



Marblehead Former Railroad Right of Way Trail Plan

November 2020



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Contents

Introduction 1

Background..... 2

Existing Conditions..... 5

Community Outreach 9

Proposed Conditions 13

Additional Recommendations 28

Appendix A: Maintenance Plan Guidance..... 30

Appendix B: Concept Designs 34

Introduction

The Marblehead Rail Trail Plan is an exciting vision for the future of how this trail can better serve a growing community of users. Funded with support from the MassTrails grant program, this plan was created in collaboration with the greater Marblehead community. This vision for a safe, accessible, and connected Marblehead Rail Trail will allow community members to enjoy the trail for years to come.



Figure 1 The trail adjacent to the Tower School

Background

Origins of the Marblehead Rail Trail

The corridor that is now the Marblehead Rail Trail was established for the Eastern Railroad in 1838, and was later transferred to the Boston & Maine Railroad.¹ The Salem branch of the railroad connected passengers to the main line with service to Boston, and the Swampscott branch was added in 1873 to allow direct service to Boston. Rail service along these tracks was discontinued in the late 1950s and the right-of-way has functioned (with varying degrees of formality) as a recreational trail ever since.²

Since the 1960s, the former rail corridor has also served as a conduit for utility infrastructure, which was installed by and is still maintained by the Town of Marblehead Water and Sewer Commissioners and the Marblehead Municipal Light Department. In 2018, the Board of Selectmen signed a memorandum of agreement with the W&S Commissioners and the Light Department to establish a recreational easement, with the obligations and responsibilities of all parties related to the Marblehead Rail Trail contained therein. This agreement ensures that the right-of-way can continue to effectively and sustainably serve its purposes as both a utility corridor and a recreational trail.

Linking the Commonwealth by Trail

The proposed improvements to the Marblehead Rail Trail come as trails in general, and rail trails specifically, are playing an increasingly significant role in daily life and recreational activity across Massachusetts. Communities across the Commonwealth have capitalized on Massachusetts' rich railroad history to convert unused rail lines to shared use paths, providing 408 miles of rail trail and 70 total trails³. This work is supported by a broad coalition of advocacy groups and several state funding sources are available, including the MassTrails Grant Program and the MassDOT Complete Streets Funding Program, as well as federal programs like Transportation Alternatives Program.

North Shore cities and towns have shown initiative in expanding their rail trail networks to create new connections within and between their communities. To the south, the City of Lynn is working to extend the Northern Strand Community Trail to downtown Lynn and the coastline⁴, while the Town of Swampscott is moving forward on construction for a path extending from the terminus of the Marblehead Rail Trail⁵. To the north, construction is underway in the City of Salem on the final segment of a continuous off-street path from downtown Salem to the Marblehead Rail Trail⁶, and the City of Peabody has received grant funding to extend the Independence

¹ <https://www.trailink.com/trail/marblehead-rail-trail/#:~:text=Marblehead%20Rail%2DTrail%20Description&text=The%20rail%2Dtrail%20follows%20a,from%20Boston%20to%20Portland%2C%20Maine.>

² *Marblehead's Emerald Necklace: The Origins of The Path and The Open Spaces It Connects* by Dennis P. Curtin

³ <https://www.railstotrails.org/our-work/united-states/massachusetts/>

⁴ <https://mass.streetsblog.org/2020/02/12/state-breaks-ground-on-new-links-to-northern-strand-trail/>

⁵ <https://swampscottrailtrail.org/>

⁶ https://www.salemnews.com/news/local_news/bike-path-almost-complete/article_7a7f3eda-e9a8-5030-a1d1-5b7b9dc11107.html

Greenway east to downtown Peabody⁷ and west over Route 1⁸. Improving the Marblehead Rail Trail will sustain this momentum to connect North Shore communities with high quality recreational trails.

