed area, with urban elements common. Vegetation is often manicured. Large numbers of users present.
Experience	Users experience a high degree of isolation, independence, and self-reliance. Opportunities for challenge and risk are high.	Users experience a moderate degree of isolation, independence, self-reliance. Opportunities for challenge and risk present.	Equal degree of isolation and encountering others. Opportunities for interaction with nature. Challenge and risk are not important.	Encounters with others are common. Access is convenient. Physical setting is less important than the activities provided.	Presence of others is expected and desired. Observing natural appearing elements is important.

The ROS can also provide standards for management across the spectrum that are appropriate for each park's setting and resources. It can provide critical information for addressing recreational use conflicts and become an essential ingredient in the agency's expanding resource management planning and forest management planning efforts. ROS can provide a framework for managing trails across a spectrum of settings and experiences.

Trail Corridors and Forest Management Activities

Many of our existing trails exist on ways that were historically developed and are currently managed, at least partly, for forest management. Many of these ways also offer valuable recreational experiences to users and those users understandably become attached to the sights, sounds and character of the trail environment. Dramatic changes to the trail corridor, such as harvesting, may therefore be met with public concern and resistance. In

DCR Guidelines - cont.

order to minimize public concern, within woodlands, DCR Foresters and Facility Managers should take extra care and coordinate information when trail development or forest management activities are planned to occur. The forester/facility manager team should:

- Assess the potential for trail recreation impacts or conflicts, before any marking of trees occurs.
- Distinguish between forest roads and recreational trails. Forest roads which have been adopted for recreational use should be expected to experience a higher level of forest management activity than a trail.
- Ensure that any new trail development is consistent with forest management plans.
- Integrate a trail corridor protection into the cutting plan. Trail corridors may vary in width depending on the significance of the trail; however, within the designated corridor, extreme care should be applied to ensure that the trees and other landscape features which serve as "gateways" or "anchors" or otherwise significantly contribute to the character or flow of the trail are protected.
- Require in the plan that harvesters do not use the trail as a skid path or forwarding route and require that trees harvested from within the corridor (if any) are removed in a manner which minimizes disturbance to the trail.
- Discuss any concerns or anticipated conflicts with District or Regional Managers.
- Consider scheduling a public meeting to discuss the plan and reach out to friends groups, neighbors, trail volunteers and other stakeholders to participate in the meeting. The Forestry Bureau already has established procedures for public outreach on cutting plans. This outreach plan may be the ideal opportunity to invite trail interests to participate in the discussion. Utilize the opportunity to educate stakeholders about the benefits of forest management in maintaining a healthy forest and ecosystem diversity.
- Ensure that adequate signage or warnings are provided at the trail head or key intersections to protect the public during harvesting operations.

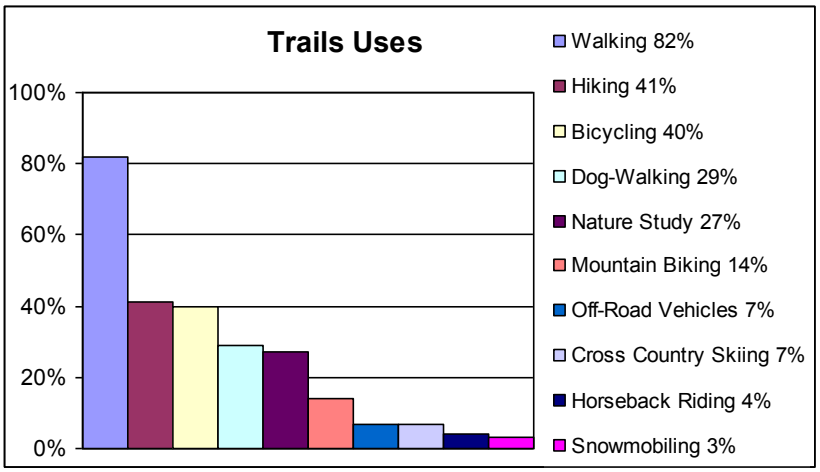
Ideally, forest management and trails management can be integrated to support each other. New sustainable trails could be developed through forestry management, and unsustainable trails closed. Trails signage and interpretation can be used to support education of the benefits of forest management. And forest ways can support both forest management and recreational trail activities.

DCR Guidelines - cont.

Trends in Recreational Trail Demand and Uses

It is important to recognize and anticipate changes in trail use patterns, demand, and types of activities to ensure that trails remain relatively stable with appropriate maintenance and management. Recognizing and accommodating these changes can also help to promote safety and reduce conflicts.

A 2004 survey of Massachusetts park users - *The Public's Use of Outdoor Resources in Massachusetts* showed that 54% of contacted households had used a park, recreational area, or public space at least once in the past 12 months. This figure represents a statistically significant increase from the 42% reported in the previous study in 1994. Of that 54% of households, 52% visited public trails. Among all the activities that respondents participate in, those that can be associated with the use of trails are shown below. Most visitors participate in non-motorized recreational uses of public lands and clearly these figures can help to guide future decisions in trail management and development.



In terms of usage of parks/recreational facilities, 64% of the respondents indicated that the opportunity for healthful experiences was very important and trails are among the most popular places that command repeat use.

Trail Regulations

DCR is currently reviewing and revising its CMR's to integrate regulations promulgated under the DEM and MDC. Once finalized, the regulations pertaining to trail activities will be included in this manual.

DCR Approved Trail Uses

Approved trail uses on DCR lands include walking, running, hiking, mountain biking, horseback riding, cross-country skiing, and snowshoeing. Snowmobile use is allowed in some State Parks in designated areas and trails, but not in Urban Parks or Watershed lands. Cross-country skiing is not allowed in the Quabbin Reservation.

Other special uses allowed include interpretive uses, wheelchairs or similar mobility devices, carriages, dogsleds, bicycles, rollerblades, and roller skis.

DCR Guidelines - cont.

Currently, eight state forests include All Terrain Vehicle (ATV) or Off Highway Motorcycle (OHM) trails. Recognizing the potential impacts, conflicts and maintenance challenges associated with these uses, DCR has adopted a special policy and procedure for designating trails which are open to these vehicles. The procedures include evaluating the property and specific trails according to more than thirty environmental, design and management criteria through a coarse and fine filter process. The DCR web site includes the agency policy for siting ATV and OHM trails at http://www.mass.gov/dcr/recreate/ohv_policy.pdf. For further information regarding these uses, contact DCR's Bureau of Recreation.

Additional Types of Trails

Long Distance Trails

Massachusetts' Long-Distance Trails are the primary spine of our greenway and trail system. Massachusetts' Long-Distance Trails include:

- Taconic Crest Trail
- National Scenic Appalachian Trail
- Mahican – Mohawk Trail
- Metacomet – Monadnock- Mattabesett Trail
- MidstateTrail
- Mass Central Rail Trail
- Warner Trail
- Bay Circuit Trail
- SAM (Snowmobile Association of Massachusetts) Corridor

Long-Distance Trails provide important long-distance recreational opportunities. They connect communities, features, and parks and forests along their route. They serve as destinations for trails that connect to them, and they bind together critical elements of our scenic landscapes. Of these, only the Appalachian Trail is permanently protected. All of the others, approximately 700 miles in all, are in danger of fragmentation as unprotected segments are lost to development or closed to the public. Protecting and promoting these resource will require a coordinated effort by multiple stakeholders, but within DCR, we should take the lead in promoting, connecting to, managing and protecting these trails as the backbone of our greenway and trail system.

Bikeways and Rail Trails

Bikeways are generally hard surfaced trails developed for multiple uses, but with on-road bicycling as a main designed use. Rail Trails specifically refer to bikeways that have been developed on former rail corridors. DCR currently manages several rail trails including the Cape Cod, Norwottuck, Ashuwillticook, and Nashua River Rail Trails. These trails often connect communities and provide a particular kind of developed trail experience that is becoming increasing popular.

Water Trails

Water trails are designated routes, features and access points along rivers, streams, estuaries, coastal areas, and ponds. Water trails do not usually require the development of the trail itself, as the designation, user information and interpretation that assists users in enjoying them. They can provide a special and scenic trail experience for users of both motorized and non-motorized watercraft. Examples of existing water trails include the Connecticut River Water Trail and the Great Marsh Coastal Water Trail network.

Historic Trails

Historic trails often involve the designation of a route along or past various features of historic or cultural importance. These trails may make use of existing roads, sidewalks or walkways, and usually include self-guided users information on the features.

DCR Guidelines - cont.

Examples might include the Freedom Trail in Boston or the Knox Trail through Western Massachusetts.

Interpretive/Nature Trails
Often short trails are specifically designed to provide natural or cultural interpretation of an area. These types of trails included signage, brochures or other kinds of written information to provide this interpretation. New formats of interpretation include pod-casts or cell phone interpretation. Some examples of these kinds of trails may include self-guided nature trails, "discovery" trails, or interpreter guided trails.

Accessible Trails
We discuss accessibility guidelines elsewhere in this manual. However, some trails are specifically developed to provide an accessible trail opportunity. These are specifically sited, designed, constructed and marketed for this purpose. Examples of these within DCR include the accessible trails at DAR State Forest, Dunn State Park and the Pittsfield State Forest's Tranquility Trail.

DCR Trail Team

In 2008, several DCR staff from across the agency assembled to review the first draft of the Trails Guidelines and Standards Manual. This group proved invaluable in identifying best practices in place across the management divisions and steering the development of this document. This group has come to be known as the DCR Trail Team. It has become clear that the Trail Team will continue to play a role in the ongoing implementation of these guidelines, future revisions, and trail-related training associated with them. The Bureau of Recreation in conjunction with the Greenways and Trails Program will coordinate the ongoing activities of the Trails Team and ensure that the group includes the various interests from across the agency and that their work is integrated with other related agency initiatives.

DCR Guidelines - cont.

Section II: Trail System Planning and Development

Instead of considering each trail individually, the trails in and around DCR facilities should be viewed as components of an integrated system or network. Trails are integral to the activities and services, and resources we are protecting at each facility.

Each ***Trail System*** should effectively contribute to three primary goals:
- Highlighting ecological, scenic, and cultural features within our facilities
- Providing specific, enjoyable recreational experiences to users
- Connecting important trail corridors, destinations, and population centers both within and outside of our facilities

Each ***Trail System*** should effectively achieve the above goals while simultaneously:
- Avoiding sensitive areas
- Meeting the expectations of users
- Minimizing ecological impacts
- Minimizing maintenance requirements

Assessing and Planning an Existing Trail System

Trail system planning does not need to take a lot of time or resources. With a few good maps, knowledgeable staff, and some strategic decision-making, we can make a great deal of progress in planning for more effective trail systems.

A more formal Trail Plan can also be developed using a public process.

Below are the basic steps to trail system planning.

Get to Know Your Trails

1. Walk Your Trails: The most important piece of information to have when assessing an existing trail system is a first hand knowledge of the trails. While out on the trail, examine and document existing conditions, problem areas, types and number of users, available parking, signage and marking, etc.

2. Gather Maps: Compile appropriate maps. Ideally, you will want to compile or request maps that depict:
- Existing trails, developed areas, roads, facilities, park boundaries, etc.
- Rare and endangered species habitats
- Streams and wetlands
- Steep slopes
- Historic/cultural resources
- Special management areas/zones
- Soils restricted for trail development

You may already have much of this information available on existing maps, or be able to request these maps from DCR's GIS program.

3. Identify Forest Management Ways: Recognize that many of the forest roads or ways that exist within a facility may have been developed to support forest management activities. While an area may not have been cut for many years, it may be due for active forest management at some point in the future. Consult your management forester and identify segments of your trail system that coincide with forest

DCR Guidelines - cont.

management ways and that may be used for that purpose from time to time. See page 7 for additional information regarding trail corridors and forest management activities.

4. Describe Use Patterns and Demand: Identify which trails are designated for which uses, and what types of use you specifically want to manage for. Identify what types of trail uses currently exist within and around your facility and the use types wherein unmet demand lies. This could be done by formal observation, informal interviews, or by user surveys. Local community Open Space and Recreation Plans can also provide valuable information on community needs and desires. It is helpful to then prioritize the uses you want to manage for and identify key characteristics of each use.

Identify Features and Experiences

5. Identify Scenic, Recreational and Cultural Features: On your map(s), highlight the scenic, recreational and cultural features within your park that you want to draw visitors to, such as water resources, ridge lines, summits, vistas, long-distance trails, notable environments, historic structures, cultural landscapes, geologic features, etc.

6. Identify Your Main Parking and Access Points: The trail system needs to have appropriate parking and access points. Both too few and too many access points will result in management difficulties. In addition, parking and access points need to be designed appropriately for the given managed uses of the trail system. For example, for a trail system that allows motorized use, parking will need to be provided that can accommodate trailers and motorized trail vehicles, but you may also want to provide separate access points for non-motorized trail users.

7. Identify Recreational Experiences: Based on the features of your facility and the types of use you want to manage for, describe some of the high priority recreational experiences you hope to provide. For example, if there is a demand for mountain biking at your facility and sufficient space, you may want to provide the experience of a range of distances and challenges for mountain bikers. Or, if you have a large number of day users seeking a short but educational pedestrian experience, you may want to provide some short, fully accessible, nature trail experiences.

Keep in mind that different users may be seeking a range of experiences from shorter, safer, more developed settings to more remote and isolated settings. Also remember that different user groups will require different trail distances and be able to handle different levels of challenge. See the section above on "types of trails" for some general guidelines and the "Minnesota Trail Planning, Design and Development Guidelines" for a more complete discussion of user needs and expectations.

8. Identify Connections: Identify main destinations within your facilities (such as day use areas, and campgrounds), main trail corridors that you want to link to (such as long-distance trails, or community trails), and nearby communities, neighborhoods, or population centers that you could connect to.

Remember that it is important to look beyond our borders and think about how we can connect people to our parks through more than just roads and parking lots.

Also remember that too many connections between trails make trail systems confusing and difficult to patrol.

Identify Constraints, Issues and Problem Areas

9. Highlight Sensitive Areas: Now using the maps and existing knowledge, identify (draw a red circle around perhaps) areas where existing trails intersect sensitive areas

DCR Guidelines - cont.

such as priority habitats, steep slopes, and wet areas. In addition, highlight specific trails or trail segments that have become persistent maintenance issues.

10. Highlight Problem Areas and Redundant Trails: Highlight trails or trail areas that are in poor condition or have become persistent maintenance problems. Many of these might be "fall-line" trails, those that go directly down the slope. You should also identify trails or trail segments that are redundant.

11. Involve Stakeholders: At this stage, it is useful to involve various stakeholders – park users, trail groups, advocates, etc. For example you might hold a public meeting on trail issues, or attend a "Friends" group meeting. These individuals and groups can help you identify features, use patterns, demand, opportunities, and connections.

Make a Plan

12. Designate Trail Use: Each trail should be designated for a certain use or uses, and these designations should be clearly identified at trailheads, intersections and on trail maps. Keep in mind that different modes of travel may impact other trail users, treadway, and resources; and often require different levels of trail maintenance and management. Review trail use designations to ensure that each makes sense.

13. Identify Potential Closures: In many DCR facilities, new trails have been developed over time without careful planning and/or adequate construction. These trails often have persistent maintenance and safety issues, user conflicts, or unacceptable environmental impacts. Considering the existing trails and highlighted areas of concern, identify trail segments that could be closed without significantly impacting the user experience, interrupting the trail corridor, or compromising the trail system.

14. Re-route and Restore Trails: At the same time, you may identify trails that are maintenance sinks or in areas of concern, but that are also critical for connections, or providing a user experience. These may be candidates for re-routes (i.e., moving the trail up-slope) or restoration (i.e., adding drainage structures) so that they can become more sustainable. Identifying and prioritizing these projects is an important step in developing maintenance and capital improvement plans.

15. Highlight Potential New Trails: Given the features you want to highlight, connections you want to make, and experiences you hope to provide, identify potential opportunities for new trails. This will be your guide in assessing future trail requests and additions. However, before one can consider new trail construction, it is essential to correct existing trail problems.

16. Identify Stewardship Partners: Lastly, within your trail system, you may be able to identify particular user groups, friends groups, scout troops, or other stakeholders who will be able to assist in the stewardship, monitoring and maintenance of particular types or sets of trails. It will be helpful to identify these groups in your trail plan.

Ideally, with a simple trail plan that includes maintenance priorities, closures, re-routes, potential new trail opportunities, and potential adopters, we will be able to effectively improve our trails system, access resources for improved trail development, and respond appropriately to requests for new trails.

DCR Guidelines - cont.

Assessing Requests for New Trails or Changes in Trail Designation

Unfortunately, we are often faced with requests for new trails or new allowed uses from advocacy groups before we have had the opportunity to carefully consider the trail system needs in a Trail Plan or a Resource Management Plan. Before considering new uses or new trail development, we should ensure that the existing trail system is working to its full potential and that the new trail will, in fact, contribute to the goals of our network.

In addition, given the agency's limited ability for maintenance, we should ensure that we have the capacity to build and maintain a new trail over its entire life cycle. Developing and committing to a long-term maintenance strategy is a critical aspect of initial trail planning and fundamental to successful trail system management.

Important basic questions to ask before developing a new trail include:

- Why do you need a new trail? How does it contribute in a new way to the user experience or how does it offer a critical connection?
- What will the trail's designated uses be and what is the demand?
- Will this trail be designed to the accessibility standards?
- Who will design and build the trail?
- Who will fund the trail?
- Who will maintain the trail?

If, in planning your new trail, we find that we cannot answer these questions or balance these components, it is probably not wise to build the trail at all.

If we find that we can easily answer these questions and provide the commitment to sustainably design, build, and maintain a new trail then proceed to *Trail Proposal and Evaluation Form* (Appendix A). The *Trail Proposal and Evaluation Form* is the next step for gathering important information and seeking approval for a new trail proposal. The information in this form will then be used by facility supervisors, managers, and foresters to evaluate and either approve or disapprove the request.

In cases where a significant change in the trail system is being proposed (for example changes that might affect 25% or more of a trail system), then DCR will likely want to engage in a Trail System Planning or Resource Management Planning process to fully assess the proposed changes.

DCR Guidelines - cont.

Additional Trail Development Concepts

Multiple-Use versus Single-Use Opportunities: Trails that are designed and managed for multiple uses differ somewhat from those that are designed and managed for single uses. Certain uses are more compatible with each other than others. See further discussion in Section III.

Multiple-use trails will likely be more expensive to develop in a sustainable manner, but given that more uses can be accommodated on fewer trail miles, may lead to lower long-term maintenance costs. They will also be able to provide recreational opportunities to more diverse users, but the user experience may be more uniform. On the other hand, some single-use trails may be easier to maintain per mile and may provide a more rewarding user experience to particular users.

Ultimately, you may want to consider developing a mixture of multiple-use and single-use trails at your facility depending on the features you wish to highlight and the user experiences you want to provide. For example, a particular park may want to specialize in offering opportunities for cross-country skiing or mountain biking and thus develop some longer single use trails to provide quality experiences in backcountry areas of the park, but may maintain a number of multiple use trails in the park's core area.

Core Area versus Backcountry Trail Opportunities: Most DCR facilities have core area(s) with significantly higher usage and more developed facilities, as well as back country area(s). Trails in the core area should be more accessible, and designed, marked, and maintained to a higher Trail Class standard as they are likely to see higher usage. Backcountry area may be appropriate for longer distance trail opportunities, single use trails, and a lower level of management. Trails in backcountry areas offer a more intimate experience with fewer visitors, a greater challenge, and sometimes higher risk. Risk is associated with difficulty and remoteness of a trail, the probability of meeting others, and the level of management.

Trail Management along the Recreational Opportunities Spectrum: The Recreational Opportunities Spectrum (ROS, see Section I for more details) recognizes that the user experience and expectations will vary along a continuum from primitive facilities to semi-developed sites to urban areas. Some DCR facilities are naturally going to provide a more urban or sub-urban recreational experience and some a more natural or even semi-primitive experience. The facilities (including trail facilities) across this spectrum will obviously be managed differently, with different standards and different levels of management.

The ROS helps provide management guidelines across this continuum. In urban and sub-urban settings: Accessible, multi-use hard surfaced paths may be more appropriate with a relatively high level of use, and greater signage and management presence.

In developed and semi-developed natural settings: Users may expect a diversity of trail types and experiences from woodland only pedestrian trails to mountain biking trails to soft-surface multi-use trails, but they will also expect to encounter a variety of users, especially in core areas.

In semi-primitive settings: Expectations will vary depending on whether the facility allows motorized use or not. In non-motorized areas, trails will tend to be narrow and more rugged with a minimum of management presence. Users will expect to find a certain level of solitude and may not expect many other users.

DCR Guidelines - cont.

Connecting to Neighboring Communities: Where feasible and appropriate, consider using trails to connect state parks and forests to neighboring communities. Trail connections beyond our borders are important as recreational opportunities and as transportation alternatives. They also allow us to expand the numbers of miles and types of user experiences we can provide and help strengthen ties to local user and advocacy groups.

Trails connecting outside of our borders should be carefully developed only in partnership with a local community or trail group, with that group taking the lead. Important considerations before any new connecting trail is developed include property ownership, landowner permission, maintenance responsibility, and issues around controlled access.

DCR Guidelines - cont.

Principles of Ecologically Sustainable Trails

(This section is drawn and adapted from the Minnesota DNR Trails and Waterways Trails Planning, Design and Development Guidelines with additional information relevant for Massachusetts.)

Trails are our most important tool for linking conservation and recreation. As such, they must be developed and maintained in ways that avoid negative impacts to the ecological resources of the Commonwealth, especially those that the DCR directly stewards.

All development, including trails, has direct and indirect impacts to the environment. To help minimize these impacts, we propose the following **"guiding principles"** when developing and maintaining trail systems:

1. **Avoid Sensitive Ecological Areas**
2. **Develop Trails in Areas Already Influenced by Human Activity**
3. **Provide Buffers to Protect Sensitive Ecological and Hydrologic Systems**
4. **Develop Appropriately when Trails Do Intersect with Sensitive Areas**
5. **Use Natural Infiltration and Best Practices for Stormwater Management**
6. **Limit tread erosion through design and construction**
7. **Provide Ongoing Stewardship of the Trails**
8. **Ensure Trails Remain Sustainable**
9. **Formally Decommission and Restore Unsustainable Trail Corridors**

1. Avoid Sensitive Ecological Areas

When developing and maintaining trails, avoid sensitive ecological systems or take sufficient steps to minimize impacts on these systems. Ecologically sensitive systems include:

- Known and estimated locations of rare and endangered species and their habitats as identified by the Massachusetts Natural Heritage and Endangered Species Program,
- Priority Natural Communities and vernal pools as identified by the Massachusetts Natural Heritage and Endangered Species Program,
- Wetlands, lakes, rivers and streams,
- Public water supplies,
- Forest Reserves and Wildlands,
- Steep slopes and soils that are identified as restricted for trail or road development as defined by the Natural Resources Conservation Service,
- Unique or important geologic features, formations, and designated state geologic waysides, and
- Cultural and historic resources as determined by the DCR archeologist in consultation with Massachusetts Historic Commission.

2. Develop Trails in Areas Already Influenced by Human Activity

Consistent with the first guiding principle, where feasible, it makes most sense to site and maintain trails in areas that have already been influenced by human activity provided that you can meet your other objectives while doing so. These include:

- Already existing trails,
- Existing or historic wood roads and logging roads,
- Abandoned railroad corridors, often make appropriate multi-use trail corridors,
- Previously developed or disturbed areas.

3. Provide Buffers to Protect Sensitive Ecological and Hydrologic Systems

Maintaining buffers between trails and adjacent sensitive natural areas is essential to ensuring their long-term ecological quality, diversity, and habitat value. Irrespective of how well they are aligned and designed, trails have an impact, including habitat fragmentation, soil compaction, increased runoff and erosion, and introduction of non-

DCR Guidelines - cont.

native plant species. For these reasons, the use of buffers is an essential part of trail planning and design.

Recommended buffer widths, however, will vary in response to a number of conditions, including:

- Sensitivity of the ecological systems being impacted,
- Extent of the natural open space or greenway corridor being traversed,
- Type of trail being proposed and its potential for creating ecological impacts,
- Grade and soils types, and
- Desired trail experience.