Connecting Community Assets

Adding to the utility and importance of the Marblehead Rail Trail are the connections it provides to key destinations in the community. Thanks to successful community-led conservation efforts, Marblehead has rich natural assets, many of which are connected to one another and to neighborhoods via the Marblehead Rail Trail. The potential for recreation and exploration along the path is extended by the walking trails and open spaces available within Wyman Woods, Ware Pond, Hawthorn Pond, and more. A number of K-12 schools are connected to the path, including Marblehead High School, Marblehead Veterans Middle School, Tower School, and the new Bell elementary school, offering an option for students to walk and bike to school. Independent counts show that the number of students riding bikes to school has increased greatly



Figure 2 Trail users crossing Smith Street

in the past few years, from 60 in 2017 to over 200 in 2019. Several important places to the Jewish community are located along the path, including the Epstein Hillel School, Jewish Community Center of the North Shore, Temple Sinai, and Temple Emanu-El. Key locations for Marblehead civic life, like the Post Office and the Abbot Public Library, are readily accessible via the Marblehead Rail Trail. Finally, the path connects neighborhoods to the south and west to Marblehead’s vibrant downtown core.

Marblehead’s Complete Streets

The term “Complete Street” describes a street that is designed and operated to provide safe access and travel for all users, including people biking and walking. In 2018, the Marblehead Board of Selectmen adopted a Complete Street Policy, committing the Town to create a transportation network that accommodates all users regardless of their ability, age, or chosen mode of travel. Through the policy, the Board affirmed the Town’s commitment to apply Complete Streets principles to Marblehead’s streets to advance the safety, health, economic viability, and quality of life of the Marblehead Community.

⁷ https://www.salemnews.com/news/local_news/peabody-wins-grant-to-help-pay-for-greenway-extension/article_b4f77d20-3941-5b3b-bfc0-cdff34b3000d.html

⁸ <https://www.greenway.org/stories/new-greenway-segments-open-from-boston-to-new-hampshire>



Figure 3 Marblehead CSPP

The Town's Complete Streets Policy was approved by the MassDOT Complete Streets Funding Program, and Marblehead created and submitted a project prioritization plan in 2019, making the Town eligible to apply for and receive grants to support the construction of Complete Streets projects. The Marblehead Rail Trail improvement project is ranked as the Town's highest-priority Complete Streets project. Marblehead will apply for a grant from the Complete Streets Funding Program as part of the first funding round of the 2021 fiscal year to support the implementation of the plan.

Existing Conditions

The Marblehead Rail Trail is 4.5 miles long, and includes two branches—one running west to the Salem line, the other southwest to Swampscott—that converge at one leg of the old wye (triangular junction of rail lines that allow for trains to reverse direction) by the Village Street bridge. There is a connecting trail between the two branches, formerly the second leg of the wye, approximately 500 feet southwest of the Village Street junction, west of the substation. It is currently overgrown and not maintained. The right of way ranges from 30' to 60' wide, although the trail surface itself is at most 10' wide. The trail has a distinctive rustic, nature-trail character, which is highly valued by trail users. Passing through many of Marblehead's conservation areas, the trail provides access to woodlands, wetlands, and coast, and the dense vegetation along the corridor provides a sense of seclusion. The trail is widely used and well-loved by the community. The trail facility is modest; there are no wayfinding features, interpretive signage, or amenities aside from a few trash receptacles at street crossings and signs identifying the conservation areas.