Recommended buffer widths may range from 50-200 feet depending on conditions. For a more detailed discussion see the Minnesota DNR Trails and Waterways *Trails Planning, Design and Development Guidelines*

Consult with MNHESP to determine appropriate buffer to rare, threatened and endangered species. Consult with Historic Resources to determine appropriate buffer to historic/cultural resource. Activities within wetland resource buffer areas are regulated by Massachusetts Wetland regulations and local conservation commissions. Projects within 100 feet of a wetland or within 200 feet of a perennial stream will require the submission of a Request for Determination of Applicability form to the local conservation commission.

4. Develop Appropriately when Trails Do Intersect with Sensitive Areas
The above discussion notwithstanding, trail development and maintenance across, along, and within sensitive areas is often desirable and justifiable. Streams need to be crossed, slopes traversed, and features interpreted.

Allowing controlled access to sensitive ecological areas may be an integral part of educating the public about the value of protecting them. Most often, this takes the form of routing a corridor trail on the periphery of a sensitive area (with adequate buffers) and allowing more direct access to specific settings only in very select locations, and with appropriate trail forms (such as boardwalks and bridges) for closer observation. This approach provides reasonable access while limiting the potential for environmental impact and can also be developed in conjunction with an environmental education program. In addition, any trail development should also be consistent with Resource Management Plans.

5. Use Natural Infiltration and Best Practices for Stormwater Management
Whether paved or natural trails, one of the most critical components of trail design and management is to keep the trail away from the water and the water off the trail.

On highly developed trails, the use of natural, dispersed infiltration systems such as vegetated swales and "rain gardens" offers advantages over engineered stormwater control structures such as storm drains and catch basins.

6. Limit Tread Erosion through Design and Construction
To minimize trail erosion and impacts to water resources use sustainable trail design and construction techniques such as: reducing the "tread watershed", "outslope" the trail (slope it away from the bank) to facilitate natural drainage across the trail, and provide appropriately spaced waterbars and drainage dips. See the *Elements of Design* section for more details.

7. Provide Ongoing Stewardship of the Trails

DCR Guidelines - cont.

Trail stewardship begins with an appropriate, sustainable design, and continues with ongoing maintenance and monitoring, and if necessary restoration or closure.

Historically, DCR has put too few resources into trail stewardship, and this has to change. Trails are one of our most important recreational assets. Trail stewardship generally involves providing a safe and satisfying trail experience, minimizing trail conflicts, maintaining a stable, dry and firm trail tread, maintaining clearance zones, signing and marking trails, and insuring that there are no impacts to adjacent natural systems.

Stewardship of DCR trail resources will need to encompass a three-pronged approach:

- Ongoing trail monitoring and basic maintenance by DCR staff,
- Ongoing trail monitoring and basic maintenance by user and other stakeholder groups, and
- Capital trail restoration and closure projects to either make trails sustainable or close unsustainable trails.

8. Ensure Trails Remain Sustainable

A sustainable trail is one that can be indefinitely maintained for its intended purposes, assuming routine management and stewardship is provided consistent with the type of trail. If a trail is well designed and appropriately used, site impacts will stay within acceptable limits.

Over time, all trail treads will change shape with use and forces of nature. Anticipating and reacting to this change before significant damage occurs, is key to maintaining a sustainable trail system.

A trail becomes unsustainable when its physical condition passes a threshold where site impacts are no longer acceptable. Under these circumstances, action is required to avoid continued degradation of the trail and adjoining ecological systems.

In practice, all natural trail types tend to exhibit similar physical signs of being either sustainable or unsustainable, as reflected by rutting, erosion, by-passing, and impacts to adjoining ecological systems and hydrology.

In general, trails are considered sustainable if the following conditions are found:

- Trail tread is stable and compacted, with a constant outsloped grade preferred (the depression on a well-worn trail should average less than 3 inches in most soil types),
- Displacement of soils from the trail tread is minimal relative to the use and soil type (only limited berming on the outside of curves),
- Tread drains well with minimal to no signs of ongoing erosion,
- Tread does not restrict site hydrology and impact surface- or ground-water quality, and
- Impacts to surrounding ecological systems is limited to the trail tread and directly adjacent clearance zone, with no bypassing and cross-country travel occurring.

When a trail becomes unsustainable, there are three options. Re-design and restore the trail, restrict use/re-classify the trail, or decommission the trail.

9. Formally Decommission Unsustainable Trail Corridors

Closing or decommissioning is often necessary to ensure an effective and sustainable trail system and reduce maintenance costs and user conflicts. Decommissioning a trail involves more than just a sign or barrier. When a trail is closed or a trail segment is rerouted, at a minimum the visible ends of the old trail should be re-graded back to the

DCR Guidelines - cont.

original slopes, the eroded soil there should be replaced, and the trail end should be replanted with native plants. The use of a physical barrier and reducing the visibility of the old trail tread are both necessary to effectively close a trail. Experience has shown that relying solely on fences and gates to block entrances of decommissioned trails is not very effective.

The Minnesota Department of Natural Resources' *Trail Planning, Design, and Development Guidelines* provides guidance on different methods of closing trails including using dense planting at entrances, creating closure berms to block access, using slash to reinforce closures, ways to re-naturalize corridors after closure, and public information and education. In many cases, these closures can be done in conjunction with forest management and integrated into a forest management plan.

DCR Guidelines - cont.

Building Sustainable Trails

In the previous section we discussed broad principles of planning sustainable trails. But how do these translate on the ground?

While there are many factors that can influence the sustainability of trails, when you get to actually putting them or managing trails on the ground, they should achieve the following objectives.

- **Connect positive, and avoid negative, control points**
  A sustainable trail will lead users to desired destinations such as water features, historic sites, vistas, interesting landforms and user facilities; while avoiding wet areas, steep slopes, critical habitats, and other culturally or environmentally sensitive areas.

- **Keep water off the trail**
  As we have noted, erosion is the number one problem for sustainable trails. It damages trails, is expensive to repair and diminishes the user experiences. In New England, water is the primary erosive force. Trails that collect water or channel water will be both environmentally and economically un-sustainable.

- **Follow natural contours**
  Trails lie on the land in three ways – along a fall-line (in the direction of the slope), on flat ground, or along the contour (perpendicular to the slope). Of these types of trails, **only the contour trail** on the side-slope easily sheds water and is thus sustainable.

- **Keep users on the trail**
  When users leave the trail tread, they widen it, create braided trails, and create social trails. These can cause environmental damage and raise maintenance costs. Users leave the trail when it becomes eroded or wet, or when the trail does not meet their needs or expectations.

- **Meet desired user experiences**
  Sustainable trails and trail systems must meet different users' needs and expectations. If they do not, users may abandon the trails and / or create their own, less sustainable trails.

Ultimately, a sustainable trail design will most often be a trail that connects desired control points by roughly contouring along the sides of slopes.

Designing Sustainable Contour Trails

The contour trail is the most sustainable design, but how does one specifically lay out and create these trails so that they do not collect or channel water? A sustainable contour trail should conform to the following five "rules:"

1. Outslope: The trail tread should be outsloped (sloped away from the hillside) by 5%. This will allow water that comes on to the trail to flow off downhill and not be channeled down the trail.

2. Grade Reversals: While the trail will generally follow the contour of the land, it will also most likely either be climbing or descending slightly. However, a sustainable trail should also reverse its grade often (from down to up and vice versa, "surfing the hillside"). This will reduce the watershed of any given section of trail, prevent water from collecting and running down the trail, and reduce any erosion potential. Most trails should include grade reversals every 20 to 50 feet.

DCR Guidelines - cont.

3. Half Rule: A trail's grade (percent slope) should not be any greater than half the grade of the hillside that it contours along. For example, if the slope of the hill the trail runs along is 16%, than the grade of the trail should be no more than 8%. This will allow water to flow across the trail, off the trail and continue down the slope. This is especially important along gentle slopes.

4. Ten Percent Average Grade: An average trail grade of 10% or less will be most sustainable, on most soils and for most users. This does not mean that shorter sections can't be steeper.

5. Maximum Sustainable Grade: The maximum sustainable grade is the steepest grade the trail will attain, and should be determined early in the planning process. Typical maximum grades may vary from 15% to 25%, but this is site specific and depends on factors such as soils, rainfall, the half rule, grade reversals, user type, desired difficulty level, and number of users.

DCR Guidelines - cont.

Building an Enjoyable Trail Experience

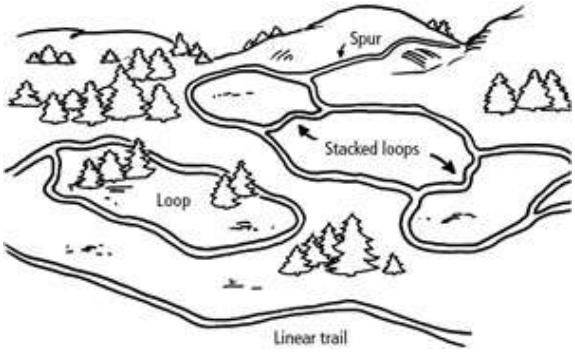
Beyond the issue of trail sustainability, the most successful trails are a reflection of the settings and landscapes they traverse. People purposefully choose specific settings for the experience they seek, and the trail should reflect those expectations. The more natural the setting, the more the trail needs to be shaped by nature. The more urban the setting, the more the trail needs to highlight local landmarks and points of interest and provide a social atmosphere.

Well-designed trails will also use natural and built elements to create sequences of visual, physical, and emotional experiences that are pleasing to the trail user. All aspects of a site – its topography, viewsheds, water features, ecological communities, cultural sites, developed areas, roads, and trails – should be perceived as part of the sequence of events that give the trail its character. To be successful, the collective sequence must also meet the expectations of the visitor in terms of desired mode of travel, setting, level of difficulty, and length of trail.

Managing Viewsheds: Managing the views as one progresses along a trail is an important consideration. Taking advantage of compelling views and downplaying those that detract from the trail is all part of controlling the sequence of events that enhances the trail's recreational value. Managing viewsheds is also an ongoing maintenance issue and may, at times, conflict with vegetation management. In these instances, it is important to define which viewsheds are important to the trail experience and how those will be preserved over time as part of the vegetative management program for the trail.

Trails "Shapes" and Layouts: Trail "shapes" are defined by their purpose and topography, but they also help to create a recreational experience relative to the trail's setting. Understanding the emotional response that various shapes induce is critical to designing trails that successfully mesh with the larger landscape experience.

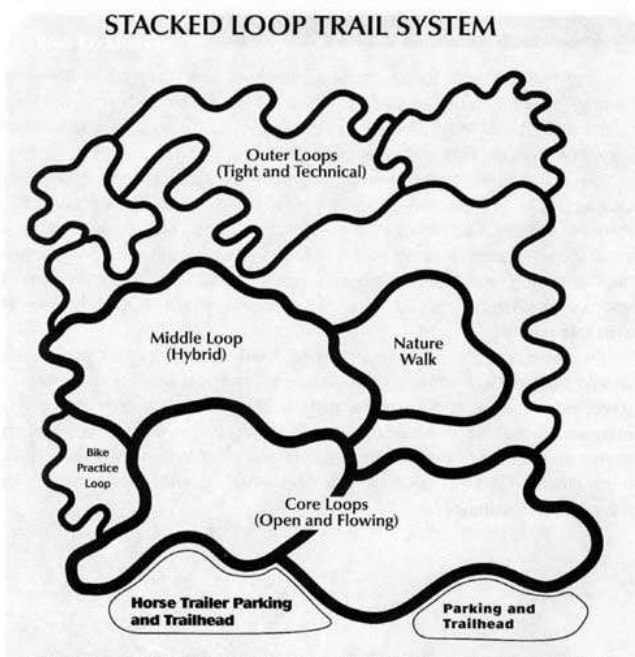
Bikeways often follow old rail lines, and are therefore straight with little grade change. This provides a particular type of linear trail experience, and often meshes with more urbanized settings. Long-distance trails tend to be fairly linear as they connect features and destinations over a long distance, and will tend to follow ridgelines and river corridors. Spurs take the user to a particular destination and back. Loop trails allow for users to end up where they started without repeating any part of the trail.



(Graphic from "Trail Design for Small Properties" www.extension.umn.edu/distribution/naturalresources/DD8425.html#1)

DCR Guidelines - cont.

Within DCR's parks, stacked loop trails (a series of loops that build upon each other or a large loop with different cut-offs along the way) can be an efficient design that allows you to offer a variety of trail distances and experiences in a relatively compact area.



(Graphic from NEMBA www.nemba.org/digitalnemba/images/StackedLoopTrails2.jpg)

Taking Advantage of Landscape Features:
In addition to the broader concepts of trail layout, good trail design also takes advantage of landscape features along the way that help to create the sequence of events and define the user experience. The four primary design elements are listed below.

Terminus and Destinations: Every trail should have a clear beginning and ending. Loop trails may just have a single beginning and ending, but may also have "destination" points along them. Terminus points should give the user a clear sense of initiation and accomplishment. Destinations should be features that entice the user on, and should leave the user with a sense of having achieved a goal.

Gateways: Gateways occur when natural or human structures constrain the trail and thus create a sense of "entrance." A bridge, a passage between two large trees, or a railroad cut into a ledge, all create a visual gateway. Ideally, gateways will also occur or be created at or near trailheads to give a sense of trail entrance.

Anchors: Landscape anchors are any vertical feature (a tree, boulder, wall, hill, valley, sign, etc.) that visually help to tie the landscape scene together and give it interest and balance. Anchors can also serve as stand alone points of interest that draw attention and provide continuity from one visual sequence to the next. Designing the trail to take advantage of natural landscape anchors and wrapping the trail from one anchor to the next, provides the trail with a sense of flow and purpose.

DCR Guidelines - cont.

Edges: Edges are borders between landscape features or between ecological zones. The trail itself creates edges within the site (one along each side). Examples include borders between:

- land and water,
- steep slopes and level ground,
- woodlands and grasslands,
- forest types or habitats, and
- human created linear features like fence lines and roadways.

Edges often offer rich opportunities for trails. Following or crossing edges enables the user to experience different aspects of a site in unison. Edges are also often ecologically rich and provide habitats for diverse plants and wildlife.
Constraints: Within each property there are also constraints and obstacles around which trails need to be designed. Streams, property lines, wetlands, steep slopes – all form constraints that define where the trail can go.

For a more detailed discussion, see the Minnesota Department of Natural Resources' *Trail Planning, Design, and Development Guidelines.*

DCR Guidelines - cont.

Building Accessible Trails

Trails are about providing people access to the land. Our facilities offer a wide range of recreational opportunities, settings and experiences. DCR is committed to integrating accessibility into the range of recreation opportunities while protecting natural resources and settings so that all people, including people who have disabilities, have the opportunity to enjoy and experience what our public lands have to offer.

How does accessibility fit into the range of settings we provide? We certainly don't want to pave the wilderness, nor do people with disabilities only wish to experience highly developed settings. When the decision is made to construct or alter a trail or other facility, we must ask, "Will a person with a disability have an equal opportunity to use this trail?" Are there existing conditions that may limit a trail's ability to meet accessibility standards (see Accessible Trail Standards Conditions for Departure)? The key is to ask these questions before the trail has been designed and built. Then we can provide trails for use by all people.

To achieve this goal, DCR proposes to adopt the Forest Service Trail Accessibility Guidelines (FSTAG) available at http://www.fs.fed.us/recreation/programs/accessibility/FSTAG.doc.

These guidelines provide accessibility standards for trails, but they will only apply to:

- New or altered (re-designed or re-developed) trails that;
- Have a Designed Use of pedestrian/hiker, and
- Connect directly to a currently accessible trail or trailhead.

Trail maintenance is not subject to these guidelines, although, through regular maintenance, we should attempt to enhance accessibility. For example, if an opening in a downed tree needs to be cut, we should make sure we cut it at least 32" wide, or if a bog bridge is installed, we should attempt to make it 32" wide.

In addition, there are several conditions under which trail designs may depart from the standards in the accessibility guidelines. There are also general exceptions and several existing trail conditions which may be "limiting factors" in a trail's ability to meet the design standards. The FSTAG provides a flow chart which guides trail managers through the process of determining whether and which of the accessibility guidelines apply, and DCR's Universal Access Program can assist trail managers in determining the application and implementation of these guidelines.

For those trails or trail segments that do apply, they should be designed and maintained to meet the general standards in the chart on the following page.

Examples:
Imagine you wanted to create a new walking trail, from a day use area, around a pond. This is envisioned as a class 3 (improved) trail, and construction to the accessibility standards would not harm any cultural, historical or significant environmental resources. In this case, you would likely need to construct the trail to the below standards.

Imagine you needed to develop a new access trail from a road to the Appalachian Trail. This is envisioned as a class 2 (simple) hiking trail. The terrain climbs steeply, and the soils are not firm in many places with natural obstacles. Constructing this trail to the accessibility standards with substantially change the physical setting and the trail class, and would be impractical due to terrain. This would lead to conditions for departure and you would not need to build this trail to the full standards.

DCR Guidelines - cont.

Massachusetts DCR Universal Access Program's
SUMMARY OF GUIDELINES FOR ACCESSIBLE TRAILS
(Based on Forest Service Trail Accessibility Guidelines, May, 2006)
This chart should be used as a guide only. Contact DCR's Universal Access Program for assistance in evaluating, designing and developing new or altered trails.

ACCESSIBLE TRAIL STANDARDS

Trail Grade (max) (*1)	**w/ resting intervals** (*2)	**Cross Slope (max)**	**Obstacle Height (max)**	**Trail Tread**
• 5% max. for any distance • 8.3% for 200 'max. • 10% for 30' max. • 12.5% for 10' max.	N/A, not required @ 200' max. @30' max. @ 10' max.	5% (*2)	2" height max.	Firm & stable

Clear Width	**Openings**	**Passing Space Interval**	**Edge Protection**	**Protruding Objects**	**Signs**
36" (*3)	½" max. diameter	Every 1000' when clear width less than 60". 60"x60" min. or T-shape min. 48"	3" min. height (where edge protection provided)	80" min. clear head space (or provide barrier to warn blind)	At trailhead; identify total length of trail & first point of departure

*1 No more than 30% of the trail shall exceed 8.3%
*2 Resting interval: 60" minimum in length by minimum width of trail width, 3% max. grade. For routes: 5% max. cross slope allowed for proper drainage.
*3 May be reduced to 32" or less with allowable exceptions.
*4 May be no less than 32" for a distance of 24" max. with one of four conditions

There are several "Conditions for Departure," "Limiting Factors" and "Exceptions" that will affect the degree to which these standards are applicable.

Conditions for Departure:
The following four conditions for departure allow deviation from the standards where exceptions apply.

1. Where compliance would cause substantial harm to cultural, historic, religious, or significant natural features or characteristics.
2. Where compliance would substantially change the physical or recreation setting or the trail class, designed use, or managed uses of the trail or trail segment, or would not be consistent with the applicable land management plan.
3. Where compliance would require construction methods or materials that are prohibited by federal, state, or local law, other than state or local law whose sole purpose is to prohibit use by persons with disabilities.
4. Where compliance would be impractical due to terrain or prevailing construction practices.

Exceptions and Limiting Factors:
Where one or more limiting factor exists and one or more conditions for departure exist, then there may be exceptions from following the guidelines. Limiting factors include:

a) The combination of trail grade and cross slope exceeds 20% for over 40 feet (6100 mm).
b) The surface is not firm and stable for a distance of 45 feet or more.
c) The minimum tread width is 18 inches or less for a distance of at least 20 feet.
d) A trail obstacle of at least 30 inches (770 mm) in height extends across the full width of the trail.

DCR Guidelines - cont.

Permitting

Any disturbance to the natural environment has impacts, and trails are no exception. When we construct or maintain trails, we should make every effort to do no harm. As discussed above, ideally trails should be routed to avoid sensitive resources such as streams and wetlands, rare species habitats, and sensitive cultural sites. However, trail development within or alongside of sensitive areas is often necessary and justifiable. Streams need to be crossed, steep slopes traversed, and unique features interpreted. Allowing controlled access to sensitive ecological or cultural areas may also be an integral part of educating the public about the value of protecting these resources. When sensitive areas cannot be avoided we, as trail builders, have legal and ethical obligations to minimize our impacts by going through the proper regulatory procedures. Below are some of the state regulations and permits that you need to consider when you develop a trail.

Streams, Rivers and Wetlands: In Massachusetts, activities occurring within 100-feet of a coastal or inland wetland or within 200-feet of a perennial stream or river are governed by the Wetlands Protection Act. Among the many activities regulated by this act are changing run-off characteristics, diverting surface water, and the destruction of plant life – activities commonly associated with trail building and maintenance. If your trail building activities will occur within 100-feet of a wetland or 200-feet of stream or river you ***must*** file a "Request for Determination of Applicability" (RDA) form (http://www.mass.gov/dep/water/approvals/wpaform1.pdf) with you local conservation commission. Your local Conservation Commission can explain the state regulations and local bylaws; they can also provide guidance on completing your RDA.

How do you know if your trail project will occur near a wetland? A good starting point is the wetlands on-line viewer, which is available at http://maps.massgis.state.ma.us/WETLANDS12K/viewer.htm. If your project occurs near a wetland identified on this map, you will need to submit an RDA. Be advised that not all wetlands are indicated on this map, so an RDA may be required even if no wetlands are indicated on the on-line viewer.

Threatened and Endangered Species: Over 440 species of plants and animals are protected under the Massachusetts Endangered Species Act (MESA). MESA protects state-listed rare species and their habitats by prohibiting the "Take" of any species that is listed as Endangered, Threatened, or of Special Concern. A "Take" is any activity that directly kills or injures a MESA-listed species, as well as ***activities that disrupt rare species behavior and their habitat.***

Trail building activities are subject to review by the Massachusetts Natural Heritage and Endangered Species Program (http://www.mass.gov/dfwele/dfw/nhesp/nhesp.htm) if they occur in areas that have been delineated as "Priority Habitat." You can determine if your project will occur within Priority Habitat with the help of the Priority Habitat on-line viewer (http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/priority_habitat/online_viewer.htm). If your trail project is located within priority habitat, you ***must*** file a MESA project review checklist. This checklist may be found at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/pdf/mesa_proj_review_check_elect.pdf.

Archeological and Cultural Resources: Any soil disturbance activities, such as trail building, that are on state property or funded ***through state or federal funds*** (including Recreational Trails Grants) require review from the Massachusetts Historic Commission (MHC; http://www.sec.state.ma.us/mhc/) and you ***must*** file a Project Notification Form. This form may be found at http://www.sec.state.ma.us/MHC/mhcform/formidx.htm. If the project is not in an area

DCR Guidelines - cont.

with archeological and/or cultural resources, the MHC will not require anything further. If the project is in such an area, the MHC may request an archaeological survey, and you will need to hire a private archaeologist complete this.

Historic Landmarks: In certain cities and town, all or some of the parks have been designated as local historic landmarks. Chestnut Hill Reservation for instance, is considered a Boston Landmark. Any work in the area, design and construction, has to be reviewed by the local historic landmark board before work can begin.

Note that these review processes treat trail construction and alteration similarly. Alterations include significantly changing the trail's grade, width, or surface, adding bridges, adding a spur to serve a new destination, and changing the trail's use, such as from horses to hikers. The following checklist will help you determine if your trails project requires regulatory review.

Massachusetts Regulatory Review Checklist

☐ Yes ☐ No	Will any work occur within 200 feet of a stream or river or within 100 feet of a wetland? If yes, contact your local conservation commission for help preparing an RDA.
☐ Yes ☐ No	Does the project area intersect with any Priority Habitat Area? If yes, file a MESA Project Review Checklist with the NHESP.
☐ Yes ☐ No	Will the project disturb any soil <u>and</u> will it occur on state property or be funded with state and/or federal funds? If yes, file a Project Notification Form with the MHC.

DCR Guidelines - cont.

On the Ground; Putting It Together

With a basic understanding of sustainable, enjoyable, and accessible trails concepts, it is now time to put that knowledge to work on the ground. A brief, but good description of these steps is also included in the USDA Forest Service *Trail Construction and Maintenance Notebook* at http://www.fhwa.dot.gov/environment/fspubs/00232839/index.htm.

1. Scouting the Trail:
Scout the potential trail corridor in the trail's primary season of use. To clearly see landscape details, scout when deciduous trees have lost their leaves. If possible, scout in all seasons to reveal attractive features and hazards that may affect location, construction, or maintenance. Look for:

- Spring: high water, ephemeral ponds, flowers
- Summer: dense foliage, normal water level
- Fall: foliage color
- Winter: icicles, snow scenes, frozen water

Note existing trails and roads, control points, obstacles, points of interest, and anchor points. Take notes and mark locations on a map or record GIS coordinates.