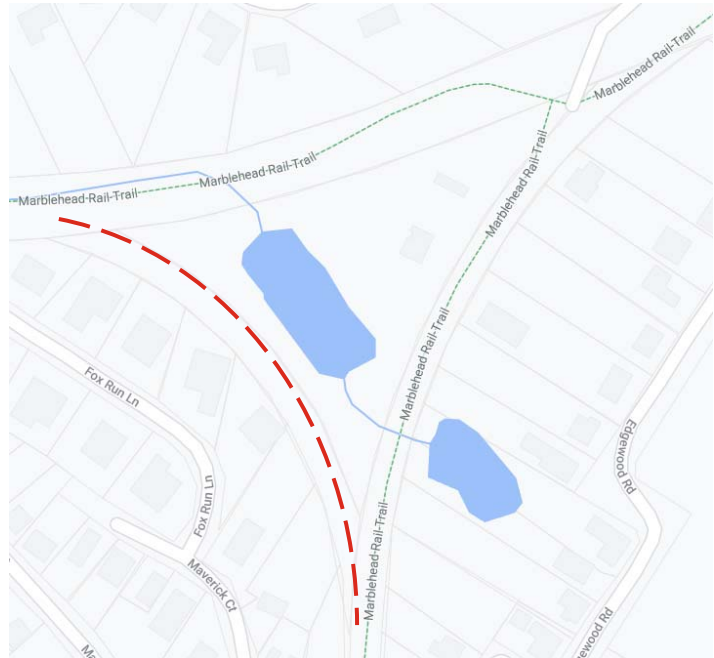


Figure 4 Existing rail trail shown in green, with unmaintained segment in red

Within the right-of-way, multiple types of utilities are present. The electric substation located within the wye serves the entire town of Marblehead, and there are powerlines running the length of both the Salem and Swampscott branches, as well as internet and telephone cables. The utility poles on the Salem branch are owned and maintained by Marblehead Municipal Light Department, while Verizon Wireless owns the utility poles on the Swampscott branch. In addition to utility poles and overhead wires, underground pipes are also located within the corridor, maintained by the Water and Sewer Commission. Access to the pipes is performed through manholes, which can be seen on the trail.

The trail's gravel surface varies widely in its condition, showing significant erosion damage in some areas. While the section of trail between Rockaway Avenue and Seaview Avenue was regraded and resurfaced in 2018, other sections remain untouched. Where the trail embankment is steep, informal access paths can contribute to erosion problems. Trail width varies significantly, from 4 to 10 feet wide. Gates, steep grades, and lack of curb ramps make roadway crossings challenging and potentially unsafe for trail users. Several crossings are completely inaccessible



Figure 5 Utility cover in informal access point

to people using wheelchairs, mobility devices or adaptive cycles, while most are difficult and inconvenient for people walking, biking, and pushing strollers.

Overall Trail User Experience

Salem branch

From the Wye, the Salem branch extends west through Hawthorn Pond, Wyman Woods, and Lead Mills conservation areas, ending at Lafayette St. (MA 114), where the Salem Bike Path begins. The natural character of the trail is especially pronounced on this branch, and users can observe native plants and wildlife along the corridor. Width of the gravel trail surface varies between four and ten feet. There is only one street crossing (West Shore Drive), which was identified in the Town's Complete Streets prioritization plan as a high priority for improvement. Field visits by the consultant team identified the following challenges and barriers to comfortable use of the Salem branch:

- Drainage problems on the trail surface lead to muddiness and puddles, making the Salem branch unpleasant or unusable in rainy or icy conditions
- The bollards on the bridges in the Lead Mills Conservation Area are difficult or impossible to navigate on a bike, using a mobility device, or pulling a child trailer
- Protruding rocks in the surface can be hazardous to trail users
- Vegetation is overgrown in some areas, narrowing the trail and obscuring sight lines at the street crossing on West Shore Drive
- Invasive plants are present in some areas



Figure 6 Segment of the Salem Branch of the trail



Figure 7 Bollards on one of the bridges in Lead Mills Conservation Area

Swampscott branch

The Swampscott branch extends southwest from downtown Marblehead to the Swampscott line (approximately 125 feet south of Seaview Avenue), passing through neighborhoods and natural areas. This branch runs past the Ware Pond Conservation Area, Marblehead High School, the US Post Office, and other commercial and cultural destinations. Trail width on this branch varies between four and ten feet. The Swampscott branch has significantly more street crossings than the Salem branch, with six crossings total. Field visits by the consultant team identified the following challenges and barriers to use on the Swampscott branch:

- Drainage problems on the trail surface lead to muddiness and puddles, making the Swampscott branch unpleasant or unusable in rainy or icy conditions

- Vegetation is overgrown in some areas, narrowing the trail and obscuring sight lines at the street crossings
- The trail is narrow in places, which makes navigating the hillier segments approaching streets especially challenging
- Presence of major obstacles in the trail—including rocks, concrete slabs, tree roots, and patches of large aggregate resulting from trail surface erosion—makes the trail hazardous to users



Figure 8 Steep segment of the Swampscott Branch



Figure 9 Rutting in the trail surface from drainage problems

Street Crossings

Site documentation by Toole Design Group indicate the urgency of improving the trail’s eight street crossings. Severe crashes have occurred at trail crossings in the past, notably a pedestrian crash at the Pleasant Street crossing which resulted in the death of a high school student in 2009. In October 2020, while this plan was being developed, another cyclist was struck and severely injured at the Pleasant Street crossing. While each street crossing has a unique context, many present common issues:

- Drivers at the busier trail crossings are driving fast and do not always yield to trail users
- Steep grades at some crossings make access difficult for people biking or using mobility devices
- Steep grades also make the approach to crossings from the trail more dangerous, as it’s harder to control speed, and fast-flowing runoff leaves the trail with an uneven, rutted surface