2. Establishing Your Trail Design Standards:
After exploring the trail corridor, but before flagging the exact trail location, establish your design standards. Design standards are based on the trails Designed Use and Trail Class. These will be affected by your desired managed uses; the setting; the quality of experience you want to offer, including the level of risk; and your construction resources, including budget and expertise.

Consider these aspects of the trail design such as trail configuration, trail length, tread surface, tread width, obstacles, clearing width, clearing height, grade, cross slopes, turning radius, sight distance, water crossings, and special requirements.

USDA Forest Service trail design parameters are included in Appendix C.

Recommended trail design standards are also suggested in the University of Minnesota *Recreational Trail Design and Construction Manual* at www.extension.umn.edu/distribution/naturalresources/DD6371.html#trail1.

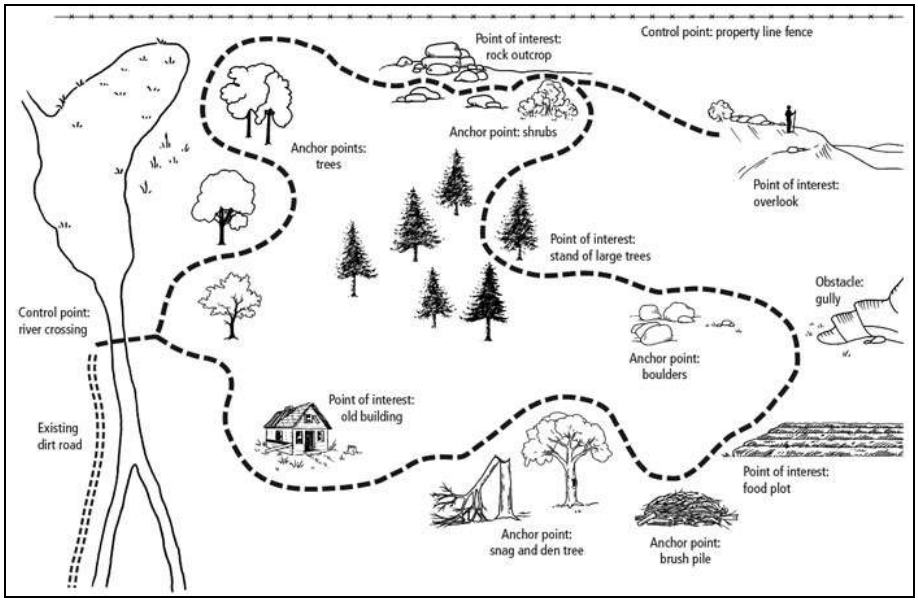
3. Flagging Your Trail:
Now it is time to flag your trail on the ground. A trail that follows natural contours, gently curving and bending around obstacles, and that disturbs the site as little as possible, is aesthetically pleasing and more enjoyable to travel. Mark the route with brightly colored plastic flagging tape tied to trees and shrubs. Use a clinometer to maintain desired trail grade and GPS to help locate and connect trails. You may want to revisit and revise your marking more than once or with more than one person. Remember one of the principle rules of sustainable trails, "keep the trail away from water and the water off the trail."

4. Putting It All Together:
The graphic below illustrates how you can put these design elements together to create a sequence of events and a more satisfying trail experience.

- This design uses the trailhead at the end of the dirt road to create a single access point that can be monitored and controlled, and also provides a single trail terminus. The trail also provides an overlook as a destination about half way along.
- The bridge over the stream at the beginning of the trail will serve as a trail gateway. An additional gateway is created as the trail moves between the boulders in the north section.

DCR Guidelines - cont.

- You can see how this trail makes use of anchors and points of interest along the way, both curving around and away from various elements to create a sequence of trail events.
- Finally, the trail makes use of edges in a couple ways. It goes along the edge of the wetland and fence line in north-west of the property, and along the edge of the food plot in south-west. It also crosses in and out of the stand of evergreens in the middle to create a set of transitions between forest types.



DCR Guidelines - cont.

Trail Design and Construction Resources

- The USDA Forest Service "**Trail Construction and Maintenance Notebook**" at http://www.fhwa.dot.gov/Environment/fspubs/00232839/index.htm includes excellent descriptions and diagrams of various trail construction and maintenance techniques from tread maintenance to grade dips to switchbacks to bridges.

- Appalachian Mountain Club's **- The Complete Guide to Trail Building and Maintenance** 3rd Edition by Carl Demrow and David Salisbury. Includes the essentials for creating environmentally sound trails: how to plan, design, build, and maintain trails; protective gear; choice of tools for each job; building ski trails, bridges, stiles, and ladders. Updated techniques focus on stonework, drainage, and erosion control, and working with private landowners. Photos and illustrations are also included.

- The Appalachian Trail Conservancy's **- A.T. Design, Construction, and Maintenance** by William Birchard, Jr., Robert D. Proudman, and the Regional Staff of the Appalachian Trail Conservancy. Second edition (2000) of the definitive handbook on trail work, from landscape values to the nitty-gritty of moving rock.

- Student Conservation Association's **Lightly On The Land**: The SCA Trail Building and Maintenance Manual, 2nd Edition by Bob Birkby. For half a century, the Student Conservation Association (SCA) has inspired people of all ages to take part in projects that enhance the environment. In settings from city parks to backcountry wilderness, the practical skills presented in its pioneering handbook have been tested in the field by volunteer and professional work crews throughout the nation. Their input enriches every chapter of the new edition with fresh approaches, new ideas, and modern applications of traditional skills.

- **Minnesota Department of Natural Resources'** ***Trail Planning, Design, and Development Guidelines*** manual provides guidelines for developing sustainable motorized and nonmotorized trails. Extensive attention is given to developing trails that are physically, ecologically, and economically sustainable. A newly-developed trail classification system is described to enhance consistency in how different types of trails are planned and designed. The principles of trail design emphasize the art of designing trails to make them more visually appealing and enjoyable. Technical design guidelines for various types of trails are also extensively considered in the manual. Click the link below to download--CAUTION! This is a very large file, almost 700 MB. http://www.bestpracticesmn.org/presentations/NRW9-20-06/FULL%20DOCUMENT%20no%20cover.pdf

- **USDA Forest Service Accessibility Guidebook for Outdoor Recreation and Trails** is a guidebook intended to help users apply the Forest Service Outdoor Recreation Accessibility Guidelines and Forest Service Trail Accessibility Guidelines. Available at: www.fs.fed.us/recreation/programs/accessibility/htmlpubs/htm06232801/index.htm

- **University of Minnesota** ***Trail Design for Small Properties*** provides simple, inexpensive solutions for designing, building, and maintaining sustainable trials—trails for hiking, horseback riding, bicycling, cross-country skiing, snowmobiling, off-highway motorcycles (OHMs), and all-terrain vehicles (ATVs). http://www.extension.umn.edu/distribution/naturalresources/DD8425.html

- **University of Minnesota** ***Recreational Trail Design and Construction Manual*** is a guide for private woodland owners, organizations, and businesses (including nature centers, youth groups, schools, conservation clubs, and resorts) that are interested in designing and constructing trails. It describes step-by-step construction methods, ways

DCR Guidelines - cont.

to handle trail obstacles, and recommended standards for the most common types of trails. http://www.extension.umn.edu/distribution/naturalresources/DD6371.html

- **American Trails Resource Library on Trails Design and Construction** http://www.americantrails.org/resources/trailbuilding/index.html

- **International Mountain Bike Association's - Trail Solutions** IMBA's Guide to Building Sweet Singletrack. This book combines trailbuilding techniques with proven fundamentals in a colorful, easy-to-read format. The new book expands greatly on IMBA's popular 2001 handbook "Building Better Trails" and breaks new ground by providing detailed advice on banked turns, rock armoring, mechanized tools, freeriding, downhilling, risk management, and other pioneering techniques.
  The book is divided into eight sections that follow the trailbuilding process from beginning to end. Readers will be guided through the essential steps of trail planning, design, tool selection, construction, and maintenance.

- **Natural Surface Trails by Design** by Troy Scott Parker Physical and Human Design Essentials of Sustainable, Enjoyable Trails. This first book in a series captures much of the detailed knowledge of skilled trail designers. It presents eleven generative concepts as the foundation for a concise process that explains, relates, and predicts what actually happens on all natural surface trails. The concepts cover the essential physical and human forces and relationships that govern trails—how we perceive nature, how trails make us feel, how trail use changes trails, how soils and trail materials behave, and how water, drainage, and erosion act.

DCR Guidelines - cont.

Section III: Trail System Management, Maintenance and Monitoring

Trail Classification

The DCR Road and Trail Inventory classified roads / trails along the following types:

- ***Administrative Road:*** A road accessible to DCR administrative vehicles, but not open to the public.
- ***Forest Way / Trail:*** A route that potentially serves as both a trail and as access for forest management activities.
- ***Trail:*** A pathway that is used for recreational trail use.

Identifying and distinguishing between forest ways, which may serve a forest management as well as a recreational function and recreational trails will be important in determining how we manage, protect and educate users on each type of trail.

Each trail should also be classified into one of five trail classes. Trail class is the prescribed scale of trail development, representing the intended design and management standards of the trail. The five categories classify trails along a spectrum of development and are defined in terms of tread, obstacles, constructed elements, signs and typical recreation experience.

These prescriptions (adapted from the USDA Forest Service) take into account user preferences, setting, protection of sensitive resources, and other management activities. The general criteria in the table below define each trail class and are applicable to all system trails. Appendix C provides additional Criteria specific to motorized trails, equestrian trails, snow trails, and water trails.

Trail Class descriptions define "typical" attributes, and exceptions may occur for any attribute. Apply the Trail Class that most closely matches the managed objective of the trail.

DCR Guidelines - cont.

Trail Class Attributes

Trail Attributes	Trail Class 1 *Minimal/ Un developed Trail*	Trail Class 2 *Simple/ Minor Development Trail*	Trail Class 3 *Developed/ Improved Trail*	Trail Class 4 *Highly Developed Trail*	Trail Class 5 *Fully Developed Trail*
General Criteria					
Tread & Traffic Flow	• Tread intermittent and often indistinct • May require route finding • Native materials only	• Tread discernible and continuous, but narrow and rough • Few or no allowances constructed for passing • Native materials	• Tread obvious and continuous • Width accommodates unhindered one-lane travel (occasional allowances constructed for passing) • Typically native materials	• Tread wide and smooth with few irregularities • Width may consistently accommodate two-lane travel • Native or imported materials • May be hardened	• Width generally accommodates two-lane and two-directional travel, or provides frequent passing turnouts • Commonly hardened with asphalt or other imported material
Obstacles	• Obstacles common • Narrow passages; brush, steep grades, rocks and logs present	• Obstacles occasionally present • Blockages cleared to define route and protect resources • Vegetation may encroach into trailway	• Obstacles infrequent • Vegetation cleared outside of trailway	• Few or no obstacles exist • Grades typically <12% • Vegetation cleared outside of trailway	• No obstacles • Grades typically <8%
Constructed Features & Trail Elements	• Minimal to non-existent • Drainage is functional • No constructed bridges or foot crossings	• Structures are of limited size, scale, and number • Drainage functional • Structures adequate to protect trail infrastructure and resources • Primitive foot crossings and fords	• Trail structures (walls, steps, drainage, raised trail) may be common and substantial • Trail bridges as needed for resource protection and appropriate access • Generally native materials used in Wilderness	• Structures frequent and substantial • Substantial trail bridges are appropriate at water crossings • Trailside amenities may be present	• Structures frequent or continuous; may include curbs, handrails, trailside amenities, and boardwalks • Drainage structures frequent; may include culverts and road-like designs
Signs	• Minimum required • Generally limited to regulation and resource protection • No destination signs present	• Minimum required for basic direction • Generally limited to regulation and resource protection • Typically very few or no destination signs present	• Regulation, resource protection, user reassurance • Directional signs at junctions, or when confusion is likely • Destination signs typically present • Informational and interpretive signs may be present	• Wide variety of signs likely present • Informational signs likely • Interpretive signs possible • Trail Universal Access information likely displayed at trailhead	• Wide variety of signage is present • Information and interpretive signs likely • Trail Universal Access information is typically displayed at trailhead
Typical Recreation Environs & Experience	• Natural, unmodified • ROS: Often Primitive setting, but may occur in other ROS settings • WROS: Primitive	• Natural, essentially unmodified • ROS: Typically Primitive to Semi-Primitive setting • WROS: Primitive to Semi–Primitive	• Natural, primarily unmodified • ROS: Typically Semi-Primitive to Semi-Developed Natural setting • WROS: Semi-Primitive to Transition	• May be modified • ROS: Typically Semi-Developed Natural to Developed Natural setting • WROS: Transition	• Can be highly modified • ROS: Typically Developed Natural to Urban setting • Commonly associated with Visitors centers or high-use recreation sites

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DCR Guidelines - cont.

Operation and Maintenance Considerations by Class
Trail operation and maintenance considerations (adapted from the USDA Forest Service) are intended to complement the trail class general criteria. These considerations can be regarded as general guidelines to assist in developing trail prescriptions, and subsequent program management, operations and maintenance.

Trail Attributes	***Trail Class 1*** **Minimal/Undeveloped Trail**	***Trail Class 2*** **Simple/Minor Development Trail**	***Trail Class 3*** **Developed/Improved Trail**	***Trail Class 4*** **Highly Developed Trail**	***Trail Class 5*** **Fully Developed Trail**
Trail Management	Typically managed to accommodate: • Low use levels. • Highly skilled users, comfortable off-trail. • Users with high degree of orienteering skill. • Some travel modes and ability levels may be impractical or impossible, and may not be encouraged. • Water Trails: Users require high level of navigation/orientation and paddling skills.	Typically managed to accommodate: • Low-to-moderate use levels • Mid-to-highly skilled users, capable of traveling over awkward condition/obstacles • Users with moderate orienteering skill. • Trail suitable for many user types, but challenging and involves advanced skills. • Water Trails: Moderate to high level of navigation/orientation and paddling/piloting skills required.	Typically managed to accommodate: • Moderate to heavy use. • Users with intermediate skill level and experience. • Users with minimal orienteering skills . • Moderately easy travel by managed use types. • Random potential for accessible use. • Water Trails: Basic to moderate navigation and paddling/piloting skills required.	Typically managed to accommodate: • Very heavy use. • Users with minimal skills and experience. • Users with minimal or no orienteering skills. • Easy/comfortable travel by managed use types • May be (or has potential to be made) accessible. • Water Trails: Basic navigation and paddling/piloting skills required.	Typically managed to accommodate: • Intensive use. • Users with limited trail skills and experience. • Trail typically meets agency requirements for accessibility • Includes "Pedestrian Trails".
Maintenance Frequency & Intensity	• Infrequent or no scheduled recurring maintenance. • Maintenance interval is typically 5 or more years, or in response to reports of unusual resource problems requiring repair.	• Maintenance scheduled to preserve the trail facility and route location. • Maintenance interval typically 3-5 years, or in response to reports of unusual problems.	• Trail cleared to make available for use early in use season, and to preserve trail integrity. • Maintenance interval typically 1-3 years, or in response to reports of trail or resource damage or significant obstacles to managed use type and experience level.	• Trail cleared to make available for use at earliest opportunity in use season. • Typically, maintenance performed at least annually.	• Maintenance performed weekly, or as needed to meet posted conditions. • Major damage or safety concerns typically corrected or posted <24 hours of notice.

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Trail Maintenance

Trail maintenance comes in two forms, routine or periodic maintenance performed as a regular duty of park staff, seasonal staff or some form of trail crew or volunteers; and larger capital trail repair or reconstruction.

Routine Maintenance

High-quality and timely maintenance will greatly extend the useful life of a trail. The primary tasks of routine maintenance are to:

- Direct water off the tread / Maintain drainage structures
- Remove debris and obstacles
- Maintain clearances
- Maintain clear trail edges
- Remove debris
- Replace and maintain trail signs and route markers
- Keep users on the trail
- Monitor and report conditions and serious problems

Of course, there is always too much work for the time you have to spend. How do you decide what to do? To prioritize, it's important to:

- Monitor the trail conditions closely
- Decide what can be accomplished as basic maintenance
- Determine what can be deferred
- Identify what area will need major work

This 'trail triage' is critically important if your maintenance dollars are going to be spent keeping most of the tread in the best possible condition.

The first priority for trail work is to correct truly unsafe situations. This could mean repairing impassable washouts along a cliff, or removing blowdown from a steep section of trail or repairing trail structures such as bridges, steps and railings.

The second priority is to correct things causing significant trail damage – erosion, sedimentation, and off-site trampling – or problems which if left will create compounded future problems.

The third priority is to restore the trail to the planned design standard. This means that the ease of finding and traveling the trail matches the design specifications for the recreational setting and target user. Actions range from simply adding "reassurance markers" to full-blown reconstruction of eroded tread or failed structures.

Whatever the priority, doing maintenance when the need is first noticed will help prevent more severe and costly damage later.

Trail Crews

Trail Crews may be regular park staff, season staff, special season crews such as the Western Region Trail Crew funded by the Recreational Trail Program Grants, SCA – Mass Parks Crews, or hired professional crews such as the AMC Pro-Crew. Professional crews can assist in larger and more technical trail projects.

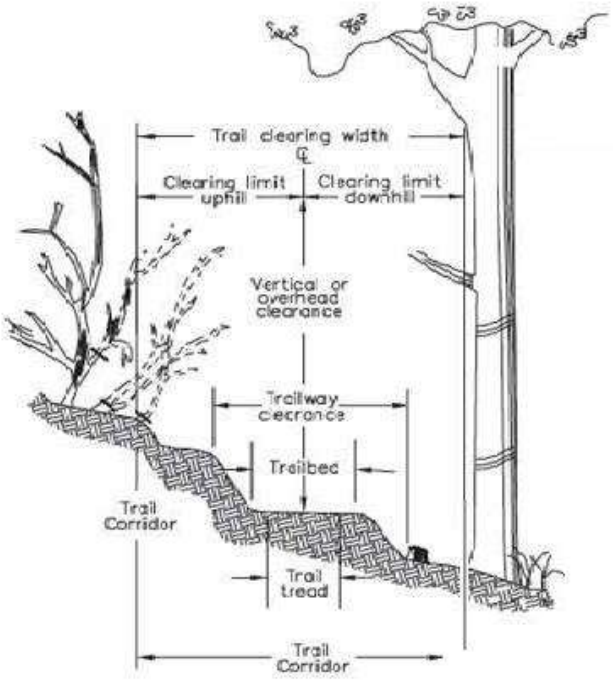
The best trail maintainers are those with "trail eye," the ability to anticipate physical and social threats to trail integrity and to head off problems.

DCR Guidelines - cont.

Maintenance Activities
Trail maintenance activities on DCR's natural surface trails fall into the following categories:

- Trail Corridor Vegetation Clearance
- Trail Tread Maintenance
- Simple Drainage Structure Installation and Maintenance
- Moderate Drainage Structure Installation
- Steep Slope Structure Installation
- Trail Closures
- Trail Re-routes
- Wet Area Crossings
- Minor Stream Crossings (<20')

Trail Cross Section and Terms



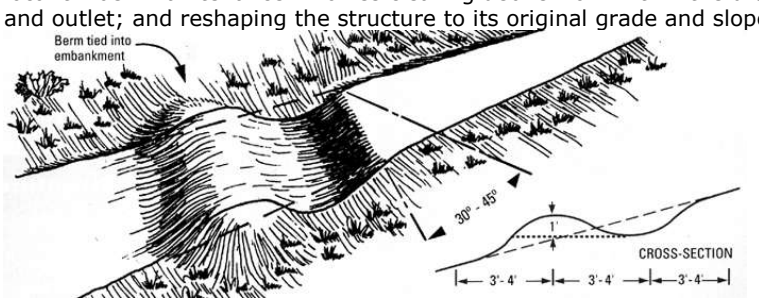
Trail Cross Section

Trail Corridor Vegetation Clearance
As vegetation falls or grows into the trail corridor, it must periodically be trimmed or removed to maintain a trail corridor clear or obstacles. This activity includes cutting, trimming and removal of vegetation within up to 18" of the existing trailbed width, and up to a vertical height of 6'to 9'. Tree branches that grow into the trail corridor are pruned back to the nearest larger branch or trunk.

DCR Guidelines - cont.

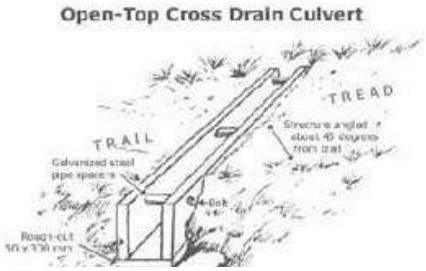
Tread Maintenance
Occasionally, the existing trail tread requires maintenance to remove obstacles, and maintain proper grading and outslope for drainage. This activity includes removal of obstacles such as stones, roots or small stumps in the existing tread, reshaping the existing tread with hand tools such as shovels and rakes, and bringing in fill to cover exposed roots and rocks and fill mudholes. It does not involve work outside of the existing trailbed. (See Appendix I for further specifications.)

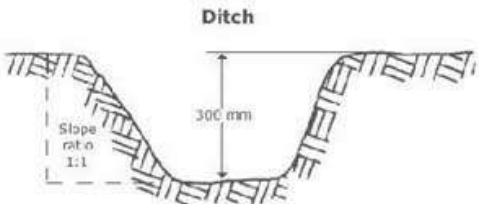
Simple Drainage Structures (drain dips and water bars)
This activity includes the maintenance of existing and installation of new simple drainage structures within existing trailbed. This may involve digging within the existing tread to a depth of no more than 12 inches to create a drainage dip, and / or the installation of logs, stones or other natural or imported materials to create a water bar. Most work is within the existing tread, but this activity may involve some digging and soil removal within 3' of the existing tread, particularly on the downslope side. Rock water bars may also involve the collection and moving of large stones from the immediate area. Native wood structures may include felling and utilizing local timber. Maintenance involves clearing debris from within the drainage structure and outlet; and reshaping the structure to its original grade and slope.



Trail drain dip

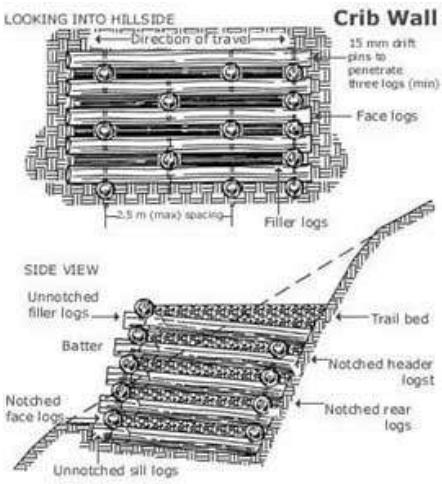
Moderate Drainage Structures (ditches, culverts and turnpikes)
Ditches and culverts may be installed and maintained to move water from one side to another and keep water off the trail. Ditches may be dug to a depth of 12" within 2' of the trail tread. Open cross ditches may be dug across the existing tread and within 3' on either side. Culverts (typically 9" to12") may be installed digging into the tread (up to 15") and digging and installing rock headers on either end within 3' of the existing tread. Turnpikes lift the trail tread above saturated soil. They are often combined with ditches and culverts to relieve a trail of water from seeps and streams, reduce erosion and provide dry footing. Building a turnpike involves digging a trench on either side of the trail (usually 24-48' apart) and setting stone or logs securely in each trench. Length of turnpike depends on local conditions. After the parallel rows of rock or logs are in place, the area between is filled with small stones and crushed rock. A layer of mineral soil may be added to the top. Material to build turnpikes may be found from adjacent trail corridor or imported to site.

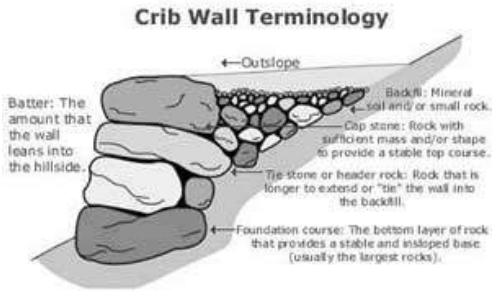




DCR Guidelines - cont.