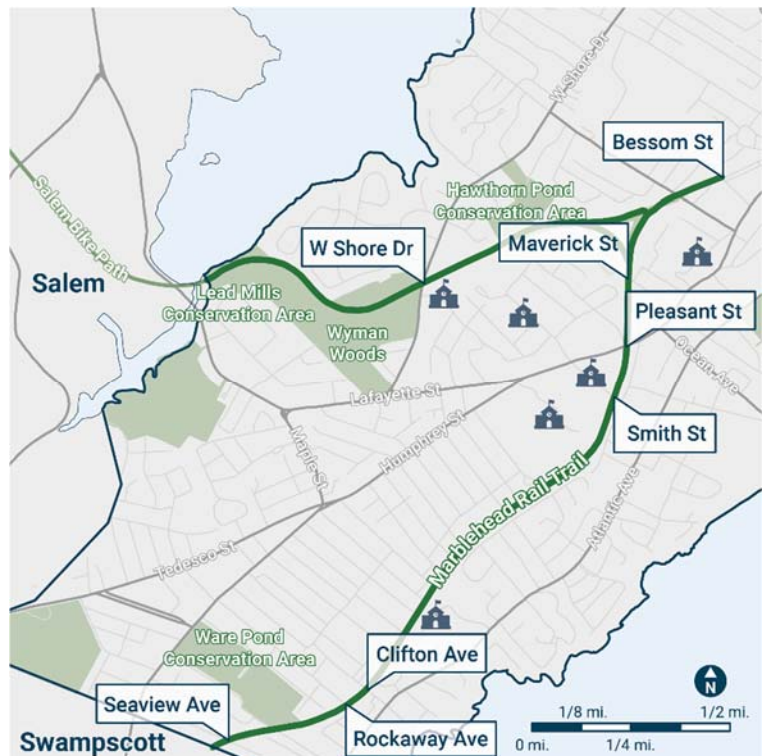


Figure 10 Marblehead Rail Trail street crossings

- The cable barriers which keep unauthorized motor vehicles off the trail leave only narrow openings for trail users to pass through, making access especially difficult for people biking, using mobility devices, or pulling child trailers
- Crosswalks at street crossings are sometimes misaligned with the trail
- Vegetation can obscure sightlines at crossings



Figure 11 Misaligned crosswalk at Clifton Ave crossing



Figure 12 Steep grade entering roadway at Rockaway Ave crossing

Accessibility

The challenges which the trail presents for all trail users are especially magnified for people with disabilities and/or people who use mobility devices, like wheelchairs or walkers, as well as people who use adaptive cycles to accommodate disabilities. Accessibility is a central consideration to ensure people of all ages and abilities can comfortably enter and exit the trail from its access points at street crossings, navigate street crossings, and enjoy the experience of traveling along the trail itself. Some accessibility issues observed on the trail include:

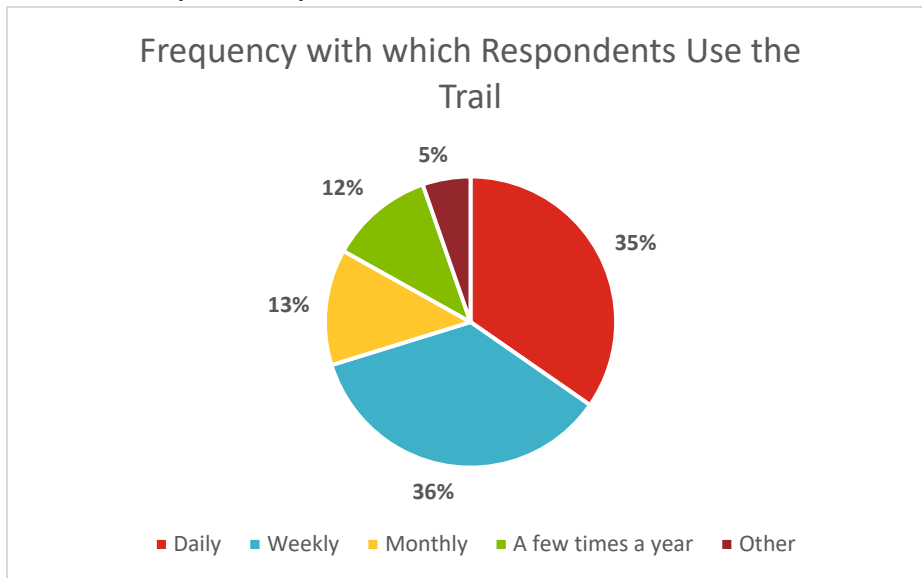
- Street crossings are difficult to navigate, with steep grades approaching the street and narrow clearance to enter and exit
- The quality of curb ramps at street crossings is variable; some crossings lack curb ramps altogether
- Narrow or more overgrown parts of the trail can be less comfortable for people using mobility devices
- There are no suitable places to rest along the trail (for example, pull-off areas or benches)
- Inconsistent surface quality can make for a less predictable and less comfortable experience for people using mobility devices and/or with limited mobility

Community Outreach

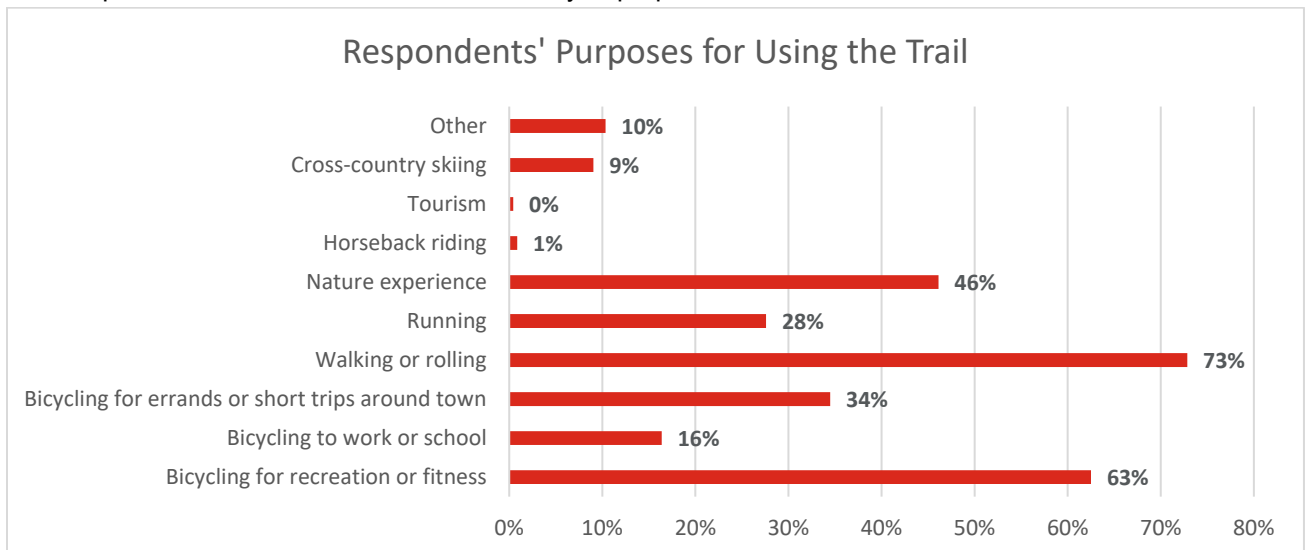
The community outreach process for this project was designed to engage the public and stakeholders to understand how the rail trail is used, what aspects of the trail should be protected and preserved, and what improvements are desired. The project team conducted stakeholder interviews, provided an online survey distributed by Town staff, and hosted a public workshop on Zoom which included facilitated small-group discussions.

Survey Respondents

- The survey received 232 complete responses
- 90% of respondents live in Marblehead, with an additional 6% living in Salem or Swampscott
- Most respondents are daily or weekly trail users:



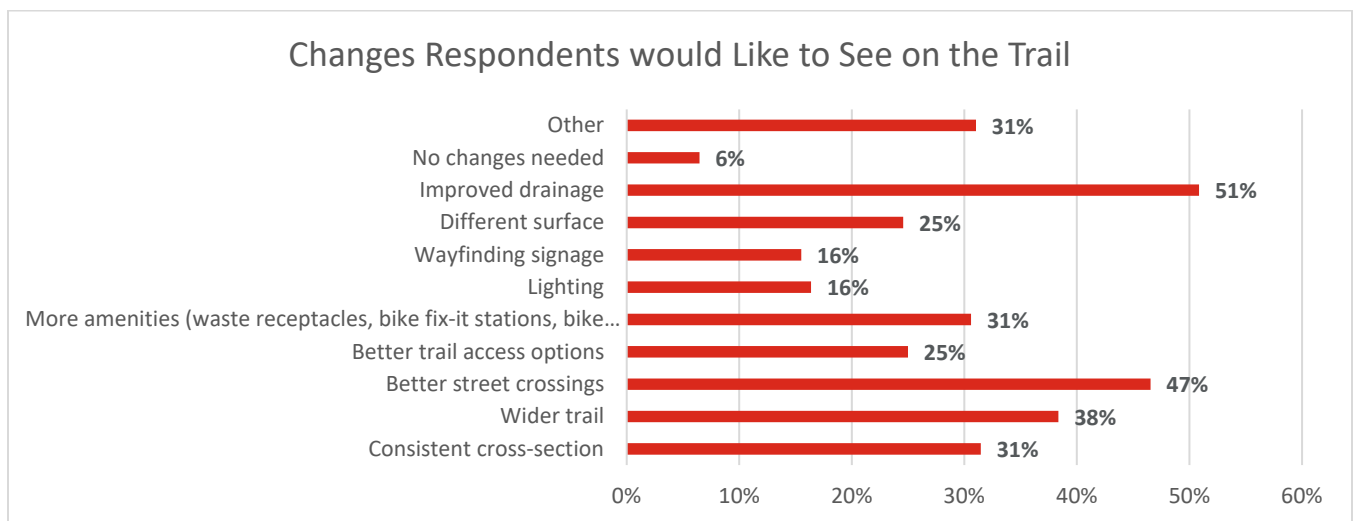
- Respondents use the trail for a diverse array of purposes:



- The demographics of the survey respondents are as follows:
 - » 83% of respondents identify as white, and 14% chose not to share their racial or ethnic identity; 3 respondents identify as a race or ethnicity other than white
 - » 79% of respondents are 45 years old or older, and 36% are 65 years old or older
 - » 42% of respondents identify as men and 51% identify as women; 5% chose not to share their gender

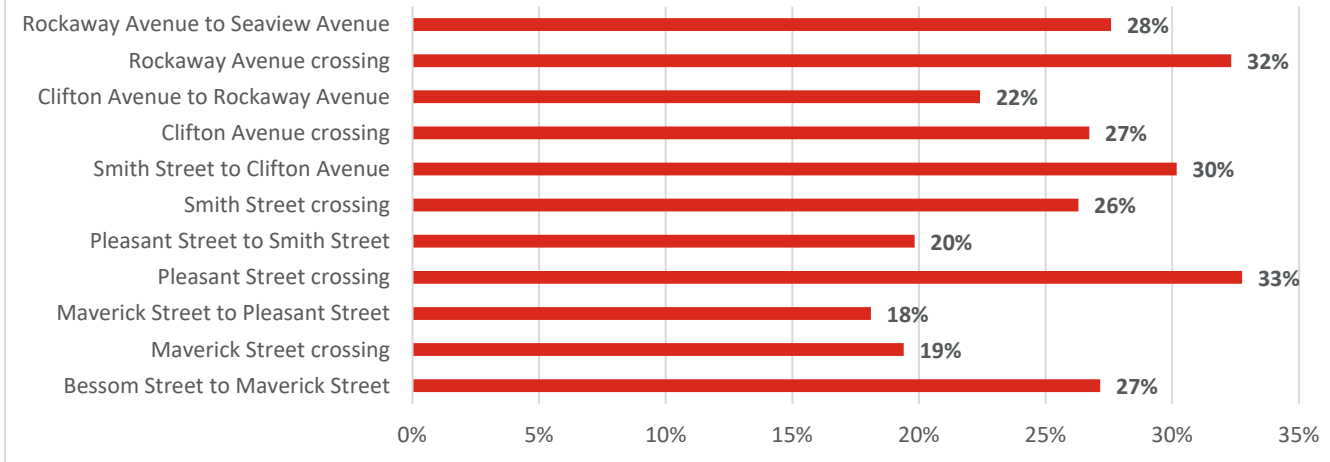
Survey Results

Responses to the online survey, supported by the public workshop, show strong support among trail users for improvements to street crossings and drainage. There is also some support for providing trail amenities, particularly if they are designed and situated with an eye toward maintaining the rustic character of the trail. A significant number of respondents expressed support for making the trail wider and more consistent throughout the corridor.