Steep Slope Structures (crib or retaining walls, check dams and steps)
On steeps slopes, retaining walls, check dams and steps are occasionally required to stabilize the trail tread, keep users on the trail and reduce erosion. Retaining walls can help to support turning platforms on switchbacks, shore up trails across rough terrain and steep side slopes, and reinforce the outer edge of a partial bench. Retaining walls may be constructed of either wood or rock. Some excavation will be required establish a footing for the rock or wood. Depth of excavation depends on the slope and size of material used to build retaining wall. Excavated soil may be used for back fill. Rocks and peeled logs are then securely layered to the desired height to create wall. The back of the wall is filled with small stones or crushed rock and mineral soil. Check dams help to slow the flow of water in gullies, allowing silt to build up behind structures and prevent futher erosion. They are effective tools for salvaging badly eroded tread and for restoring closed trails and damaged slopes. Check dams are built from large rocks or peeled logs securely installed perpendicular to the tread. Some excavation is necessary to secure rock or logs into the tread way. Filling behind the rock or logs with small stones or mineral soil will allow check dams to be used as steps. Large rocks (weighing from 40-100 lbs), timber and fill material may be obtained locally (see diagrams).





Trail Closures
Trails that are seriously eroded, difficult to maintain, and poorly located can impact natural resources values and the user experience. Best management practices may call for closing these trails. Closing an existing trail to prevent future use may involve blocking or disguising the trail with available fallen wood or the felling of nearby trees. Brushing in the closed trail helps to retain leaf litter and soil. Closing may also involve some re-grading of the tread to a more natural grade or re-vegetation using local plant material. Closing a trail may even involve installation of check dams to restore damaged slopes.

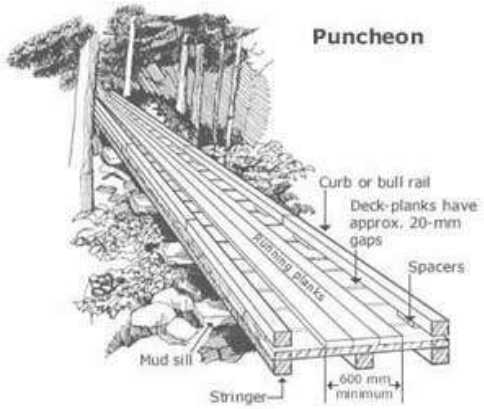
Trail Re-Routes
Occasionally, trail re-routes are required to improve existing trail conditions that cannot be solved with the above maintenance techniques or to avoid environmentally

DCR Guidelines - cont.

sensitive areas. Trail re-routes may involve flagging a proposed route, trimming and removal of vegetation, and excavation of organic material and sometimes mineral soil on side slopes to a depth of not more than 12”. Excavated material may be broadcasted on the side of the trail or retained for use as fill. Constructing a reroute may also involve removal of obstacles such as rocks and roots, and installation of the above trail structures. The width of soils disturbance and vegetation clearing is dependant upon the designed trail use (see DCR Guidelines and Best Practices Manual), but ranges from 12” to 48” (tread width) and up to 10’ and 18” outside of the tread width (vegetation clearance).

Trail Maintenance in Potential Wetland Resources Areas
Any trail maintenance activities that result in an alteration of a wetland resource area will use Best Management Practices for controlling erosion and sedimentation, will be submitted to the local Conservation Commission for review, and/or shall be in compliance with an approved MOU with DEP.

Wet Area Crossings (bog bridges, puncheons)
Trails occasionally cross areas that have seasonally saturated soils or wet areas. In order to minimize impacts to vegetation and soils, and keep trail users dry, a number of different types of structures can be installed and maintained. Stepping stones are simple low-maintenance ways for trails to cross through wet areas. Installation of stepping stones includes excavation of 12’ of soil and setting of a large stone(s) for stepping. Large rocks will most likely be collected from along or nearby the trail corridor. Bog bridges and puncheon are simple wooden boardwalk structures. Stone or wooden sills are place on top of or dug into the soils to a depth of no more than 6” and a width of 18-36”. Side by side planks, peeled logs or stringers with decking are laid on top of the sills. These structures are no more than the existing tread width. Maintenance typically involves replacement of rotted sections.



Minor Stream Crossings (culverts and minor bridges (<20’))
Trails typically cross streams on fords, bridges or culverts. The size of such structures depends on the size of the stream and the surrounding terrain. Installation of bridges may include excavation of soils adjacent to the stream to install stone or timber abutments. Bridge stringers are then securely attached to the

DCR Guidelines - cont.

abutments and then the top is decked. Stone and or timber may be collected from the immediate area. Culverts may be wood, stone, metal or plastic and will be laid in the stream. Maintenance will involve cleaning debris from culverts and may involve replacement of rotted materials. (See Appendix I for further specifications.)

Capital Project Repairs
Major trail repairs and reconstruction that cannot be performed through routine maintenance or trail crews will need to be planned in conjunction with the Bureau of Engineering and funded through the capital budget process or by grants.

Alternative Funding Sources

Federal Sources
- Recreational Trails Program
- NPS Rivers, Trails and Conservation Assistance Program
- Transportation Enhancements

State Sources
- State Natural Resource or Park Agency Grant Programs
- State Transportation Agency Grant Programs
- Land and Water Conservation Funds
- State Public Health Grant Programs
- Conservation Trust Fund
- Parks Trust Fund

DCR Guidelines - cont.

Trail Signage

"Signs are probably the quickest and easiest way to leave the trail user with a positive impression. If the signs are high quality, well maintained, and properly located, other trail problems are often over-looked. Consistent signs are the quickest way to increase the trail's identity and the public's support for the trail."
(National Park Service)

Current DCR Trail Marking
As noted in the introduction, DCR properties and divisions have historically used a variety of different types of trail signage and marking systems from plastic blazes that designate trail uses, to painted or routed trailhead signs, to aluminum trail rules signs, to numbered intersections. This section proposes trail signage and marking standards that will help improve trail management and user safety, enhance the users' recreational experience, and help create a positive agency trails identity. While achieving these standards may take years to realize, working toward them incrementally over time is an important goal.

Why Strive for Consistent Signage?
Appropriate trail signs and markings provide information, enhance safety, and contribute to a positive user experience. Trail signage is perhaps our most important form of communication with our users, as signs are the message they see every time they visit. Consistent signage, both within DCR facilities and between similar types of facilities, enhances safety, creates a positive trail identity, helps meets user expectations, and contributes to the public's support for trails.

The broad objectives of DCR's trail signage should be to:
1. Provide consistent positive exposure of the trail system to attract users
2. Educate the user about trails and trail uses
3. Reassure / ensure that the user is on the right trail and will not get lost
4. Control trail usage, reduce conflicts, and create safer, more enjoyable, and environmentally friendly recreational experiences

However, these objectives must be balanced with aesthetic considerations to avoid "sign pollution."

We accomplish these objectives through the consistent use of the following different kinds of trail marking:
- Trailhead signs and kiosks
- Intersection directional signs
- Reassurance markers and blazes
- Interpretive displays

It is important to consider the different purposes of each type of sign and use them appropriately. For example, using reassurance blazes to indicate allowed trail uses is probably inappropriate because it may require more blazing, and is very difficult to change if the allowed uses change. On the other hand, using trailhead signage to designate allowed uses is simpler to implement, requires much less maintenance, and can be easily changed.

Implementation Priority
Implementing the below standards fully within the DCR system will take time. The priority for implementation should be as follows:

DCR Guidelines - cont.

1. Fully implement the sign standards wherever new trails are developed or constructed.
2. Fully implement the standards when trails undergo significant restoration or repair.
3. Implement the appropriate standards as possible as trails are worked on through routine maintenance. For example, when a trail is maintained, re-blaze then, remove old plastic signage and install key intersection signs.
4. Implement the intersection signage standards park-wide.
5. Implement full signage standards park-wide.

General Trail Signage Standards
The following are DCR's general trail sign standards.

- Signage within a single DCR facility should be consistent with respect to colors, materials, and look. Ideally, adjacent facilities will also be consistent.
- The ideal trail signage standard for DCR should be ***brown signs*** () with ***white or off-white lettering***.
- For simple trailheads and intersection signage, routed wood signs are preferred as they are aesthetically appealing and resistant to damage and vandalism.
- It is also acceptable that trail signage be vinyl lettering on composite (carsonite-type) sign boards. Vinyl lettering can be ordered through the DCR sign shop at 617-727-5118 or through Carsonite signs.
- Generally, colors should be brown and white, and consistent within a facility.
- Aluminum and plastic trail signs are ***not*** recommended.

Naming Trails
Trail names can be an important element of the outdoor experience and can help draw visitors onto the trail. The "Blue Heron Trail," "Skyline Trail" or the "Round the Mountain Trail" convey to the user information about the wildlife, destination or experience that lies ahead. Trails named for blaze colors, memorializing a trail advocate or designating a DCR management component may not be as appealing, functional or memorable for users. Whenever possible, utilize trail names that suggest an attractive destination; introduce natural, cultural or historical context for the trail; or otherwise capture the imagination and experience of the intended user. Please keep in mind that not all trails need to be or should be named.

Trailhead Signs
Trailhead kiosks or signs may come in different forms depending on the setting, complexity, and information needs.

For more developed trailheads, popular trails or high profile trails, a designed and professionally fabricated trailhead sign is appropriate. The template (right) follows the general standards for "Wayside Signage" in the in the DCR Graphics Standards Manual. This template includes:

- A sign board of approximately 20" wide by 24" in height (5:6 portrait orientation).
- Trail Name in Frutiger Italics in a 4" (1/6) brown band at the top.

DCR Guidelines - cont.

- Text message (in sabon font) with trail description and perhaps additional information placed in the upper left text box.
- A map showing features, destinations, distances and connections in the upper right.
- Standard (and edited as needed) "Trail User Etiquette" is in a brown box in the lower left.
- Allowed and prohibited use symbols are in the lower right.
- Allowed and prohibited use symbols may also be in 4" x 4" square signs mounted on the posts below the sign.
- Park name is in capitals, left justified at the bottom with the DCR logo in the lower right corner.
- The position of the map, text boxes and symbols may be flexible depending on the specific needs of each sign.
- This type of sign should be affixed with brackets to two 4x4 pressure treated wood posts planted 24" in the ground.

On roadsides or at lower profile trailheads, simpler routed wood signs are preferred. These should be:

- A sign board of approximately 21" wide by 15" in height (5:7 ratio landscape orientation)
- All text should be 1"
- Trail name in capital letter, underlined"
- Key trail destinations and distances
- All text shall be routed with a ¼" veining bit with a minimum depth of 1/8" and a maximum depth of ¼"State
- Park Name in caps at the bottom
- "dcr" or dcr plus logo in the lower right corner
- Information and symbols showing allowed and prohibited trail uses and trail difficulties. This information may be in 4"x4" or 3"x3"square signs mounted on the post below the sign.
- Sign should be affixed with lag bolts to a single 4x4 pressure treated wood post planted 24-36" in the ground. Top of sign should be installed 1" down from top of 4x4. Post should be the same color brown as sign.
- The top of the 4x4 pressure treated post should be beveled 45 degrees to back with 1 inch flat on top (same side as sign).
- Top of sign board should be approximately 36 inches / feet from the ground.

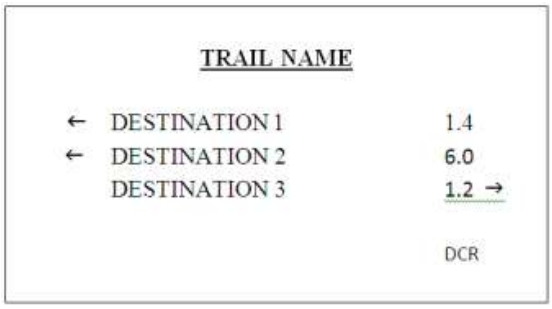
Intersection Directional Signs
Directional signs **should** be placed at trail intersections (see examples below). Depending on the setting, trail class and trail system, these signs should either be placed at most intersections or at main intersections, decision points, and spur junctions. Ideally, intersections signs should be mounted on 4"x4" wood posts. Post type should be consistent within the site. In areas with vandalism or other issues, intersection signs **may** be mounted high on trees. Trails names and arrows **may** also be placed vertically on wood or Carsonite type posts.

Intersection directional signs are the most important source of information for users, and can serve to enhance safety, avoid bad user experiences, and

DCR Guidelines - cont.

increase use of under-used sections of the trail. If someone knows that there is a waterfall, lake, or other attraction down the trail, they may be tempted to hike to it and thus become intrigued with the trail idea.

Intersection signs **should** include the following information:



- Sign board should be 18" by 10" (or 12" depending on the number of destinations)
- All text in 1" capitals
- All text shall be routed with a ¼" veining bit with a minimum depth of 1/8" and a maximum depth of ¼"
- Trail name, if the trail is named, underlined
- The closest significant destination (such as a view, summit, waterfalls, etc.) in each direction.
- The closest trailhead / parking area
- References should indicate the next trail intersection/major destination and be rounded to the nearest tenth of a mile.
- References shall be listed in the following order: straight, left, right.
- Total number of directional references shall not exceed four.
- "DCR" or dcr and logo in the lower right corner

- Sign should be affixed with lag bolts to a single 4x4 pressure treated wood post planted 24-36" in the ground. Top of sign should be installed 1" down from top of 4x4. Post should be the same color brown as sign.
- The top of the 4x4 pressure treated post should be beveled 45 degrees to back with 1 inch flat on top (same side as sign).
- Top of sign board should be approximately ? inches / feet from the ground.

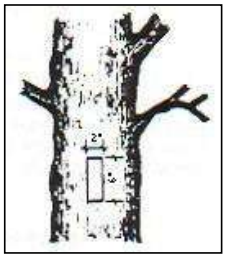
The sign or post **may** also include:

- markings for allowed or restricted uses
- trail difficulty
- intersection number in the lower left corner on sign

In complex trail systems with numerous intersections, intersection numbering can be used and these numbers listed on an accompanying trail map. Numbers should not be used instead of directional signage, but can be used in conjunction and can be placed on the intersection directional sign in the lower left corner.

Reassurance Markers/Blazes

Trail blazes or reassurance markers are important trail elements that allow the user to stay on trails and provide a sense of reassurance. The recommended guidelines are consistent with best management practices for trail marking.



Official DCR trails **should** be blazed with vertical ***painted blazes***. Plastic blazes should be avoided and replaced when trails are re-blazed, upgraded of maintained. Painted blazes are more vandal resistant, do less damage than nail-on blazes, and are easier to alter.

DCR Guidelines - cont.

Blazes are placed on trees, slightly above eye level so that hikers, bikers or riders can see them easily when traveling in either direction. In areas where the trail receives winter use, blazes are placed higher so they are visible above the snow. Blazes should be placed immediately beyond any trail junction or road crossing. Blazes should generally be within "line of sight," i.e., when standing at a blaze marker, the user should just about be able to see the next one. It is not desirable to have more than one blaze visible in either direction at any one time. One well placed blaze is better than several that are poorly placed, and it is important to strike a balance between "over-blazing" and "under-blazing." (An exception to the line-of-sight blazing policy occurs in wilderness or primitive areas where blazing is not generally recommended.)

Standard blazes should be 2" x 6" vertical rectangles. The 2" x 6" rectangular shape is large enough to be seen easily without being visually obtrusive and is the most universally accepted style of trail blazing. Edges and corners should be crisp and sharp. Dripping paint, blotches and over-sized blazes should be avoided. On rough barked trees, the tree will first need to be smoothed using a paint scraper, wire brush, or draw knife. A high quality, glossy, exterior acrylic paint such as Sherman Williams Metalatex or Nelson Boundary Paints should be used for long durability.

It is acceptable to use different colors and shapes to denote specific trails or trail loops. For example the "Red Dot Trail" may be blazed in red circular blazes. Colors **should** be distinguishable from boundary paint colors.

Vegetation should be pruned from in front of the blazes to ensure visibility in all seasons.

In non-forested areas, blazes may be placed on wooden or Carsonite-type posts 4 feet above the ground or stone cairns may be used to mark the trail. Blazes can be painted on exposed rock, but will not be visible in the winter.

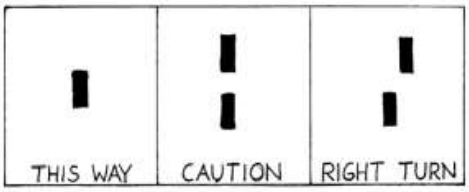
Colors and Shapes
The general recommended standard for blaze colors should be white for Long-Distance Trails such as the AT or New England National Scenic Trail, blue for non-motorized trails and orange for designated ATV and Off Highway Motorcycle trails in orange (*Non-motorized trails which are open to snowmobile use in winter should **not** be permanently blazed in orange to avoid confusion by other motorized users.)

Many trails within DCR have specific colors and/or shapes associated with their identity. For example the "Blue Herron Trail" is identified by a blue triangle, the "Midstate Trail" by a yellow triangle and the "Red Dot Trail" by a red circle. This manual does not recommend changing these. Particularly for longer distance trails that may go through a number of trail types, property ownership and across roads having a particular blazing identity can provide additional user reassurance. Also, in more complex trail systems (such as the Blue Hills or Middlesex Fells) loops blazed in a specific color can guide users on a particular user experience.

However, efforts should be made to avoid multiple colors and shapes of blazes on any particular segment of trail.

DCR Guidelines - cont.

Directional Change Indicators



Double blazes should be used in places that require extra user alertness (e.g. important turns, junctions with other trails, and other confusing locations). They should be used sparingly so that they do not become meaningless or visually obtrusive. They are unnecessary at gradual turns and well-defined trail locations such as switchbacks. A reassurance marker should be placed so that it can be seen from the direction indicator. Be sure to mark confusing areas to guide users coming from both (or all) directions. Avoid arrows.

Mile Markers
Rail trails and long-distance trails may have mile markers posted at each mile from their origin. These can be placed on Carsonite or similar type posts, nailed to trees, or, on rail trails, they may be on granite markers recalling whistle posts.

Identification Markers for Identity Trails
Certain trails may have specific identities or official logos associated with them. For example, the Blue Heron Trail has a heron logo and the Mid-State Trail has a yellow triangle. These distinctive logos or identity markers should be placed at all road crossings (even drivable woods roads), on intersection signs, and periodically along the trail to assure users. Generally they should be about 1/2 mile apart, but frequency should increase in areas where there are numerous roads and intersections. They should not be continuous. These markers may be made of plastic or aluminum for nailing to trees or posts. Stickers may be used for intersection signs. They can be used in conjunction with mile markers. A larger emblem (8”-10” diameter) for identity trails is typically used at trailheads, major roads, and other locations where more visibility is desired.

Interpretive Displays
An interpretive sign must be part of a well thought out interpretive plan complete with goals, objectives, thematic statements and topics. The plan should be based on an audience and site analysis which will guide the selection of materials and interpretive approach. Contact the Interpretive Services section of the Bureau of Ranger Services if you are interested in developing an interpretive plan. Once you have completed your interpretive plan, you will need to confer with Interpretive Services and the DCR Graphics Team to develop specific displays. An outline of the wayside development process is available in the DCR Graphic Standards Manual.

Interpretive waysides are an important and effective way to provide information to visitors. There are two types of wayside: low profile and upright. Low profile exhibits are low, angled panels that provide an interpretive message related to a specific place or feature. They usually include one or more pictorial images and a brief interpretive text. Upright waysides typically provide general information, rather than site-specific interpretation; they are often located near a visitors center or trailhead to provide information about facilities, programs, and management policies.

DCR Guidelines - cont.

The panels are fabricated from a high-pressure laminate material, which is both cost-effective and allows the use of color to create a more attractive presentation. They are generally guaranteed for 10 years by the fabricators, and are resistant to vandalism by spray paint or cutting. The Graphic Design team will coordinate fabrication through the state vendor program.

Sign Maintenance
Sign maintenance is critical to the operation of a quality trail system. Well maintained signs that are repaired promptly convey a sense of pride and reduce further vandalism. Signs are a highly visible representation of the quality of the trail. Their maintenance or lack of maintenance leaves the visitor with a positive or negative impression about the trail. Signs convey many kinds of information and it is critical that they be in good shape. Special attention should be given to those that are damaged from shooting and other factors, those that are faded or brittle from long exposure, and those that are simply missing. All signs that are damaged or weathered no longer convey a good impression or serve the intended purpose, and should be repaired or replaced. Periodic painting and other maintenance is a necessity and will prolong the life of a sign.

Standards in Primitive Areas
Some of the trail sign standards will be different in those forest and park areas classified as "Primitive" or "Semi-Primitive" under the Recreational Opportunities Spectrum. These differences include:

- Minimizing signage in primitive areas and forest reserves while still providing for user safety
- Continuously blazing is not necessary or desired
- Directional signage may only occur at major intersections and may not include distances or trail names, but should include directions and major destinations
- Interpretive waysides should not be used

Temporary Trail Signage and Blazing
Some uses such as seasonal snowmobiling or special events may require temporary trail blazes and signs. Temporary signs installed by DCR partners should be allowed under a Special User Permit or MOA and should follow these guidelines.

- Temporary signs shall be approved by the facility supervisor
- They should be installed on posts rather than nailed to trees
- They shall not advertise specific vendors
- They shall be removed when the seasonal or temporary use is over
- Temporary signs shall not be inconsistent with these DCR standards

DCR Guidelines - cont.

Trail Mapping

Trail maps are one of the most important tools we have for providing quality user information, managing user expectations, minimizing conflict, and promoting safe and appropriate trail use. DCR has a standard set of trail maps for most facilities (the "green maps"). DCR trail maps should show

- trail layouts
- trail use designations (if necessary)
- terrain (contours and hydrology)
- connections to other trails, trail systems or roads off of DCR property
- access points such as campgrounds, parking and trailheads
- features such as summits, vistas, and important cultural or natural sites
- a scale for distances
- key of symbols

DCR trail maps can also provide information about allowed uses, rules and regulations, trail etiquette, and cultural or natural interpretation including photos and graphics. Examples include the Cape Cod Rail Trail and the Blue Hills Mountain Biking maps.

Maps can be provided to the public on trailhead signs, in paper form at park entrances and trailheads, and on the internet for download. However, if maps present too much information, are poorly designed, or are not available where the public wants them, they are not useful to the public.

Presenting excellent maps, in standard forms but multiple formats, will greatly enhance the public's use and appreciation of DCR and our trail systems.

Additional trail map standards will be developed in the future in coordination with DCR Trails and Graphics Teams.

Digitally Mapping Trails

Currently, DCR Bureau or Forestry is in the process of digitally mapping all of our existing trails and roads with Global Positional System (GPS) technology and creating a Geographic Information Systems (GIS) layer of trails. This data will be extremely valuable for assessing our existing trail systems, planning trail system improvements, and creating excellent trail maps and signs. In conjunction with this effort, DCR GIS Program staff recently developed a protocol for mapping roads and trails. Having a standardized method is essential for collecting complete, high-quality data that is consistent across the park system. The protocol consists of a method for the fieldwork

DCR Guidelines - cont.

and office-work portions of data collection, plus a GPS application for collecting standard information about roads, trails, and other conditions in the field.

The application consists of forms for collecting line and point GPS data. Lines represent trails and roads, while points can be collected for a large number of features such as trail intersections, bridges, culverts, damaged areas, vistas, parking areas, and many other point types related to forestry, recreation, and infrastructure.

This methodology was developed based on several years of experience mapping trails in DCR's system, plus detailed input from Forestry and Trails program staff. The document "Mapping Trails the DCR Way" (Appendix G) contains a set of guidelines for choosing walking routes and determining completeness of the road and trail mapping. The document "DCR Road and Trail metadata" (Available on Request from the DCR GIS Program) contains a list of the line and point types that can be collected with GPS and the attributes that need to be recorded for each type.

DCR Guidelines - cont.

Partnerships, Friends and Volunteers

Trails offer the DCR a powerful avenue for encouraging volunteerism in our parks. People love to volunteer on trails, and trail management can greatly benefit from volunteers. User groups can help create, restore, or close trails. Friends groups can raise money and advocate for funding. Individuals and organizations can adopt trails. Volunteer teams can help clean-up, improve, or beautify them.

As our agency moves into the future, volunteerism is only going to become a more important avenue for accomplishing our goals. However, for volunteerism to be effective, it must be guided, directed, and managed. In fact, some of the trails problems we have today may, in part, be due to the unplanned and unmanaged volunteer enthusiasm of the past. Ideally, this manual will provide some of the guidance necessary to make most effective use of volunteers.

Why Use Volunteers?

- Often land managers lack the resources and staff to adequately monitor and maintain trails
- Trail volunteers make better trail users
- Trail stewardship can foster land protection and generate funds for trail development and maintenance

Types of Trail Partnerships

Partnerships and volunteer activities related to trails come in many forms. Here are a few examples of the types that exist in our system and that might be useful to encourage or create.

Friends of: The DCR has many friends groups, and in some cases these include "Friends of" a particular trail. Friends groups are formally (or informally) established groups whose propose is to promote the park or the trail. They generally can be effective in four areas – organizing volunteers, raising funds, advocacy, and/or running programs. Friends groups tend to be self-directed and bring a lot of ideas and energy. They can be effective at recruiting and managing volunteers, and occasionally bring their own trail building and managing expertise. However, to be most effective, the energy of friends groups should be channeled into needed projects, and they often need hands-on training, technical assistance, and oversight.

Activity Oriented Groups: Massachusetts has a number of activity oriented or user groups that are organized to promote recreational opportunities around a specific use such as mountain biking or snowmobiling. User groups are often effective in mobilizing volunteers and even in-kind donations, and often bring a high level of their own technical expertise. However, user group's efforts need to be guided and channeled into completing projects that are needed from the point of view of the park supervisor and trail system plan. User groups will often want to create new trails, when, from the park's point of view, trail rehabilitation or even closures may be more important to the overall system. In some cases, user groups can also be effective in completing needed regular maintenance, such as trail grooming.

Community Trail Committees: A growing number of communities are establishing trail committees at the local level. These groups tend to be focused on creating new trail opportunities on community lands, but may want to create connections to state parks and forests. While these connections are valuable, they should be established and laid out in ways that contribute to the park's goals and trail system plan. Too many connections and inappropriate connections need to be avoided.

DCR Guidelines - cont.

Adopters: Adopters can be individuals, organizations, or businesses who agree to beautify or provide regular monitoring and maintenance to a particular section of trail. For example, adopters along bikeways may regularly clean a section, mow a section, or maintain a flower bed. Along hiking trails, adopters periodically hike, clear, and perform routine maintenance. Adopter programs can be effective ways to channel volunteer interest, but they require a certain level of formality and some training and monitoring. There are two types of Adopt-a-Trail Program approaches that may occur in association with state land:
Massachusetts Adopt-A-Trail Program: This is a program which is facilitated by a member of the DCR staff who serves as "Supervisor" and will organize work details with individual volunteers or groups who choose to take responsibility for regular trail maintenance and enhancement on a section of trail. This program is defined, organized and facilitated by the state, in conjunction with an individual or group. Appendix E includes a brief description of the DCR Adopt-A-Trail Program.
Organizational Adopt-A-Trail Program: Adopt-A-Trail Programs may also be organized and overseen by parks friends groups or other similar organizations. For example, the Friends of Blue Hills has established a model Adopt-A-Trail program. They organize adopters, provide training, and oversee the program. It is the responsibility of the volunteer organization to stay in close communication with a member of the DCR staff in order to determine the trail work that is needed and permitted, but it is ultimately the organization which facilitates the program. To view the Friends of the Blue Hills Adopt-A-Trail Handbook and other information please visit their website or contact the Blue Hills Reservation Supervisor.
Volunteer Trail Patrols/Ambassadors: Like adoption programs, individuals and organizations may agree to regularly patrol and serve as "ambassadors" on a trail. These types of programs are particularly useful on multi-use trails. Like adopter programs, they require a certain level of formality and training to ensure that the patrols are equipped with the knowledge and materials to perform the task.

Guiding Volunteer Efforts
As noted above, in partnering with volunteers in our parks, it is vital that their energy be guided into projects that are truly needed, that they are accomplished to our trail building and maintenance standards, and that they either have or are given the appropriate tools and technical training to accomplish the goals.

Strategies for insuring this include:

- DCR has a (draft) policy for working with volunteers in parks. This policy should be followed, including procedures for project approval.
- All volunteers must fill out and sign a "Volunteer Agreement and Release Form."
- New trails should not be created unless the a Trail Proposal Evaluation Form (Appendix B) has been submitted, reviewed, and approved by the appropriate people., and the new trail fits into the facility's trail system plan.
- The facility supervisor should be aware of and formally approve all volunteer trail work.
- Volunteers should adhere to the guidance included in this document including trail design, development, and maintenance standards and signage standards.
- DCR should develop formal Adopter and Ambassador programs with training and written agreements to ensure that volunteers have the necessary tools and training to effectively contribute to trails management.

Attracting and Keeping Volunteers
Reach out to your prospective work crew

DCR Guidelines - cont.

- Use the local media, start a website
- Contact local clubs and enthusiasts
- Solicit for volunteers in parks, on trails or where they congregate

Be prepared
- Develop clear goals, objectives and strategies
- Train crew leaders in advance
- Prepare for any kind of turnout and a variety of skill levels
- Have tools necessary for the job

Manage your volunteers
- Brief your crew, complete waiver (if required), sign in and out volunteers,
- Assign crew leaders to projects
- Promote safe and proper tool use and maintenance techniques
- Care for your crew – provide snacks, water…

Keep them coming back
- Provide sense of accomplishment
- Make it enjoyable
- Show your appreciation
- Stay in touch

Potential Trail Partners
- Appalachian Mountain Club
- Student Conservation Association
- New England Mountain Bike (NEMBA)/ International Mountain Bike (IMBA)
- National Off Highway Vehicle Conservation Association (NOHVCC)
- Snowmobile Association of Massachusetts (SAM)
- Bay State Trail Riders
- Local User & Community Groups
- Friends Groups
- Rails To Trails Conservancy
- American Trails
- National Hiking Society
- Local, State and National non-profit organizations

DCR Guidelines - cont.

Understanding and Managing Conflicts

Conflicts on multiple-use trails have been described "as problems of success-an indication of the trail's popularity" (Ryan 1993, 158). In fact, the vast majority of trail users are satisfied, have few complaints, and return often. However, conflicts among trail users do occur, including conflicts between trail users and animals, trail users and trail managers, and even trail proponents and private landowners. If not addressed, conflicts can spoil individual experiences and threaten to polarize trail users who could be working together rather than at odds with one another. As the number of trail users grows and diversity of trail activities increases, the potential for conflict grows as well. It is the responsibility of managers and trail users to understand the processes involved in recreational conflicts and do everything possible to avoid and minimize them on multiple-use trails.

Conflict in outdoor recreation settings (such as trails) can best be defined as "goal interference attributed to another's behavior" (Jacob and Schreyer 1980, 369). As such, trail conflicts can and do occur among different user groups, among different users within the same user group, and as a result of factors not related to users' trail activities at all. In fact, no actual contact among users need occur for conflict to be felt. Trail conflict has been found to be related to

- activity style (mode of travel, level of technology, environmental dominance, etc.)
- focus of trip
- user expectations
- attitudes toward and perceptions of the environment
- level of tolerance for others
- different norms held by different users.

Conflict is often asymmetrical (i.e., one group resents another, but the reverse is not true). The following 12 principles for minimizing conflicts on multiple-use trails are recommended. Adherence to these principles should help improve sharing and cooperation on multiple-use trails.

1. **Recognize Conflict as Goal Interference:** Do not treat conflict as an inherent incompatibility among different trail activities, but goal interference attributed to another's behavior. For example, if a user's goal is to few wildlife, a group of screaming teens can interfere with that goal.
2. **Provide Adequate Trail Opportunities to Minimize Contacts:** Offer adequate trail mileage and provide opportunities for a variety of trail experiences. This will help reduce congestion and allow users to choose the conditions that are best suited to the experiences they desire.
3. **Establish Appropriate User Expectations:** If users expect to find the conditions and uses that they actually encounter, they are more likely to be tolerant of them. On the other hand, if a user expects to find a wilderness experience and finds multiple users, conflict may arise. Use signage, interpretive information, and trail design to establish appropriate expectations.
4. **Involve Users as Early as Possible:** Identify the present and likely future users of each trail and involve them in the process of avoiding and resolving conflicts as early as possible, preferably before conflicts occur. For proposed trails, possible conflicts and their solutions should be addressed during the planning and design stage with the involvement of prospective users. New and emerging uses should be anticipated and addressed as early as possible with the involvement of participants. Likewise, existing and developing conflicts on present trails need to be faced quickly and addressed with the participation of those affected.
5. **Understand User Needs:** Determine the motivations, desired experiences, norms, setting preferences, and other needs of the present and likely future users

DCR Guidelines - cont.

of each trail. This "customer" information is critical for anticipating and managing conflicts.

6. **Identify the Actual Sources of Conflict:** Help users to identify the specific tangible causes of any conflicts they are experiencing. In other words, get beyond emotions and stereotypes as quickly as possible, and get to the roots of any problems that exist.
7. **Work with Affected Users:** Work with all parties involved to reach mutually agreeable solutions to these specific issues. Users who are not involved as part of the solution are more likely to be part of the problem now and in the future.
8. **Promote Trail Etiquette:** Minimize the possibility that any particular trail contact will result in conflict by actively and aggressively promoting responsible trail behavior. Use existing educational materials or modify them to better meet local needs. Target these educational efforts, get the information into users' hands as early as possible, and present it in interesting and understandable ways (Roggenbuck and Ham 1986).
9. **Encourage Positive Interaction Among Different Users:** Trail users are usually not as different from one another as they believe. Providing positive interactions both on and off the trail will help break down barriers and stereotypes, and build understanding, good will, and cooperation. This can be accomplished through a variety of strategies such as sponsoring "user swaps," joint trail-building or maintenance projects, filming trail-sharing videos, and forming Trail Advisory Councils.
10. **Favor "Light-Handed Management":** Use the most "light-handed approaches" that will achieve area objectives. This is essential in order to provide the freedom of choice and natural environments that are so important to trail-based recreation. Intrusive design and coercive management are not compatible with high-quality trail experiences.
11. **Plan and Act Locally:** Whenever possible, address issues regarding multiple-use trails at the local level. This allows greater sensitivity to local needs and provides better flexibility for addressing difficult issues on a case-by-case basis. Local action also facilitates involvement of the people who will be most affected by the decisions and most able to assist in their successful implementation.
12. **Monitor Progress:** Monitor the ongoing effectiveness of the decisions made and programs implemented. Conscious, deliberate monitoring is the only way to determine if conflicts are indeed being reduced and what changes in programs might be needed. This is only possible within the context of clearly understood and agreed upon objectives for each trail area.

Source: *Conflicts on Multiple-Use Trails Synthesis of the Literature and State of Practice*, sponsored by the Federal Highway Administration and National Recreation Advisory Committee, https://www.fhwa.dot.gov/environment/conflicts/conf1.htm

DCR Guidelines - cont.

Special Trail Uses

DCR's trails offer extensive opportunities for special events such as:

- guided hikes,
- educational programs,
- volunteer work days,
- races and rallies,
- outfitted activities, and
- commercial activities.

Any organized, special activity should be coordinated with the facility's supervisor and may require a "special use permit." Any commercial activity, race or rally, or event which might be expected to significantly affect the public use or enjoyment or the general environmental quality of any of the lands or waters of the Department will require a "special use permit."

Overnight Activities on DCR Trails

Trails, especially long distance trails, offer a unique opportunity for overnight recreational experiences such as backpacking and back-country camping. Currently, DCR offers some limited designated site camping opportunities along the Appalachian Trail. However, opportunities for developing overnight opportunities also exists along other long-distance trail corridors such as the MMM trail and Mid-State Trail, and along important greenways such as the Connecticut River Greenway.

A process for designating and managing overnight areas or facilities in other parks or along other trails will need to be established with the Bureau of Recreation.

Off Trail Activities

Trails also contribute to and intersect with various off-trail activities that occur within our parks, forests and reservations such as geocaching, orienteering, bird-watching, and hunting.

Geocaching: Is a questing activity in which individuals or organizations use GPS (Global Positioning Systems), compasses, and maps to find caches located within public spaces. The Department of Conservation and Recreation supports and permits geocaching in keeping with its mission to protect, promote, and enhance the Commonwealth's natural, cultural, and recreational resources. DCR has established a policy to provide management guidelines for geocaching, so as to encourage safe geocaching practices and minimize impact on the natural and cultural resources managed by the Department. This policy is available at R:\DCR Policies\DCR Policy Files\Geocache.

Hunting: Hunting is permitted in most state forests and parks. Hunting seasons are established by the Massachusetts Division of Fisheries and Wildlife and licenses are required. For more information, see. http://www.mass.gov/dcr/recreate/hunting.htm.

DCR Guidelines - cont.

Appendix A

USFS

Trail Planning and Management Fundamentals

Trail Type ▪ Trail Class ▪ Managed Use ▪ Designed Use ▪ Design Parameters

Updated: 1/2004

In FY02, with the national introduction of the Infra 5.0 Trails Module Linear Events and TRACS (Trail Assessment and Condition Surveys), five fundamental concepts were introduced as cornerstones of Forest Service trail planning and management:

- Trail Type
- Trail Class
- Managed Use
- Designed Use
- Design Parameters

Although not entirely new, these revised concepts provide an updated and expanded means to consistently record and communicate the intended design and management guidelines for trail design, construction, maintenance and use. Before completing documentation for TRACS Trail Management Objectives (TMO), editing these Linear Events in the Infra Trails Module, or applying these concepts in trail management, it is essential that their intent is clearly understood.

Trail Type

A fundamental trail category that indicates the predominant trail surface or trail foundation, and the general mode of travel the trail accommodates.

Trail Types are exclusive, that is there can only be one Trail Type assigned per trail or trail segment. This allows managers to identify specific trail Design Parameters (technical specifications), management needs and the cost of managing the trail for particular uses and/or seasons by trail or trail segment.

When one Trail Type "overlaps" another, identify each trail or trail segment with its respective Trail Type as a separate route, with its own Trail Name and Trail Number. The "Shared System" data attribute in the Infra Trails Module will allow you to flag the route as also being used as a different type of route or Trail Type, (presumably during a different time of the year). For example, Canyon Ridge Trail 106 may be categorized as a Standard/Terra Trail from MP 0.0 to its end termini at MP 7.4. The first three miles of that same route may also function as a Snow Trail during the winter, in which case a separate record would be established for Canyon Creek Snow Trail #206 from MP 0.0 to MP 3.0. The actual naming and numbering of trails (i.e. Standard/Terra Trails versus Snow Trails) should be consistent with local unit identification protocols.

DCR Guidelines - cont.

The three fundamental Trails Types include:

Standard/Terra Trail: *The predominant foundation of the trail is ground (as opposed to snow or water); and that is designed and managed to accommodate ground-based trail use.*

Snow Trail: *The predominant foundation of the trail is snow (as opposed to ground or water); and that is designed and managed to accommodate snow-based trail use.*

Water Trail*: The predominant foundation of the trail is water (as opposed to ground or snow); and that is designed and managed to accommodate trail use by water craft. There may be ground-based Portage segments of Water Trails.*

Trail Class

The prescribed scale of trail development, representing the intended design and management standards of the trail.

- There is only one Trail Class identified per trail or trail segment.
- The National Trail Classes provide a chronological classification of trail development on a scale ranging from Trail Class 1 to Trail Class 5 (see Attachment A: Trail Class Matrix):
  - Trail Class 1: Minimal/Undeveloped Trail
  - Trail Class 2: Simple/Minor Development Trail
  - Trail Class 3: Developed/Improved Trail
  - Trail Class 4: Highly Developed Trail
  - Trail Class 5: Fully Developed Trail
- Each Trail Class is defined in terms of applicable Tread and Traffic Flow, Obstacles, Constructed Feature and Trail Elements, Signs, Typical Recreation Environment and Experience.
- Trail Class descriptions define “typical” scenarios or combined factors, and exceptions may occur for any factor. In applying Trail Classes, choose the one that most closely matches the managed objective of the trail.
- Trail prescriptions describe the desired management of each trail, based on Forest Plan direction. These prescriptions take into account actively managed trail uses, user preferences, setting, protection of sensitive resources, and other management activities. To meet prescription, each trail is assigned an appropriate Trail Class.
- There is a direct relationship between Trail Class and Managed Use (defined below), and one cannot be determined without consideration of the other.
- These general categories are used to identify applicable Trail Design Parameters (defined below) and to identify basic indicators used for determining the cost to meet national quality standards.
- Trail Classes represent a refinement and expansion of the previously used Forest Service Management Classes: Mainline/Primary, Secondary and Way Trails.

DCR Trail Guidelines and Best Practices Manual – Appendix A – March 2012

DCR Guidelines - cont.

Managed Use

Modes of travel that are actively managed and appropriate, considering the design and management of the trail.

- There may be more than one Managed Use per trail or trail segment.
- Managed Use indicates a management decision or intent to accommodate and/or encourage a specified type of trail use.

Designed Use

The intended use that controls the desired geometric design of the trail, and determines the subsequent maintenance parameters for the trail.

- There is only one Designed Use per trail or trail segment.
- Although the trail may be actively managed for more than one use, and numerous uses may be allowed, only one use is identified as the critical design driver. The Designed Use determines the technical specifications for the design, construction and maintenance of the trail or trail segment. For each Designed Use and applicable Trail Class, there is a corresponding set of nationally standardized technical specifications or Design Parameters.
- Of the actively Managed Uses that the trail is developed and managed for, the Designed Use is the single design driver that determines the technical specifications for the trail. This is somewhat subjective, but the Designed Use is most often the Managed Use that requires the highest level of development. (ie: Pack & Saddle stock require higher and wider clearance than a trail designed for Hikers). In addition to Designed Use, managers must also determine the desired development scale or Trail Class, with Trail Class 1 being the lowest level of development and Trail Class 5 the highest. On a Trail Class 1 Hiker trail, the trail is basically a deer path and in places may disappear and be reacquired later. Trail Class 5 is most often paved, or at least hardened, and is associated with a highly developed Recreation Opportunity Spectrum classification (ROS).

Designed Use / Managed Use Types

- All Terrain Vehicle
- Snow All Terrain Vehicle
- Bicycle
- Dogsled
- Hiker / Pedestrian
- Motorcycle
- Pack and Saddle
- Snowmobile
- Snowshoe
- Watercraft
- Motorized Watercraft
- Non-Motorized Watercraft
- Cross Country Ski

DCR Trail Guidelines and Best Practices Manual – Appendix A – March 2012

DCR Guidelines - cont.

Design Parameters

Technical specifications for trail construction and maintenance, based on the Designed Use and Trail Class.

- The national Trail Design Parameters represent a standardized set of commonly expected construction and maintenance specifications based on Designed Use and Trail Class.
- Local deviations to the Design Parameters may be established based on specific trail conditions, topography and other factors, providing that the variations continue to reflect the general intent of the national Trail Classes.
- Design Parameters are a refinement and expansion of the previously used “Easiest, More Difficult, and Most Difficult” trail categories for communicating Forest Service construction, maintenance and management specifications.

Design Parameters include technical specifications regarding:
- Tread Width
- Surface
- Grade
- Cross-Slope
- Clearing
- Turns

DCR Trail Guidelines and Best Practices Manual – Appendix A – March 2012

DCR Guidelines - cont.

Appendix B

Massachusetts *Department of Conservation and Recreation*

department of
Conservation and Recreation
dcr

Trail Proposal and Evaluation Form (word document form)

1. ***Requester's Information and Contact***

2. ***DCR Contact and/or Park Supervisor***

3. ***Location of Proposed Trail*** (Specify the location or the proposed trail as exactly as possible. Also attach a topographic map showing location)

4. ***Objective of trail***
   If the trail exists, who does the trail serve?

   Who will the new or improved trail serve?

   Please explain the significance, need or value of this trail and the reason(s) for the proposed change:

5. ***Description of Proposed Trail***
   Upgrade of existing ( ) Relocation of existing ( ) New trail ( ) Change in Use ( )

   Length: _____
   What is the Class of the Proposed Trail? And the Designed Use Parameter? (See DCR Trail Guidelines Manual, Section III, Trail Classification, page 35, and Appendix F)

6. ***Support and Success of Trail Project***
   Who supports this initiative?

   What is the evidence for the demand for this project?

   Who will build, or improve this trail?

   What costs are associated with this project and how will this project be funded

   Who will maintain this trail project for future use

DCR Trail Guidelines and Best Practices Manual – Appendix B – March 2012

DCR Guidelines - cont.

DCR Review of Proposed Trail Project
(To be filled out by DCR staff)

1. ***Is this project supported by existing DCR plans? Is it embodied in an RMP or Trail Plan? If not, is ti supported by operations and planning staff? Should it be pursued?***

2. ***What are the potential short and long term management issues associated with this project?***

   Design, construction and maintenance issues

   Management issues (abutter concerns, user conflicts, safety, resource impacts):

3. ***Would this trail need to meet FSTAG accessibility standards?***
   Yes/No? Why? List Conditions for Departure

4. ***Site Evaluation***

   Description of topography :
   0-15% slope ( ) 15-30%slope ( ) > 30% slope ( )
   Soil description:_____

   Historic, Cultural or Archeological resources/ impacts:

   Forestry management resources/ impacts:

   Rare, Endangered and Threatened species or natural community resources / impacts: Is it in NHESP Priority Habitat?

   Other critical wetland, natural resource or wildlife habitat resources/impacts:

   Other potential impacts or conflicts:

DCR Trail Guidelines and Best Practices Manual – Appendix B – March 2012

DCR Guidelines - cont.

Permitting: **Massachusetts Regulatory Review Checklist**

☐ Yes ☐ No Will any of the work require digging, pulling or scaring of ground surfaces?
If yes, DCR shall have project reviewed by DCR Archeologist. Proponent shall file permits with MHC is such as required after initial archeological review. All permits shall be reviewed by DCR prior to submittal.

☐ Yes ☐ No Will any work occur within 200 feet of a stream or river or within 100 feet of a wetland resource area?
If yes, contact your local conservation commission for help preparing an RDA or NOI. All permits shall be reviewed by DCR prior to submittal.

☐ Yes ☐ No Does the project area intersect with any Priority Habitat Area?
If yes, DCR shall send a project review request to NHESP. Proponent shall file permits if such are required by NHESP. All permits shall be reviewed by DCR prior to submittal.

*For additional information on permitting, please see DCR Trail Guidelines Manual.

Approval:
Facility Supervisor Approve ( ) Disapprove ( )
Comments / Recommendations:

Signature:_____ Date:_____

Management Forester Approve ( ) Disapprove ( )
Comments / Recommendations:

Signature:_____ Date:_____

Trail Coordinator Approve ( ) Disapprove ( )
Comments / Recommendations:

Signature:_____ Date:_____

Regional Director / District Manager Approve ( ) Disapprove ( )
Comments / Recommendations:

Signature:_____ Date:_____

Please submit a copy of completed forms the DCR Bureau of Planning and Resource Protection, Greenways and Trails Program, Paul Jahnige, paul.jahnige@state.ma.us for tracking purposes.

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DCR Guidelines - cont.

Appendix E

Massachusetts Department of Conservation and Recreation

VOLUNTEERS IN PARKS PROGRAM DRAFT 1-1-12

Volunteers in Parks (VIP) Program

DRAFT 1/1/2012

NOT CURRENTLY FINALIZED OR APPROVED

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ATTACHMENTS:
A. Volunteer Project Description Form
B. Volunteer Release Form
C. Volunteer Services Log
D. Volunteer Services Report
E. Stewardship Agreement

DCR Guidelines - cont.

INTRODUCTION

The Department of Conservation and Recreation (the "Department" or the "Agency") is committed to welcoming, facilitating and effectively involving Volunteers in the stewardship of the Commonwealth's natural and cultural resources in the Agency's care. Volunteering is as old as the "Parks Movement" itself. Today, Volunteers play an important role in caring for parks across the Commonwealth and the nation. Volunteering in parks offers the opportunity for social interaction and physical exercise while performing work that reflects a Volunteer's personal values.

As valuable as Volunteers are, they do not replace the essential management of professional staff. DCR is truly fortunate to have numerous dedicated, professional staff who lend their expertise to the Massachusetts park system. Their talents for resource protection, public service, and management of both staff and volunteers are the backbone of the Commonwealth's park system. Appropriate volunteer management protects the Volunteer, DCR professional staff, the resources under DCR's care and the taxpayer. Without adequate management, volunteers could injure themselves or other visitors, damage sensitive natural resources, or create liability for the Commonwealth that must be borne by the taxpayer.

This policy is guided by legislation which directs DCR to establish guidelines and standards for Volunteers to participate in stewardship activities on DCR property. In 2007, the Legislature enacted "An Act Relative to Volunteers at State Parks" which declared "that Volunteer activities and events serve an important public purpose, assist in the enhancement, preservation and improvement of the park system in the commonwealth, and that a program is required to help foster and assist in the stewardship of [DCR] properties through encouraging Volunteer activities and partnerships with nonprofit organizations." See St. 2007, c. 208, as codified in G. L. c. 21 § 17G. The Act authorizes DCR to enter into agreements with nonprofit organizations regarding volunteers' participation in stewardship, fundraising or special events activities on department property ("Stewardship Agreement"). Section 17G (c). The legislation also provides liability protection to Volunteers in particular circumstances; and anticipates DCR's co-sponsorship of fund-raising and special event activities by Nonprofit Organizations when the activities promote a public purpose related to DCR and the funds generated are used to directly support or improve a DCR facility or program. By following this policy and the management procedures, DCR staff can provide Volunteers with a safe and effective stewardship experience while ensuring that park resources benefit both from the inspiration of volunteers and the professional stewardship of DCR staff.

DEFINITIONS

For the purposes of this policy, the following definitions shall apply:

> **Co-sponsor** shall mean DCR's determination to assume joint responsibility with a Nonprofit Organization for the events or activities set forth in a Stewardship Agreement upon due execution of said agreement.
> **Nonprofit Organization** shall mean a Friends Group[1] or Organized Community or Activity Oriented Group[2] that is either (A) described in section 501(c)(3) of title 26 of the United States

[1] **Friends Groups** are organized to support a specific park or group of parks and play an instrumental role in projects that include, but are not limited to, organizing events, advocating for park resources, promoting park activities, and raising money to support park programs and park infrastructure improvement.

[2] **Organized Community or Activity Oriented Groups** are scouts groups, civic organizations, garden clubs, trail groups and other groups that support a park or group of parks as a secondary aspect of their

DCR Guidelines - cont.

Code and exempt from tax under section 501(a) of such title and which does not practice any action which constitutes a hate crime referred to in subsection (b)(1) of the first section of the Hate Crime Statistics Act (28 U.S.C. 534 note); or (B) a not-for-profit organization which is organized and conducted for public benefit and operated primarily for charitable, civic, educational, religious, welfare, or health purposes and which does not practice any action which constitutes a hate crime referred to in subsection (b)(1) of the first section of the Hate Crime Statistics Act (28 U.S.C. 534 note). See G. L. c. 21, § 17G.

Stewardship Activity means an activity undertaken on DCR property that does not include fundraising; such activities may include, but are not limited to, trail clearing, planting, trash pickup.

Volunteer shall mean an individual performing services for a Nonprofit Organization or a governmental entity (DCR) who does not receive either compensation (other than reasonable reimbursement or allowance for expenses actually incurred[3]) or any other thing of value in lieu of compensation, in excess of $500 per year; such term includes a volunteer serving as a director, officer, trustee, or direct service volunteer. See G. L. c. 21, § 17G.

Volunteer Project shall mean the stewardship, maintenance, interpretive educational activity or any such other fundraising or special event or activity on DCR property that has been duly authorized by DCR under a Volunteer Project Description Form.

Volunteer Project Description (VPD) Form shall mean a form that documents a Volunteer Project as duly proposed by an individual Volunteer, Nonprofit Organization or DCR staff, attached hereto as Attachment A.

APPLICABILITY

This Policy sets forth the conditions under which Nonprofit Organizations and Volunteers can engage in Volunteer Projects on DCR properties. This Policy also establishes guidelines, requirements and standards for: (1) authorizing and registering Volunteers to provide stewardship services; (2) the direction, control, safety and supervision of the Volunteers of a Nonprofit Organization; (3) requiring the Nonprofit Organization to provide DCR with an annual accounting of any funds generated and expenditures incurred as a result of the Volunteer Project; and (4) identifying the circumstances under which the Volunteers, while acting within the scope of their volunteer responsibilities under a Volunteer Project Description Form approved by DCR or a Stewardship Agreement duly executed by a Nonprofit Organization and DCR, are regarded as public employees within the meaning of G. L. c. 258[4].

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organizational mission or purpose. These groups volunteer their skills, energy and expertise on a specific project or projects at DCR properties.

[3] While this reference to reimbursements is included in the federal definition of a volunteer as cited in the G. L. c. 21, § 17G., DCR is not able to reimburse volunteers for expenses incurred.

[4] G. L. c. 21, § 17G(d) provides:

> [DCR] shall post on its website for public review and subsequently establish guidelines, requirements and standards for: (1) authorizing and registering volunteers to provide stewardship services; (2) delegating direction, control, safety and supervision of the volunteers to the nonprofit organization; (3) developing accounting and reporting procedures as required in

DCR Guidelines - cont.

DCR will regard those Volunteers who are performing activities on behalf of DCR under an approved VPD Form or services for a Nonprofit Organization in accordance with a duly executed Stewardship Agreement as public employees within the meaning of G.L. c. 258.

This policy neither applies nor pertains to:

a. Any activity by a Nonprofit Organization, or its members or individuals that is not authorized by DCR as a Volunteer Project; or

b. The circumstances under which a volunteer performs services for a governmental agency other than DCR.

I. GENERAL VOLUNTEER GUIDELINES

This section delineates the criteria, procedures and approvals required for all Volunteers and Nonprofit Organizations engaging in volunteer activities on DCR property.

A. Types of Volunteers

A wide range of individuals and organizations volunteer at DCR properties. They range from Boy Scouts and Girl Scouts to senior citizens, and include individuals, families, and members of organizations such as park "friends" groups, civic groups, activity-oriented groups, community groups, corporate groups, religious organizations or youth- service organizations. The organizations may or may not be registered nonprofit (501(c) (3)) organizations.

B. Common Volunteer Activities

Volunteers may perform a wide range of activities depending on the needs of the DCR property or facility. Common volunteer activities include:

- General clean-ups of an area, including litter and refuse removal.
- Greeting, welcoming and assisting park visitors by providing them with necessary information about the facility, local services, the park setting, and points of interest.
- Assisting DCR staff with educational programs or events.
- Removing invasive plant species.
- Researching historical or scientific information regarding park resources or property.
- Maintaining a park's recycling center; sorting recyclable materials from non-recyclable materials.
- Planting flowers, trees or shrubs to enhance landscaping, create habitat or otherwise enhance a DCR property or facility.

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subsection (b); and (4) considering the volunteers, while acting within the scope of volunteer responsibilities for the department or the nonprofit organization, are regarded as public employees within the meaning of [G. L. c.] 258. In a civil action involving a volunteer who is considered a public employee, [DCR] may assert any defense or limitation on liability that the volunteer could have asserted under federal or state law.

DCR Trail Guidelines and Best Practices Manual – Appendix E – March 2012

DCR Guidelines - cont.

- Performing minor trimming or weeding with hand tools.
- Performing trail maintenance activities such as removing fallen limbs, trimming brush, maintaining drainage structures, blazing trails, or creating steps or bog bridges.
- Organizing activities or events intended to promote public awareness and appreciation for park resources.

C. Activities Volunteers May Not Perform

For the protection of the Volunteer and the Commonwealth, Volunteers may not perform any of the following activities:

- Operating state-owned vehicles, including pick-up trucks, "golf carts" or other vehicles. Volunteers may ride as passengers in state vehicles only while performing assigned duties or services.
- Operating state-owned power equipment.
- Operating personal or Nonprofit Organization-owned power equipment such as chainsaws, unless expressly authorized by DCR in a Stewardship Agreement.
- Collecting parking fees, camping fees or other revenue from the public, including disbursement of park funds to the public or other Volunteers.
- Wearing a DCR uniform or representing themselves as DCR employees.
- Any duty or activity that may be considered the enforcement of park rules or regulations or other state regulation or law.

In addition, any proposed Volunteer activity may be denied if, in the Agency's opinion, the activity (a) presents a safety risk to the Volunteer, DCR employees or the general public; (b) would likely create a negative impression about the Department or the park system; (c) likely imposes additional liability upon the Department; or (d) likely imposes additional costs on the Department.

D. Facility Staff Responsibility

DCR staff plays a critical role in ensuring that Volunteers have a successful and productive experience in assisting DCR with stewardship activities. DCR staff will endeavor to identify valuable volunteer stewardship activities for their respective facilities. DCR staff is often the initial point of contact for potential Volunteers and is responsible for assisting with the development of Volunteer Project Description Forms and implementation of this policy.

Subject to available resources, DCR staff shall endeavor to communicate to individual Volunteer and/or the Nonprofit Organization any applicable maintenance and quality standards associated with any applicable Volunteer Project. Unless otherwise stated in a Stewardship Agreement, DCR facility staff shall also endeavor to supervise, train, and coordinate Volunteer activities and provide the necessary tools and supplies to accomplish Volunteer Projects on DCR property.

E. Volunteer Recognition

DCR shall develop a volunteer recognition program to honor volunteers based upon the number of hours of service to the Commonwealth.

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DCR Guidelines - cont.

II. FORMS AND PROCEDURES FOR ALL VOLUNTEERS AND ORGANIZATIONS

This section describes procedures required for all Volunteers performing stewardship activities on DCR properties.

A. Volunteer Project Description (VPD) Form

Any individual Volunteer or Nonprofit Organization or DCR staff member seeking to undertake a Volunteer Project shall complete a VPD Form attached hereto as Attachment A. The VPD Form ensures that DCR staff, the Volunteer and/or Nonprofit Organization have a clear and common understanding of the scale, scope and timing of the proposed Volunteer Project. DCR may approve Volunteer Projects that are part of an annual work plan, coordinated with the Facility Supervisor and detailed in the VPD Form.

The project proponent shall submit completed VPD Forms to the supervisor or manager overseeing the property on which the activity is sought to occur. The supervisor or manager will review the proposal and share with the appropriate DCR District Manager or Regional Director who will review all proposed Volunteer Projects within their jurisdiction to ensure that they meet DCR objectives and mission. The District Manager or Regional Director shall retain a copy of each VPD Form.

Volunteer projects that are limited to the activities shown in the "Common Volunteer Activities" list on page 5 may be approved at the regional level and do not require further administrative review.

Volunteer projects that involve activities beyond these common tasks shall be reviewed through these additional steps. Within two (2) business days of receipt, the District Manager or Regional Director shall forward a copy for review to the DCR Labor Relations Liaison, who will in turn make a copy available to DCR's Office of Partnerships.

Within two (2) business days of receipt, the DCR Labor Relations Liaison shall transmit a copy of the VPD Form to the appropriate labor union representative for his/her review and comment. The appropriate labor union representative shall provide any written comments on the proposed Volunteer Project to DCR's Labor Relations Liaison within two (2) business days of receipt. The District Manager or Regional Director shall coordinate with the Labor Relations Liaison to review any comments submitted by the union and shall, within two (2) business days of receipt of such comments, notify the project proponent in writing that the project has been approved, amended or denied.

B. Volunteer Release Form

Prior to starting a Volunteer Project, each Volunteer shall complete and submit to DCR or the Non-profit Organization coordinating the activity, a Volunteer Release Form (Attachment B) for each VPD form under which they are volunteering.

DCR Guidelines - cont.

To be considered a Volunteer under this Policy and to receive the liability coverage provided to an uncompensated public employee associated with the Volunteer Project (under G. L. c. 258), a Volunteer Release Form must be signed and submitted to DCR or the Non-profit Organization coordinating the activity, prior to beginning the Volunteer Project.

Volunteer Release Forms should be retained by the DCR facility with the VPD form in a file for the Volunteer Project. Any Volunteer performing an approved and ongoing Volunteer Project need only complete one Volunteer Release Form for each VPD form describing that project.

Nonprofit Organizations must ensure that all Volunteers performing volunteer services under their supervision sign Volunteer Release Forms before beginning volunteer activities. A Nonprofit Organization shall also be responsible for collecting the completed forms and delivering them to the Facility Supervisor within five days of the commencement of the approved Volunteer Project. No person may undertake volunteer activities without first having executed a Volunteer Release Form.

C. Volunteer Services Documentation

Each DCR facility shall maintain a Volunteer Services Log, attached hereto as Attachment C. The log shall record the hours of volunteer service committed to all approved Volunteer Projects. Nonprofit Organizations conducting Volunteer Projects shall collect and enter the names and addresses of its participating Volunteers into the Volunteer Services Log and provide this information to the appropriate DCR staff within 7 calendar days of completion of the Volunteer Project. For those Volunteer Projects where the Volunteer is working directly with DCR, DCR shall collect and enter the names and addresses of individual Volunteers into the Volunteer Services Log. The DCR employee shall retain the Log for each project in order to complete the Volunteer Services report described below, within five (5) business days of receipt of the volunteer information contained in the Volunteer Services Log.

To be considered a Volunteer under this Policy and to receive the liability coverage provided to an uncompensated public employee associated with the Volunteer Project (under G. L. c. 258), the person's name must appear on the Volunteer Services Log; and the Volunteer must comply with the requirements of this Policy.

D. Volunteer Services Reporting and Review

DCR staff shall provide a report on Volunteer service hours on a semi-annual basis (Attachment D). Reports shall be submitted to DCR Office of Human Resources, Training Unit by April 1st and October 1st of each year. The report shall identify the approved Volunteer Projects, the dates of volunteer activity, the total number of volunteer hours per Volunteer Project and the status of the project at the reporting date. DCR will also make this information available to Volunteers and Nonprofit Organizations. The DCR Labor Relations Liaison shall meet with all relevant DCR labor union representatives to discuss past Volunteer Projects.

E. Reimbursement

DCR is <u>not</u> able to reimburse expenses incurred by volunteers.

III. STEWARDSHIP AGREEMENTS WITH NONPROFIT ORGANIZATIONS

DCR Trail Guidelines and Best Practices Manual – Appendix E – March 2012

DCR Guidelines - cont.

A. General Provisions

DCR shall use Stewardship Agreements (Attachment E) to authorize DCR co-sponsorship of approved Volunteer Projects with those Nonprofit Organizations who seek to oversee stewardship activities on DCR properties. These agreements may allow for the delegation of Volunteer supervision to the Nonprofit Organizations and include provisions providing for the indemnity of the Commonwealth from liability that may occur as a result of Volunteer activity that has caused personal injury or property damage.

For Nonprofit Organizations that perform many volunteer projects on DCR lands each year, Stewardship Agreements can provide an efficient and effective way to plan and seek approval for several projects at one time.

In evaluating whether to execute a Stewardship Agreement with a Nonprofit Organization, DCR must ensure that the proposed stewardship activities supports a public purpose related to the Agency's mission and improves a DCR property or program.

Once DCR executes a Stewardship Agreement, the Agency shall be considered a co-sponsor and/or participant in the proposed stewardship activities; and any participating Volunteer of the Nonprofit Organization shall be deemed to be a public employee within the meaning of G. L. c. 258 while acting within the scope of authorized volunteer activities.

DCR staff shall ensure proper completion of the Stewardship Agreement and shall maintain a copy at the applicable DCR facility.

B. Special Procedures for Nonprofit Organization Fundraising and/or Special Event Activities - Public Purpose; Funds Used to Support DCR Facility

Legislation permits DCR to co-sponsor and participate in an event or activity on DCR property with a Nonprofit Organization at which the Nonprofit Organization may be allowed to charge, or solicit or receive donations of funds at the event or activity. However, the event or activity must further a public purpose of DCR, and the funds generated must be used only for supporting or improving a DCR facility or program. G. L. c. 21, § 17G (b).

Nonprofit Organizations seeking DCR co-sponsorship of a fundraising and/or special event activity are subject to the following additional provisions:

1. Each Nonprofit Organization shall complete, submit and execute (i) a Stewardship Agreement (Attachment E); and (ii) a Special Use Permit Application.

2. The Nonprofit Organization should indicate on the Special Use Application that it is seeking co-sponsorship with DCR through a Stewardship Agreement. Please see http://www.mass.gov/dcr/permits/index.htm for details regarding DCR's Special Use Permit application process.

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DCR Guidelines - cont.

3. Nonprofit Organizations shall submit to DCR annually, by November 1, a record of all funds generated from co-sponsored fundraising activities or special events.

If DCR executes a Stewardship Agreement, the Agency shall be considered a co-sponsor and/or participant in the proposed stewardship, fundraising or special event activity; and any participating Volunteer of the Nonprofit Organization shall be deemed to be a public employee within the meaning of G. L. c. 258. However, as provided by G.L. c. 258, § 9, no volunteer or Nonprofit Organization shall be indemnified for intentional torts or a violation of a person's civil rights.

C. Activities Undertaken Absent a Stewardship Agreement – Funds Not Used to Support DCR Facility

If DCR declines to execute a Stewardship Agreement for a stewardship, fundraising or special event, or the entity requesting co-sponsorship does not meet the definition of a Nonprofit Organization, the Agency shall not be considered a co-sponsor or participant in the event or activity for the purposes of this Policy. However, the proposed activities may proceed if the following conditions are met:

1. Where the VPD Form concerns a stewardship activity, the Volunteers sponsored by said entity may proceed with activities duly established under an approved VPD Form as provided in II.A., and such Volunteers shall be deemed to be uncompensated public employees within the meaning of G.L. c. 258 as provided therein.
2. Where the VPD Form concerns a fundraising or special event activity, DCR will proceed to make a determination on the Nonprofit Organization's pending Special Use Permit (SUP) Application. If DCR approves the SUP Application, the proposed activities may proceed without DCR sponsorship, but are nevertheless subject to the terms of the approved SUP. Note that when approved special events or fundraising activities occur on DCR property and the funds raised are not expended only for the support or improvement of DCR, Volunteers for those events or activities are not deemed uncompensated public employees and are, therefore, not afforded the protections of G.L. c. 258.

IV. OTHER AGREEMENTS

This section describes other types of agreements related to Volunteer Activities.

A. Memoranda of Agreement with Volunteer Organizations

Prior to the adoption of this policy, DCR entered into Memoranda of Agreement (MOA) with volunteer organizations. Any MOAs in effect on the effective date of this Policy shall remain in effect until so expired under the terms of the MOA. DCR will review these MOAs with each organization and determine whether to evaluate the activities it proposes through the process described in this policy. If DCR determines that the volunteer organization satisfies the definition of a Nonprofit Organization and DCR elects to co-sponsor the activities proposed by said Nonprofit Organization, DCR and the Nonprofit Organization will execute a Stewardship Agreement and DCR may delegate the supervision of Volunteers to the Nonprofit Organization. If DCR declines to co-sponsor activities proposed by the volunteer organization, or said organization does not meet the definition of a Nonprofit Organization, then said volunteer organization may proceed to apply for a Special Use Permit in accordance with Section IV.A.b.

DCR Guidelines - cont.

B. Host Camper Agreements

Individuals interested in participating in the Host Camper Program shall complete a Host Camper Application form and comply with all relevant policies and procedures for that program.

DCR Guidelines - cont.

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Massachusetts

Attachment A

Massachusetts Department of Conservation and Recreation
Volunteer Project Description

To be completed by DCR Staff and Volunteer or Non-Profit Organization

(Use additional pages if needed)

Project Title:	Region:
Location of Project:	Date of project:

Project Categories:

☐ Park Conservation/ Stewardship
- ☐ Landscaping/planting
- ☐ Litter removal
- ☐ Trail maintenance
- ☐ Recycling
- ☐ Other _____

☐ Volunteer Recruitment
☐ Customer Service: Greeting or Customer Information
☐ Scientific; Nature Studies, Inventory, or Observation
☐ Educational: Training or Educational Program Delivery
☐ Creative: Photography, Art, or Writing
☐ Special Event or Fundraising (please also fill out a DCR Special Use Permit Application)

Project Description: (general description, goals, anticipated results, examples of specific tasks) (Attach if necessary)

Estimated Number of Volunteers:	Tools needed for project:

Name of co-sponsor if any (Non-profit, Friends Group, etc.):

Is this Project a: ☐ One time need? ☐ Seasonal need? ☐ On-going need?

If project is a seasonal or ongoing need, what is the estimated range (low to high) of total time (months, days, hours, etc.) to complete this Project?

Months: **and/or** Days: **and/or** Hours:

When will there be volunteers? ☐ **One Time Only** ☐ **Temporarily** ☐ **Year-Round**

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OR ☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ July ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec OR Specify Date (Start and End):		
Please identify preferred times of day or days of week for this project if applicable.		
What specific skills and/or qualifications are necessary for completion of this Project? (to be filled out by DCR staff)		
Submitted By – for DCR staff (please print)	**Signature** ➤	Date
Submitted by – for Volunteer Group:	**Signature** ➤	Date
Facility Supervisor or Manager	☐ Approved	Date:
District Manager	☐ Approved	Date:
Regional Manager	☐ Approved	Date:
Labor Relations	☐ Approved	Date:
Union	☐ Review	Date:
Office of Partnerships	☐ Review	Date:

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DCR Guidelines - cont.

dcr
Massachusetts

Attachment B

Massachusetts Department of Conservation and Recreation
Volunteer Release Form

I, _____, (*Your Name*) a member of or participant in the activities sponsored by _____, (*Name of the Organization, if applicable*), understand the work that I have volunteered to do and I hereby state that I am qualified and physically capable of accomplishing the work and activities for which I have volunteered, and that I will perform them as directed by a properly authorized supervisor. I agree to comply with all DCR rules and regulations.

I hereby release the Commonwealth of Massachusetts and the Department of Conservation and Recreation (the "Department"), their employees and agents, from all claims, loss, damage, expenses and/or injuries, whether to person or to property, which may result from my actions while participating in volunteer programs and projects approved or sponsored by the Department.

I further agree to indemnify, defend and hold harmless the Commonwealth of Massachusetts and the Department, their employees and agents, from liability for any damage or injuries resulting from my actions while participating in volunteer programs and projects approved or sponsored by the Department.

I acknowledge that, by participating in such volunteer programs and projects, I have not received an appointment to state service and I will not receive a salary or payment from the Commonwealth. As such, I understand that I am not entitled to Workers Compensation for any injury suffered while involved in volunteer work or projects for the Department and, further, that I will provide my own health insurance.

I recognize that G.L. c. 21, § 17G provides that, pursuant to the provisions, requirements and limitations of G.L. c. 258 and the guidelines adopted by DCR, I shall not be liable for injury or loss of property or personal injury or death caused by my negligent or wrongful act or omission while acting within the scope of my volunteer activities. However, I acknowledge that I will not be indemnified under G. L. c. 258, Section 9 for intentional torts or for the violation of a person's civil rights

_____ _____ _____
Signature Date Signature of Parent or Legal Guardian Date
(For persons under 18 years of age)

Emergency Contact Information:

Name _____ Phone # _____

Relationship _____

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DCR Guidelines - cont.

dcr
Massachusetts

Attachment E

Stewardship Agreement
Between _____
and
The Department of Conservation and Recreation

Whereas, the Commonwealth of Massachusetts, Department of Conservation and Recreation (DCR), is the owner and manager of the property known as _____ (the Facility); and

Whereas, _____ (Nonprofit Organization) is incorporated as a non-profit organization as defined in 42 U.S.C. 14505; and

Whereas, DCR seeks to satisfy the requirements of G. L. c. 21, Section 17G(d)(2), which requires it to establish procedures for the delegating direction, control, safety and supervision of the volunteers to the Nonprofit Organization; and

Whereas, the Nonprofit Organization seeks to engage in a Volunteer Project or Projects at the Facility as defined and authorized in the DCR's Policy to Manage Volunteers on DCR Property;

Now, therefore, the parties agree as follows:

a. This Agreement shall be effective for the scope of the Volunteer Project or Projects, as described in the Volunteer Project Description Form(s) which is/are attached and incorporated herein.

b. DCR and the Nonprofit Organization shall comply with the procedures established in the DCR's Policy to Manage Volunteers on DCR Property.

c. DCR staff shall coordinate volunteers at the Facility and may provide the necessary tools and supplies to accomplish the Volunteer Project.

d. The Nonprofit Organization shall provide DCR with an annual accounting of funds and expenditures generated or otherwise associated with Fundraising or Special Events anticipated within this Stewardship Agreement and DCR's Policy to Manage Volunteers on DCR Property, provided that all funds shall be devoted to support or improve a DCR facility or program.

e. Nonprofit Organization that conduct certain activities shall accept complete liability and responsibility for the Nonprofit Organization's use of the Facility and its actions and the actions of its volunteers in the Facility. When a Nonprofit Organization proposes to conduct the following activities[5]:

[5] Please note that Stewardship Agreements and SUP's have different requirements for providing insurance and agreeing to indemnify DCR. If DCR enters into a Stewardship Agreement with a Nonprofit Organization, the terms of the Stewardship Agreement will apply. If DCR declines to enter into a Stewardship Agreement and instead issues a SUP, the terms of the SUP will apply.

More specifically, SUP's require that Permittees have Liability Insurance and provide DCR with a certificate of Insurance naming DCR as additionally insured. SUP's also require that Permittees agree to indemnify, defend and hold harmless DCR from any and all claims that may arise from the permitted event. Stewardship Agreements have different requirements because if DCR executes a Stewardship

DCR Guidelines - cont.

i. Stewardship activities that involve the use of certain tools or which, due to the nature of the Volunteer Project, create a risk to either the Volunteer or a member of the general public;

ii. Provide food and beverage service to members of the general public; or

iii. Use technical equipment (such as audio/visual equipment or amusements) when in connection with events attended by the general public, or events such as fairs, festivals, concerts, etc

they shall then carry general liability insurance having insurance coverage of at least $100,000; and shall name DCR as an additional insured on said policy. The Nonprofit Organization will indemnify, defend and hold harmless DCR, up to the one hundred thousand dollars ($100,000) liability limit as set forth in the Massachusetts Tort Claims Act, Mass. Gen. Laws c. 258, sec. 2, against any and all claims to the extent they arise as a result of the negligent or wrongful act or omission of the Nonprofit Organization and its volunteers in the performance of the activities authorized by this agreement.

f. The Nonprofit Organization will not make any claims against DCR for any injury, loss or damage to persons (including bodily injury or death) or property occurring from any cause arising out of the authorized use by the Nonprofit Organization, its agents or volunteers, except to the extent those claims arise as a direct result of the negligence or wrongful act or omission of the DCR, its employees, contractors or authorized agents.

g. Neither the Nonprofit Organization nor the Volunteer shall be indemnified under G. L. c. 258, Section 9 for intentional torts or a violation of a person's civil rights.

I have read the forgoing conditions and provisions and approve of and agree to these terms.

_____ _____
Date Accepted Nonprofit Organization:
Title:

_____ _____
Date Approved Authorized DCR Signatory
Department of Conservation and Recreation

Agreement, the agency shall be considered a co-sponsor and/or participant in the proposed stewardship, fundraising or special event activity; and any participating Volunteer of the Nonprofit Organization shall be deemed to be a public employee within the meaning of G. L. c. 258.

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Appendix F:
USFS Trail Design Parameters

Trail Design Parameters provide guidance for the assessment, survey and design, construction, repair and maintenance of trails, based on the Trail Class and Designed Use of the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use HIKER-PEDESTRIAN		Trail Class 1	Trail Class 2	Trail Class 3*	Trail Class 4*	Trail Class 5*
Design Tread Width	**Wilderness**	0" – 12"	6" – 18"	12" – 24" Exceptions: May be 36-48" at switchbacks, turnpikes, fords and steep side slopes.	24" Exceptions: May be 36-48" at switchbacks, turnpikes, fords and steep side slopes.	Not applicable
	Non-Wilderness	0" – 12"	6" – 18"	18" – 48"	32" – 96"	36" – 120"
Design Surface	**Type**	Native, un-graded. Intermittent, rough.	Native with limited grading. Continuous, rough.	Native with some on-site borrow or imported materials.	Imported materials or hardening is common.	Uniform, firm, and stable.
	Obstacles	Roots, rocks, logs, steps to 24".	Roots, rocks and log protrusions to 6"; steps to 14".	Generally clear. Protrusions to 3"; steps to 10".	Smooth, few obstacles. Protrusions 2-3"; steps to 8".	Smooth, no obstacles. Protrusions <2".
Design Grade**	**Target Range** (>90% of Trail)	< 25%	< 18%	< 12%	< 10%	< 5%
	Short Pitch Max (Up to 200' lengths)	40%	35%	25%	15%	10%
	Max Pitch Density***	< 10% of trail	< 5% of trail	< 5% of trail	< 3% of trail	< 3% of trail
Design Cross-Slope	**Target Range**	Not applicable	5 – 20%	5 – 10%	3 – 7%	2 – 3% (or crowned)
	Maximum	Up to natural side-slope.	Up to natural side-slope	15%	10%	3%
Design Clearing	**Width**	Sufficient to define trail corridor.	24" – 36", with some encroachment into clearing area.	12" – 18" outside of tread edge.	12" – 18" outside of tread edge	12" – 24" outside of tread edge.
	Height	6'	6' – 7'	8'	8'	> 8'
Design Turns	**Radius**	No minimum.	2' – 3'	3' – 6'	4' – 8'	6' – 12'

* Trail Classes 3, 4 and 5 may potentially provide accessible passage. If assessing or designing trails for accessibility, refer to current Agency trail accessibility guidance.

** Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential.

*** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

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DCR Guidelines - cont.

USFS Trail Design Parameters (1/31/2005)

Trail Design Parameters provide guidance for the assessment, survey and design, construction, repair and maintenance of trails, based on the Trail Class and Designed Use of the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use PACK AND SADDLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	**Wilderness**	Not Applicable: Not designed for equestrians as primary user, although equestrians may be present.	12" – 18" Exceptions: May be to 48" at switchbacks, turn-pikes, fords and steep side slopes.	12" – 24" Exceptions: May be to 48" at switchbacks, turn-pikes, fords and steep side slopes. Up to 60" along precipices.	24" Exceptions: May be to 48" at switchbacks, turn-pikes, fords and steep side slopes. Up to 60" along precipices.	Not Applicable: Not designed for equestrians as primary user. Equestrians generally not present.
	Non-Wilderness		12" – 24" (With above exceptions)	18" – 48" (With above exceptions)	36" – 96"	
Design Surface	**Type**		Native, w/ limited grading.	Native with some on-site borrow or imported materials.	Native with some imported materials or stabilization.	
	Obstacles		Roots, rocks, logs to 12"	Generally clear. Occasional protrusions to 6".	Smooth, few obstacles. Occasional protrusions 2-3".	
Design Grade*	**Target Range** (>90% of Trail)		< 20%	< 12%	< 10%	
	Short Pitch Max (Up to 200' lengths)		30%	20%	15%	
	Max Pitch Density***		< 5% of trail	< 5% of trail	< 3% of trail	
Design Cross-Slope	**Target Range**		5 – 10%	5%	5%	
	Maximum		Natural side-slope	10%	10%	
Design Clearing	**Width**		36" – 48"	60" – 78"	72" – 96"	
	Height		8' – 10''	10'	10' - 12'	
Design Turns	**Radius**		4' – 5'	5' – 6'	6' – 10'	

* Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential. Due to effects of use on tread and erosion, steeper pitches should be carefully evaluated based on potential effects of these various factors.

** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

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DCR Guidelines - cont.

USFS Trail Design Parameters (6/18/2002)

Trail Design Parameters provide guidance for the assessment, survey and design, construction, repair and maintenance of trails, based on the Trail Class and Designed Use of the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use BICYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	**One Lane**	6" – 12"	12" – 24"	18" – 30"	24" – 48"	36" – 60"
	Two Lane	Not applicable.	Not applicable.	48 " – 60" Accommodate two-lane travel with passing lanes.	60" – 84"	72" – 120"
Design Surface	**Type**	Native. Rough, unstable or soft tread.	Native, with limited grading. Unstable or soft sections likely.	Native with some on-site borrow or imported materials. Some soft areas.	Likely imported or stabilized tread. Few, if any, loose or soft surfaces.	Firm, hardened surface.
	Obstacles	Rocks, logs and roots up to 6–12" common. Forced portages likely.	Embedded rock, protrusions to 6". Some portages may be needed.	Generally smooth with few protrusions exceeding 3".	Smooth, few obstacles. 1 – 2" protrusions.	No obstacles to wheeled transport.
Design Grade*	**Target Range** (>90% of Trail)	15% – 18%	< 12%	< 10%	< 8%	< 5%
	Short Pitch Max (Up to 200' lengths)	30% 50% on downhill-only travel.	25% 35% on downhill-only travel.	15%	10%	8%
	Max Pitch Density* **	< 10% of trail	< 5% of trail	< 5% of trail	< 3% of trail	< 3% of trail
Design Cross-Slope	**Target Range**	5% – 10%	5% – 10%	5%	3% – 5%	3% – 5%
	Maximum					
Design Clearing	**Width**	24" – 36" Some vegetation may encroach into clearing area.	36" – 48" Some light vegetation may encroach into clearing area.	12" – 18" outside of tread edge.	12" – 18" outside of tread edge.	18" – 24" outside of tread edge.
	Height	6' – 7"	7' – 8''	8'	8' - 9'	8' - 9'
Design Turns	**Radius**	3' - 4'	4' – 6'	6' – 8'	8' – 10'	8' - 12'

* Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential. Due to effects of use on tread and erosion, steeper pitches should be carefully evaluated based on potential effects of these various factors.

** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

DCR Trail Guidelines and Best Practices Manual – Appendix F – March 2012

DCR Guidelines - cont.

USFS Trail Design Parameters (6/18/2002)

Trail Design Parameters provide guidance for the assessment, survey and design, construction, reconstruction and maintenance of trails, based on the Trail Class and Designed Use identified for the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use ALL TERRAIN VEHICLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width [If sideslopes are >50%, increase widths by 6”-18”]	**One Lane**	NA – Not designed for ATV as primary user.	30” – 48” At switchbacks, > 48”	42”-60” At switchbacks, >60”	54”-72” At switchbacks, >60”	NA – Not designed for ATV as primary user.
	Two Lane		Typically not designed for two-lane travel. Passing areas (uncommon) - 60”	60” and/or accommodate with passing areas 60”-78”.	72”-96”	
Design Surface	**Type**		Native, w/ limited or no grading. Commonly soft and unstable.	Native w/ some onsite barrow or imported materials. Some loose or soft sections.	Relatively firm and stable. Gravel, pavers or other imported materials possible.	
	Obstacles		Embedded rock, steps, waterbars, holes and protrusions to 6”.	Generally smooth, with few protrusions exceeding 4”. Drain dips and low waterbars.	Smooth, few obstacles. 1-3” protrusion. Drain dips or waterbars with low-angle approach.	
Design Grade*	**Target Range** (>90% of Trail)		<25%	<15%	<10%	
	Short Pitch Max (Up to 200’ lengths)		35%	25%	15%	
	Max Pitch Density**		<10% of trail	<5% of trail	<5% of trail	
Design Cross-Slope	**Target Range**		5% – 10%	3% – 5%	3% – 5%	
	Maximum		15%	10%	8%	
Design Clearing	**Width** [On steep side hills, increase clearing on uphill side by 6 – 12”]		36”- 48” Some vegetation may encroach into clearing area.	8”-12” outside of tread edge.	>12” outside of tread edge	
	Height		5’ – 6’	6’ – 7’	8’	
Design Turns	**Radius** [Use Climbing Turns vs. Switchbacks for ATVs whenever possible]		6’ – 8’	8’ – 10’	>10’	

* Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential. Due to effects of use on tread and erosion, steeper pitches must be carefully evaluated based on potential effects of these various factors.

** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

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DCR Guidelines - cont.

USFS Trail Design Parameters (6/18/2002)

Trail Design Parameters provide guidance for the assessment, survey and design, construction, repair and maintenance of trails, based on the Trail Class and Designed Use of the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use MOTORCYCLE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width [Note: If side-slope >50%, increase widths by 6" – 18"]	**One Lane**	Not Applicable: Not designed for equestrians as primary user, though equestrians may be present.	8" – 24" At switchbacks, 36 – 48"	18" – 36" At switchbacks, > 48".	30" – 48" At switchbacks, > 48".	Not Applicable: Not designed for equestrians as primary user, though equestrians may be present.
	Two Lane		Typically not designed for two-lane travel. Passing areas (uncommon) up to 60".	48 " – 60" Occasional passing lanes to 72".	60" – 72"	
Design Surface	**Type**		Native, with limited or no grading. Commonly unstable and soft.	Native with some on-site borrow, pavers, or imported materials. Some loose or soft areas.	Gravel, pavers or other imported materials possible. Relatively firm, stable surface.	
	Obstacles		Soft sand and embedded rock, steps and protrusions up to 12".	Generally smooth with few protrusions exceeding 6".	Smooth, few obstacles. Few 2" – 4" protrusions.	
Design Grade*	**Target Range** (>90% of Trail)		< 25%	< 15%	< 10%	
	Short Pitch Max (Up to 200' lengths)		40% Rarely to 50% on downhill-only travel.	25%	15%	
	Max Pitch Density* **		< 10% of trail	< 10% of trail	< 5% of trail	
Design Cross-Slope	**Target Range**		5% – 10%	5%	3% – 5%	
	Maximum		15%	10%	10%	
Design Clearing	**Width** [Note: On steep side-hills, increase clearing on uphill side by 6-12"]		36" – 48" Some vegetation may encroach into clearing area.	12" – 18" outside of tread edge.	> 18" outside of tread edge.	
	Height		7' – 8''	8'	8' - 9'	
Design Turns	**Radius**		4' – 5'	5' – 6'	6' – 8'	

* Grade variances should be based upon soils, hydrological conditions, use levels, and other factors contributing to surface stability and erosion potential. Due to effects of use on tread and erosion, steeper pitches should be carefully evaluated based on potential effects of these various factors.

** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

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DCR Guidelines - cont.

USFS Trail Design Parameters (6/18/2002)

Trail Design Parameters provide guidance for the assessment, survey and design, construction, reconstruction and maintenance of trails, based on the Trail Class and Designed Use identified for the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use CROSS-COUNTRY SKI		Trail Class 1	Trail Class 2	Trail Class 3*	Trail Class 4*	Trail Class 5*
Design Groomed Width*	**One Lane**	N/A – Not designed or managed for skiers as primary user.	3'-4'. If groomed, width of grooming equipment.	6'-8' (or minimum width of grooming equipment).	8'-10", but typically managed to accommodate two-way passage.	N/A – Not designed or managed for skiers as primary user.
	Two Lane		Typically not designed for two-lane travel. Employ 6'-8' passing areas in steeper sections.	>8' (or min width of grooming equipment) and/or accommodate with passing areas 8'-12' wide.	12'-14'.	
Design Grooming & Surface	**Type**		Coarse compaction. Occasional or no grooming (may be ski-packed). Snowmobile packing sufficient. Tracklayer optional.	Groomed or compacted using implements and/or tracklayer when packed surface is snow-covered, drifted, melted or skied out.	Well-groomed with tiller and/or other implements. Groomed frequently, and when groomed surface becomes degraded or buried.	
	Obstacles [Caused by use, lack of grooming, melt, or surface/subsurface protrusions]		Dips, bumps, or ruts to 12" common and may be tightly spaced. Surface obstacles may occasionally require off-trail bypass.	Generally smooth. Dips, bumps, or ruts to 8" uncommon and widely spaced. Surface obstructions not present.	Consistently smooth. Small, rolling bumps, dips and rises. Surface obstructions not present.	
Design Grade**	**Target Range** (>90% of Trail)		<15%	<10%	<8%	
	Short Pitch Max (Up to 200' lengths)		25%	20%	12%	
	Max Pitch Density***		<10% of trail	<5% of trail	<5% of trail	
Design Cross-Slope	**Target Range**		<10%	<5%	<5%	
	Maximum [For up to 50']		20%	15%	10%	
Design Clearing	**Width**		4'-6' (or minimum width of grooming equipment, if larger). Light vegetation may encroach into clearing area	>1' outside of groomed edge. Light vegetation may encroach slightly into clearing area.	>2' outside of tread edge. Widen clearing at turns or if increased sight distance needed.	

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DCR Guidelines - cont.

Designed Use CROSS-COUNTRY SKI		Trail Class 1	Trail Class 2	Trail Class 3*	Trail Class 4*	Trail Class 5*
	Height [Above normal max. snow level]		6'-8' or height of grooming machinery, if used.	>8' or height of grooming machinery.	10'	
Design Turns	**Radius** [Use Climbing Turns versus Switchbacks for Ski trails whenever possible]		8'-10' if not snowcat-groomed. OR: Minimum based on turning limits of grooming machine.	15'-20' (Provide sufficient radius for grooming equipment).	>25'	

* Trail Classes 3, 4 and 5 may potentially provide accessible passage. If assessing or designing trails for accessibility, refer to current Agency trail accessibility guidance.

** Grade variances should be based upon factors such as common snow type, use levels, tightness of turns, and other factors contributing to surface stability and erosion potential.

*** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

DCR Guidelines - cont.

USFS Trail Design Parameters (6/18/2002)

Trail Design Parameters provide guidance for the assessment, survey and design, construction, reconstruction and maintenance of trails, based on the Trail Class and Designed Use identified for the trail. Exceptions and variances to these parameters can occur, however, when site-specific circumstances demand such exceptions.

Designed Use SNOWMOBILE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
Design Tread Width	**One Lane**	N/A – Not designed for Snowmobile as primary user.	Typically not groomed, but commonly signed. If groomed, 4'-6' (or minimum width of grooming equipment.)	6'-8' (or minimum width of grooming equipment). On tight-radius turns, increase groomed width to >10'.	8'-10'. On tight-radius turns, increase groomed width to >12'.	N/A – Not designed for Snowmobile as primary user.
	Two Lane		Typically not groomed, but commonly signed. If groomed, >8' groomed width.	>11' and/or accommodate with passing areas 12'-14' wide.	12'-16'. On tight-radius turns, increase groomed width to >14'.	
Design Surface	**Type**		Occasional or no grooming or user-packed. Coarse compaction with cat or snowmobile. Use of implements optional.	Groomed or compacted after significant snow accumulations or when moguled/rutted. Use of implements likely.	Well-groomed with tiller and/or other implements. Groomed frequently, soon after significant snow accumulations and before surface is degraded.	
	Obstacles [Caused by use, lack of grooming, or surface and subsurface protrusions]		Dips/bumps/ruts to 24" common and may be tightly spaced. Obstacles may occasionally require off-trail bypass.	Generally smooth. Dips, bumps, ruts to 12" infrequent and widely spaced. Surface obstacles not present.	Consistently smooth. Small, rolling bumps, dips and rises. Surface obstacles not present.	
Design Grade*	**Target Range** [>90% of Trail]		<20%	<15%	<10%	
	Short Pitch Max [Up to 200' lengths]		35%	25%	20%	
	Max Pitch Density**		<10% of trail	<5% of trail	<5% of trail	
Design Cross-Slope	**Target Range**		<15%	<10%	<5%	
	Maximum		25%	15%	10%	
Design Clearing	**Width**		4'-6' (or minimum width of grooming equipment if used). Some vegetation may encroach into clearing area	>1' outside of groomed trail edge. Light vegetation may encroach into clearing area.	>2' outside of groomed trail edge. Widen clearing at turns or if increased sight distance needed.	

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DCR Guidelines - cont.

Designed Use SNOWMOBILE		Trail Class 1	Trail Class 2	Trail Class 3	Trail Class 4	Trail Class 5
	Height [Above normal maximum snow level]		>6' (Provide sufficient clearance for grooming equipment if used).	>7' (Provide sufficient clearance for grooming equipment).	10' (Provide sufficient clearance for grooming equipment).	
Design Turns	**Radius** [Use Climbing Turns vs. Switchbacks for Snowmobiles whenever possible]		8'-10' if not groomed. (Provide sufficient radius for grooming equipment if used – typically 15-20')	15'-20' (Provide sufficient radius for grooming equipment).	>25'	

* Grade variances should be based upon factors such as common snow type, use levels, tightness of turns and others

** Maximum pitch density refers to the percentage of the trail that is within 5% (+/-) of the Short Pitch Maximum Grade.

DCR Guidelines - cont.

Appendix G

Mapping Trails the DCR Way

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February 2006

This document describes the method used by DCR GIS staff to map forest and park trails using GPS (Global Positioning System).

After several years of experience mapping our agency's trail networks, we have developed a methodology that lets us obtain accurate, useful trail data. It requires a fairly high-quality GPS unit that can take point and line features with complex attributes. We have used Trimble GPS units (GeoExplorer II, GeoExplorer3 and 3c, ProXR, and more recently the GeoXM and GeoXT with ArcPad and GPScorrect software). This document does not cover a specific GPS unit; the information should be applicable to any GPS unit of adequate specifications.

The principle concept we use for mapping trails is that of a topological network. In simpler terms, the trails are individual lines that meet at trail intersection points. Lines begin and end where they meet other trails; a single line does not continue through an intersection. This approach has two major benefits: it allows the lines that meet at an intersection to be snapped to an accurate point, and it provides a measure of quality control because the intersection points are coded with an attribute showing how many trails meet there. If the GPS user doesn't map one of the trails that should come into an intersection, it is easy to tell that a trail is missing because the numbers won't match.

Features and Attributes

The GPS unit should be set up to collect point and line features, each of which has several attribute fields. With the Trimble units we have used, some use a file called a "Data Dictionary" which contains information on the types of features that can be collected and what attributes are needed for each, and some collect data into a shapefile, which can be customized to have a form where the user can enter in similar attribute information. In both cases some of the attributes can be chosen from a picklist (which limits the possible attribute values and ensures consistent spelling). For both feature types the current date and time are collected as attributes, and some other GPS information may be collected depending on the hardware and software.

For lines, the attributes collected are:

Type: Trail, Road, or Other
Condition: Good, Fair, or Poor
Surface: Natural, Paved, Gravel, or Other
Width: 0-5', 5-10', or 10'+
Comments: a text field that the user can type anything into

DCR Guidelines - cont.

For points, the attributes collected are:

Type: Trail Intersection, Road Intersection, Trail/Paved Rd., Trail/Unpaved Rd., Paved/Unpaved Rd., Trailhead, Dead End, [those first seven are intersection types] Parking Area, Gate, Bridge, Stream Xing, Campsite, Scenic/View, Utility Lines, Wetland, Vernal Pool, or Other
Num: 0, 1, 2, 3, 4, 5, or 6+
Comments: a text field that the user can type anything into
Photo Taken: True/False – whether the user took a photo at this point (default is false)
Photo ID: If they took a photo, the number of the photo
Field Note: If they wrote a note (on paper) about this point, the number of the note

It is important to familiarize yourself with the possible attribute values (especially the many values for point Type) so that you will be on the lookout for these features in the field. For instance, you need to be aware that if you cross a stream or bridge, you should take a point there.

Field Work

Typically your day will start at a parking lot. This is a good opportunity to take your first point of the day – Type should be Parking Area. This will also help you get back to your vehicle at the end of the day! If you start at a point that is not a parking lot, it may be a Trailhead. After taking this first point, start your first line. Walk along this line until you get to the first intersection (an intersection is anywhere that the trail splits or hits another trail or road). When you get to the intersection, stop your line and enter its attributes. These attributes apply to the entire line. If a section of trail changes dramatically at some point other than an intersection (for instance, if it goes from being gravel to dirt, or from being 15 feet wide to 4 feet wide, etc.) then you'll need to end the line at that point, enter the attributes, and then start a new line. This way the attributes will be accurate for the line they are associated with.

Now you are at an intersection. Take a point at the intersection, giving it a Type of Trail Intersection (or Road Intersection, Trail/Paved Rd. or Trail/Unpaved Rd. or Paved/Unpaved Rd. as the case may be) and then enter the number of trails that meet at this intersection into the Num field. IMPORTANT: this number includes all the possible ways you can go from the intersection, including the trail you came in on. A trail that splits has a value of 3; a place where two trails cross has a value of 4 (see images below). Entering this number correctly is essential.

A three-way intersection (red dot is intersection point)

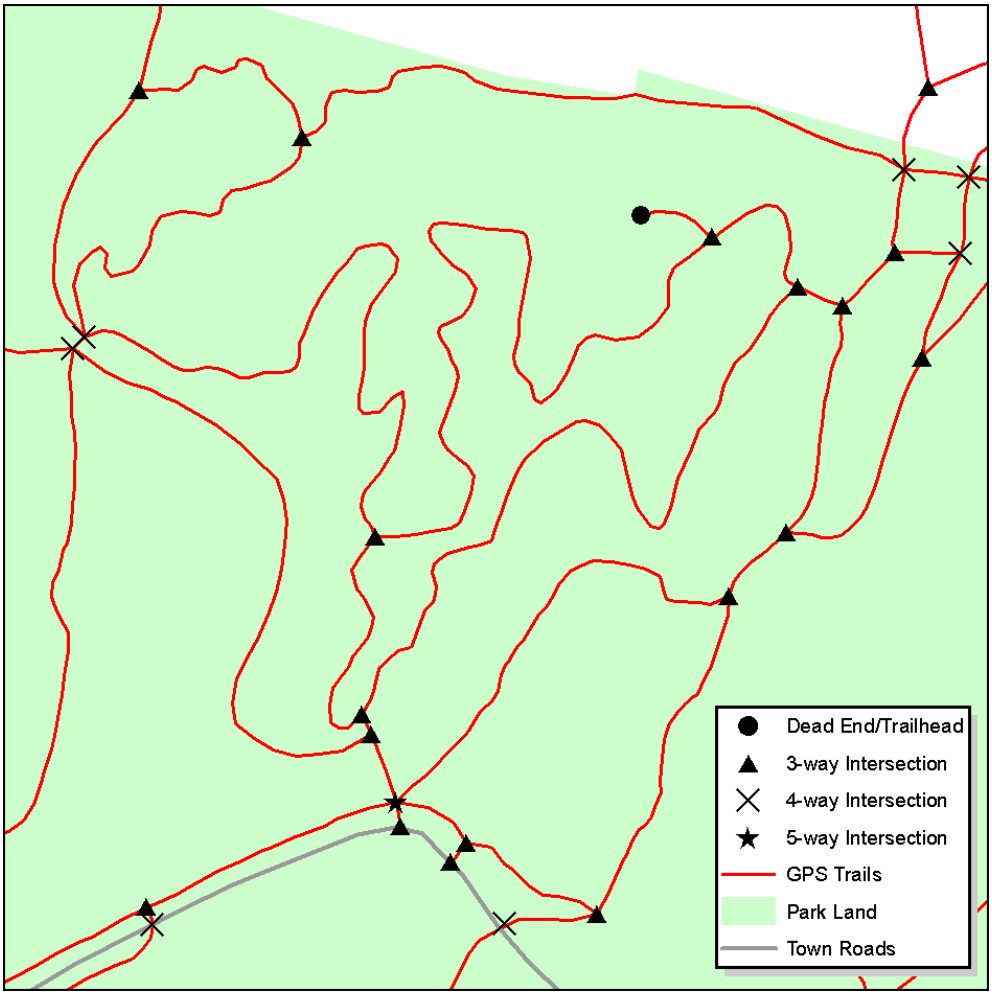
A four-way intersection

DCR Guidelines - cont.

A five-way intersection

A two-way "intersection" is just a point along a trail (not actually an intersection!)

A one-way "intersection" is a dead end or trailhead or parking lot (there is only one way you can go)



Here's an example of part of a trail map showing trail intersection points symbolized by the number of trails that meet at that intersection.

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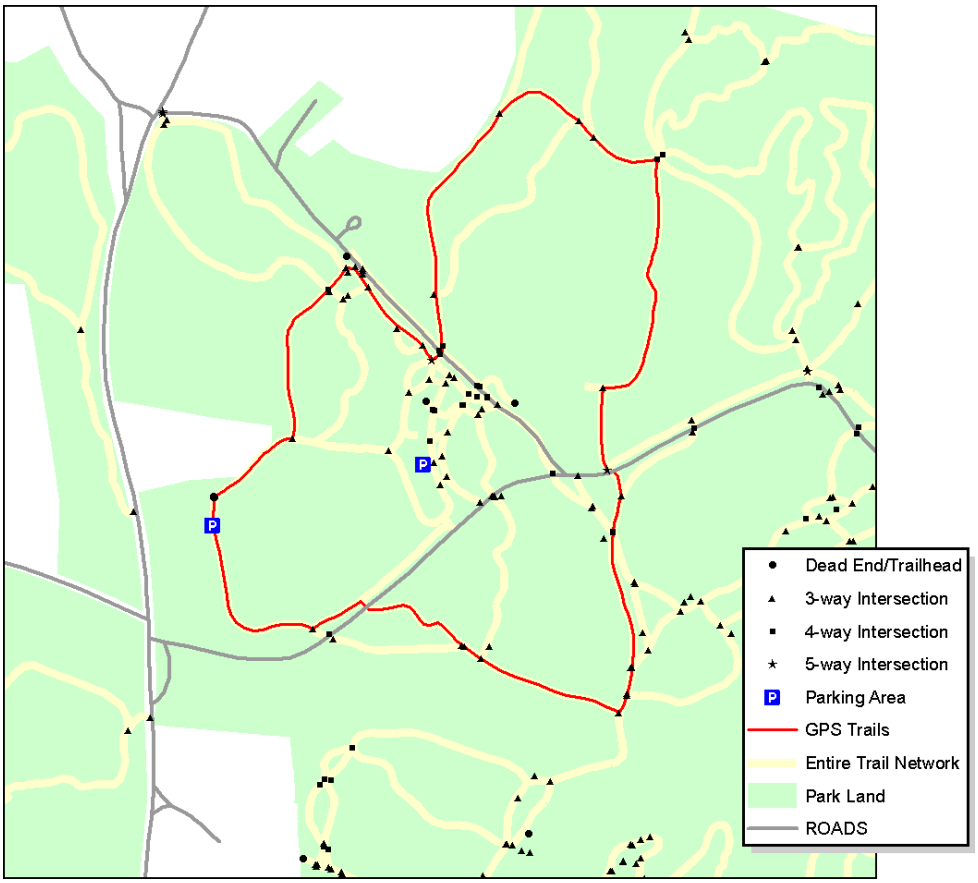
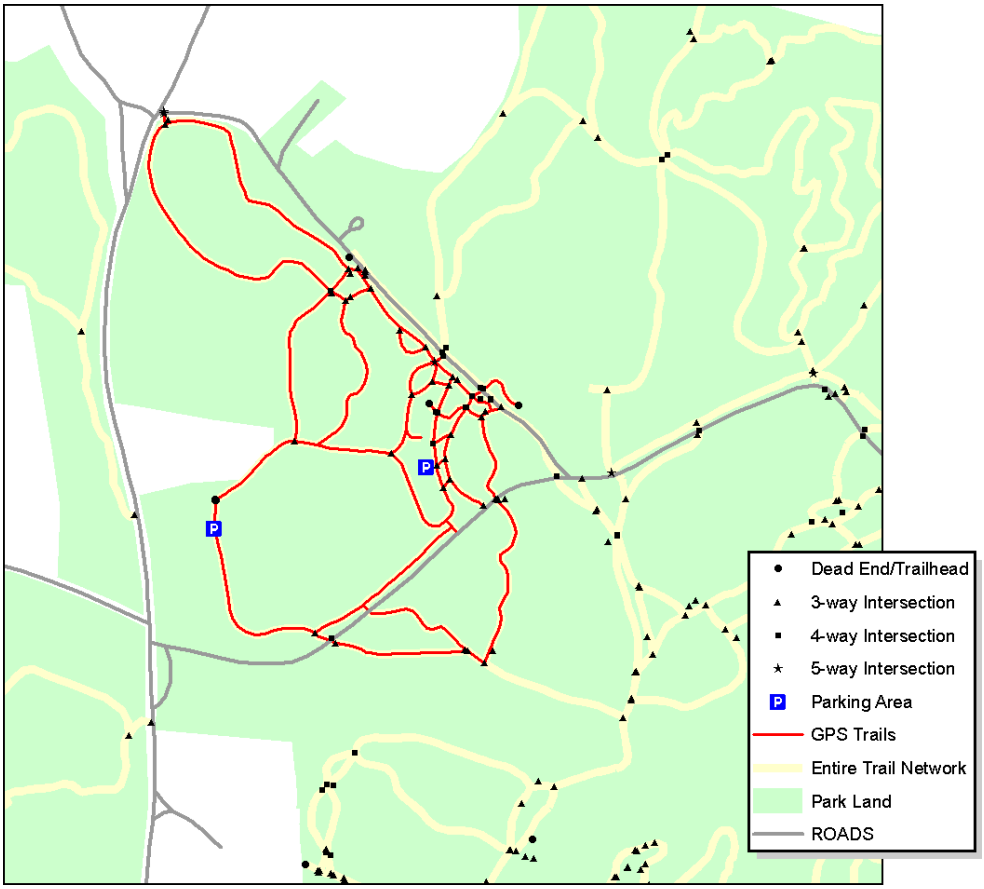
DCR Guidelines - cont.

Now you need to choose which way to go next. The way you walk when GPSing trails is very different from the way you walk when you're out for a pleasant walk in the woods. If you walk a long loop on a trail through the forest, you will miss all the side trails and you'll have to go back for them later. It is best to try to walk every side trail in a section of the park or forest before moving on to another section. This way you won't have to go back to get that one piece of trail you missed. Inevitably you will end up backtracking quite a bit to get to every trail section. Avoid the instinct to just keep walking on the main trail.



This is a bad example of how to walk when GPSing trails. The user walked a large loop, but will have to go back and GPS all the side trails he missed. This was basically a complete waste of time, since he'll end up walking almost all these trails again to get to the missed trails.

DCR Guidelines - cont.



This is a good example of how to walk. The user chose a small area of the park to concentrate on and GPSed every side trail in that area. Now that part of the park is done and the next day she can start on a new area.

Continue walking trail sections and collecting intersection points (and other points like bridges, gates, stream crossings, etc.). Eventually you will build up a connected network of intersection points and trail sections that will fill the whole park. For all but the smallest parks, this will take more than one day. If you have time between fieldwork days, make a map of your progress, symbolizing the intersection points by how many trails are supposed to meet there. This will help you see which areas you need to return to (if you see a four-way intersection with only three trails sticking out of it, you'll need to return to get that missing trail). If the park is segmented by paved town roads (like in the image above), try not moving to a new section across a road until you are sure you have gotten every trail in the section you are in. Remember, you are collecting data, and if you only collect 90% of the trails in the park, your dataset is worse than useless: it is misleading.

DCR Guidelines - cont.

Sometimes park users create their own trails that are not considered official by the park management. It is a good idea to GPS these trails anyway, even if they are clearly unofficial. This way the park managers can have a clear record of where the trails are so they can decide what to do about them (either block them off, ignore them, or make them into an official trail). They can be removed from the trail data later, but if you don't GPS them, no one will ever know about them. If you think a trail is unofficial, put a note in the Comments attribute field.

GPS techniques

For points, the GPS unit should be set up to average several position readings to get a more accurate point. We have generally used 30 position readings, one per second. It is important not to move away from the point while taking these positions.

For lines we generally set the GPS unit to take a reading (vertex) every 4 seconds if on foot; if the user is riding a bike, car, or other vehicle, set it to take a reading more often. When walking a line it is important to be aware of the GPS status—if your GPS unit stops receiving positions you need to slow down or stop until it resumes collecting vertices. If you keep walking your line will have long straight segments that will not accurately reflect the trail shape. This is especially important if the trail has sharp turns; make sure you slow down and collect a position (vertex) at any sharp corner in the trail. Some GPS units beep with every vertex collected; some will make a sound if they stop getting readings, and some may indicate GPS status visually.

DCR Guidelines - cont.

Appendix H

DCR – NHESP Biodiversity Conservation Initiative
Conditions for Yellow Guidance Codes

1. The trail segment does not cross a stream, river, pondshore, lakeshore, or muddy bank. The trail work covers less than 100 meters of trail length.
2. The trail is not on a river bank.
3. No work is carried out within 25' of a stream.
4. No work is carried out within 50' of a stream.
5. All trail work must be done entirely with hand tools; if machinery is used, turtle sweeps must be done over the entire work area (including areas where vehicles are driven to the work area) prior to each day's work.
6. All trail work shall be carried out from October 1-April 15; during the rest of the year, if machinery is used, turtle sweeps must be done over the entire work area (including areas where vehicles are driven to the work area) prior to each day's work.
7. No work is carried out between April 15-August 10.
8. No work is carried out between May 1-July 20.
9. No work is carried out between April 1-July 15.
10. No work is carried out between April 1-August 31.
11. No work is carried out between May 20-August 1.
12. No work is carried out between March 15-May 15.
13. No work is carried out between March 15-August 1.
14. No work is carried out between January 1-August 15.
15. No work is carried out between May 20-July 20.
16. No work is carried out between April 15-July 20.
17. No work is carried out between April 15-August 31.
18. Before any work, surveys must be conducted as described in the definition below. If no vernal pools or breeding amphibians are found, then the work may proceed. If any vernal pools or breeding amphibians are found, then NHESP must review Site Specific Plans under MESA before work proceeds. A report of the survey results must be submitted to NHESP **before** work proceeds, regardless of whether vernal pools or breeding amphibians are found or not. Note that these surveys must be conducted at the appropriate time of year, as described in the survey definition.
19. Between April 15 and October 15, no mowers or brush-hogs can be used. If mowers or brush-hogs must be used, then either the vegetation must be less than 1 foot high, or the vegetation must be swept with a long stock immediately prior to mowing or brush-hogging. Between October 15 and April 15, mowers or brushhogs may be used with no additional conditions.
20. Rocks more than 20 feet from trail must not be moved.
21. Drainage must not be directed towards rock ledges, rock piles, or talus slopes.
22. Drainage must not be directed towards rock ledges, rock piles, or talus slopes; rocks more than 20 feet from trail must not be moved.

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DCR Guidelines - cont.

23. From May 1 to October 15, only woody plants may be cut or removed and only hand-held manual or mechanized tools may be used. From October 15 to May 1, mowing or weed-whacking is allowed. No vehicles or heavy machinery may be used unless the ground is frozen.
24. No soil is removed or disturbed (no digging or re-grading) outside of existing trail bed. (To be revised.)
25. No woody vegetation made be cut or removed, except small branches growing into the corridor of foot trails, or dead or dying stems and trunks leaning or fallen into the trail corridor, which may be removed with hand tools or chain saws. For this purpose, the foot trail corridor is defined as a rectangle 1 foot wider than the footprint of the existing trail and 8 feet high centered over the foot trail. No branches over 2 inches in diameter may be removed. No vehicle-mounted equipment may be used for trimming woody vegetation in the trail corridor.
26. No spruce trees may be cut or removed.
27. No herbaceous vegetation may be removed from rock walls, ledges, or outcrops.
28. Puncheons must be less than 20 feet long and represent less than 5% of the entire trail segment.
29. From June 1 to September 30, only woody plants may be cut or removed and only hand-held manual or mechanized tools may be used. From October 1 to May 31, mowing or weed-whacking is allowed. No vehicles or heavy machinery may be used unless the ground is frozen.
30. No aquatic plants may be removed by manual, mechanical, or chemical means; structures over water must be less than 4 feet wide.
31. From July 1 to March 15, only woody plants may be cut or removed and only hand-held manual or mechanized tools may be used. From March 16 to June 30, mowing or weed-whacking is allowed. No vehicles or heavy machinery may be used at any time.

Definitions
*Turtle sweep: the entire trail in question has been thoroughly searched for turtles on and within 5 feet of trail; if a turtle is found it should be moved approximately 20 feet (not>50 feet) away from work limits.

**Surveys: Amphibian/Vernal Pool Surveys must include the following parameters:

- Surveys must be completed by personnel who are pre-approved ahead of time by NHESP to conduct vernal pool and/or rare salamander surveys. Rather than provide such approval on a project-specific basis, NHESP is willing to annually approve a list of qualified DCR staff and/or contractors, and update the list as needed.
- Surveys will include egg mass counts during the obligate amphibian breeding season (March - May); the specific timing of the surveys should be determined by documented amphibian movement phenology in a given region of Massachusetts in a given year (e.g., check Vernal Pool ListServ, a Yahoo Group List Serve monitored by the Vernal Pool Association). Sites should be surveyed for all vernal pool obligate species, including fairy shrimp, and also facultative amphibian species, if present at this time of the year.
- A minimum of two (2) surveys should be conducted with at least 1 week (i.e., 7 days) between surveys (since salamanders may take up to 6 weeks to lay all of their eggs) and should be conducted within all suitable breeding wetlands identified by the vernal pool expert within 100 feet of trails. Individual counts for each visit and a total count (or highest number observed) should be included with survey results.
- Results (regardless of outcome) must be reported to NHESP as a Site Specific Report with detailed trail maintenance information and surveys results, which should include: completed Vernal Pool Certification Forms (if applicable), maps (topographic and aerial maps), GPS coordinates of each site/pool surveyed, and photos of sites (i.e., vernal pool) and any obligate or facultative species found using the pool. Additionally, if a rare salamander is found in the vernal pool, a Rare Animal Observation Form must be included with the report.
- If a new or larger culvert is needed within a trail, there must be an evaluation conducted to determine if there are any hydrological effects on any pools in the vicinity of the trail (i.e., within 100 feet of the trail and culvert location). If vernal pool habitat hydrologically connected to the culvert replacement area is not identified, maintenance work may proceed; otherwise NHESP needs to review Site Specific Plans for maintenance work.

DCR Guidelines - cont.

Appendix I

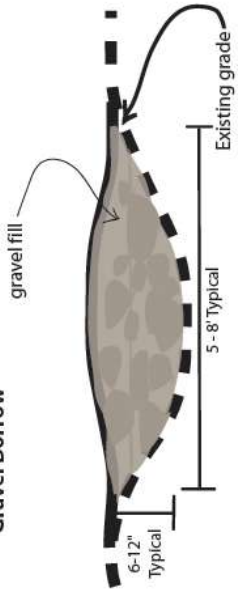
Additional Trail Maintenance Specifications

Mudholes/Protruding Rocks, Roots/Exposed Ledge

Causes:	Mudholes and ditches are depressed areas of notable deviation in grade from the surrounding area within the trail. Mudholes tend to be rounded depressional features whereas ditches are linear. After rain events, these depressional areas are often found to contain water and present and obstruction to some trail users. Mudholes in very tight soils (silts/clays) tend to pond water for longer periods of time and in some instances, where soil permeability is very low, ponding can impact the functionality of regulated wetlands.
Standard Repair:	The standard repair for mudholes and ditches is placement of a gravel/cobble mixture with compaction. Mudholes adjacent to wetlands should be flanked by erosion and sedimentation control structures such as hay bales or silt fencing during construction.
Regulatory Considerations:	Placement of fill within a wetland would require an Order of Conditions from the local Conservation Commission (Cons Com) and, possibly a permit from the U.S. Army Corps of Engineers and MA DEP. Fill placed within the "buffer zone" of the wetland may also require a permit from the Cons Com. The buffer zone will differ from town to town.
Other Repair Options:	Trails with frequent mudholes and ditches should be evaluated to determine if the standard repair would result in a sustainable trail. Large numbers of severe mudholes may be an indicator of a non-sustainable trail.

Photo of Problem Type: Mudholes

Standard Repair Diagram: Gravel Borrow



Gravel specification: 2/3 processed gravel, 1/3 bank run gravel

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DCR Guidelines - cont.

Stream & Wetland Crossings - Narrow Trails

Causes: Trails often cross intermittent streams, perennial streams or wetlands and impacts to water quality can occur if the trail users cannot cross the resource without directly contacting the water and stream substrate.

Standard Repair: Along narrow streams used for non-motorized purposes, streams can be crossed in several ways depending on the size and type of the stream and the trail's geometric relationship to the water feature. For intermittent streams, placement of flat stone along the stream bed may be appropriate. Another option is the placement of a pipe or culvert to convey flow under the trail. For perennial streams, an anchored bridge is preferred, but culverts may also be used. For wetlands (marshes, swamps) the use of a bog bridge (aka puncheon) or a boardwalk can be used although boardwalks are preferred as they are elevated above the ground.

Regulatory Considerations: Placement of fill within a wetland would require an Order of Conditions from the local Conservation Commission (Cons Com) and, possibly a Section 404 Permit from the U.S. Army Corps of Engineers and a 401 Water Quality Certification from the DEP. Fill placed within the "buffer area" of the wetland may also require a permit from the Cons Com. The buffer area will differ from town to town. The crossing of perennial streams must conform to the MA DEP Stream Crossing Standards.

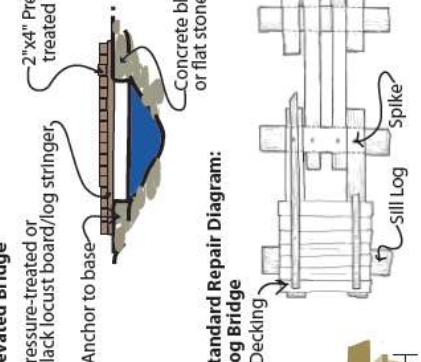
Other Repair Options: Bridge material options include steel or fiberglass pre-fab.

Information Sources: USFS, http://www.ettechtonics.com/pedestrian_and_trail_bridges/

Photo of Problem Type: Intermittent Stream Crossing

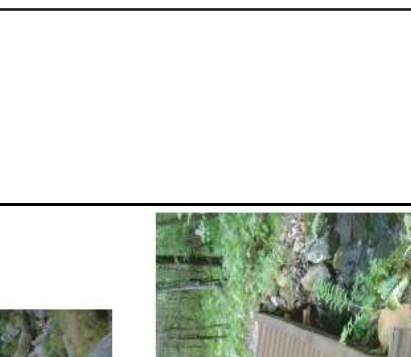
Standard Repair Diagram: Bog Bridge

Standard Repair Diagram: Elevated Bridge



Standard Repair Diagram: Bog Bridge

Photo of Problem Type: Perennial Stream Crossing



Standard Repair Diagram: Elevated Bridge

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DCR Guidelines - cont.

Appendix J

Erosion and Sedimentation Control Techniques

SEDIMENT BARRIERS

Definition

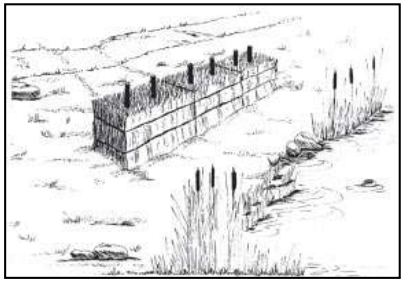
An erosion control device installed across and at the toe of a slope, usually consisting of hay, straw bales, or geo textile materials, to prevent sediment from entering wetlands or open water.

Conditions where appropriate

• When the erosion which would likely occur is in the form of sheet or rill erosion.
• Where temporary sediment retention is necessary until permanent vegetation is firmly established.

Bales

Guidelines for bale installation



• Bales shall be placed in a single row on the contour with the ends tightly adjoining, not to exceed 600 feet in length.
Turn up the ends and begin a new row, if needed.
• The bales should be embedded into the ground at least 4" deep.
• After placing bales, they should be anchored in place with two stakes per bale driven through the bale and into the ground.
• Bales should be used where the area below the barrier has exposed soils and would be impacted by water flowing through a barrier.
• Inspections should be frequent. Repair or replacement should be done promptly, as needed.

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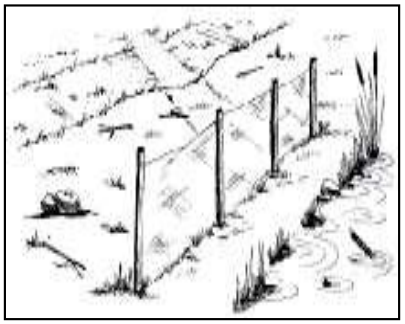
DCR Guidelines - cont.



Silt Fencing: A silt fence is a temporary sediment barrier consisting of filter fabric attached to supporting posts and entrenched in the soil. Silt fence is a sediment control practice, and is intended to be installed where sediment-laden water can pond, thus allowing the sediment to fall out of suspension and separate from the runoff. It is not intended to be an erosion control practice. Improperly applied or installed silt fence will increase erosion. A silt fence detains sediment by ponding water behind it and allowing sediment to settle out.

Silt fence can be used where:

- The slope is gentle, allowing temporary ponding and deposition of sediment;
- Sheet runoff would occur
- The size of the drainage area is no more than 1/4 acre per 100 linear feet of silt fence;
- The maximum flow path length above the barrier is 100 feet (30.5 m);

Guidelines for silt fencing

• If wooden stakes are utilized for silt fence construction, they must have a diameter of 2" when oak is used and 4" when pine is used.
• The filter fabric should be purchased in a continuous roll and cut to the length of the barrier to avoid the use of joints. When joints are unavoidable, filter cloth should be spliced together only at a support post, with a minimum of a six-inch overlap, and sealed.
• When wire support is used, a standard-strength filter cloth maybe used. When wire support is not being used, extra-strength cloth should be used.
• The fabric should be stapled or wired to the fence and a minimum of 4" of the fabric should be extended into the trench.
• The trench should be backfilled and the soil compacted over the filter fabric.

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DCR Guidelines - cont.

Additional considerations•

Inspect bales and barriers after heavy rains.

• Sediment deposits should be removed when the level of deposits reaches one-half of the height of the bale or the silt fencing.
• Barriers should be removed when the area has revegetated and the barriers are no longer needed. The sediment should be removed or graded out before removal.
• Straw and hay bale barriers require more maintenance than geo textiles due to the permeability of the bales being less than that of silt fencing.
• Silt fences should be removed when they have served their useful purpose, but not before the upslope area has been permanently stabilized.
• For specific information regarding the different types of geo textile materials and their construction and maintenance guidelines, contact the Department of Environmental Services, county conservation district, or a local industrial supplier.