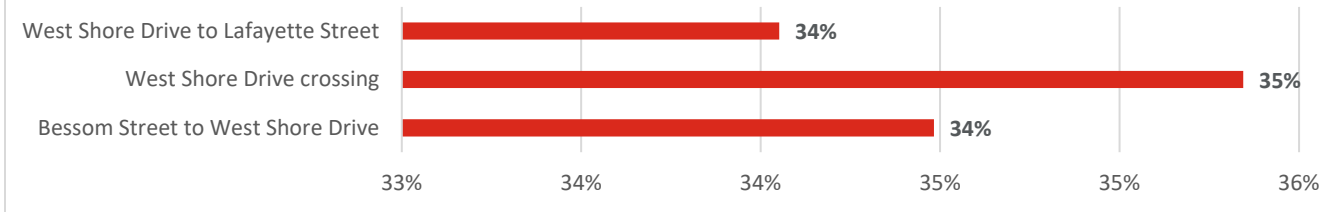


Survey respondents had a range of preferences for where they would most like to see changes to the trail, but the street crossings stand out as priorities for improvement. This is especially true of the Pleasant Street, Rockaway Avenue, and West Shore Drive crossings. As mentioned previously in the Existing Conditions section, the segment of trail between Rockaway Avenue and Seaview Avenue was recently regraded, suggesting that trail users wish to see different kinds of improvements to this portion of the trail, such as vegetation maintenance or amenities (waste receptables, benches, bike fix-it stations, etc.).

Sections of the Swampscott Branch Respondents Feel Need Improvement



Sections of the Salem Branch Respondents Feel Need Improvement



Stakeholder Interviews

The following stakeholder groups with responsibilities or interests related to the Marblehead Rail Trail were invited to share their perspectives about the conditions of the trail and potential improvements:

- Sustainable Marblehead
- Bike Marblehead
- Marblehead Conservancy
- Council on Aging
- Marblehead Police Department
- Marblehead Fire Department
- Disability Commission
- Marblehead Municipal Light Commission

While each stakeholder group brought their unique vision and ideas to the table, their recommendations were generally consistent across the groups and with the findings from the community survey and online meeting.

Summary of Community Engagement Themes

What users value about the trail

- Its natural character and feel
- The native species and distinctive ecosystems encountered along the trail

- The trail as an asset for safe walking and biking
- The trail as a conduit between diverse types of important destinations, and as a link between cities/towns

What users find challenging about the trail

- The constrained width of the trail, which can be an issue when users of different speeds are trying to pass one another, when the trail is busy, or when users are trying to socially distance
- The conditions at street crossings, where motorist yielding is an issue, and which can be especially difficult to navigate for people biking and people using wheelchairs due to constrained widths and steep grades
- The inconsistent surface quality of the trail, including protruding rocks, metal bridge deck, and areas prone to persistent drainage problems causing rutting and ponding in the surface
- Trail maintenance, especially about overgrown vegetation that narrows the trail's usable width during parts of year, and snow that presents challenges for winter commuters
- Littering and dumping along the trail; users cite problems with trash, yard debris, and dog waste being dumped or left in the right of way or on the trail itself

Proposed Conditions

Trail Surface

The trail in its current state is not compliant with the Americans with Disabilities Act (ADA), mainly due to the slope of some entrances to the trail and its uneven surface. While a DCR grant in 2019 helped to fix the sub-standard portions of the trail regarding surface and drainage, flooding and erosion still persist. In the responses to the online survey and the discussions at the virtual public workshop, residents demonstrated strong consensus in favor of maintaining the natural feel of the trail as much as possible. To invite people of all ages and abilities to enjoy the trail without the use of asphalt, stabilized decomposed granite is recommended for the trail surface. With the addition of a stabilizer, such as Organic-Lock, the decomposed granite surface can resist erosion and strengthen the trail while still allowing for water to permeate. Stabilized decomposed granite may be plowed if desired to facilitate winter trail use, albeit with a brush roller or rubber edged blade⁹.

Organic-Lock has been used locally by Massachusetts Institute of Technology (MIT) in Cambridge for their redesign of the Bush Building and by the Department of Conservation and Recreation (DCR) for several paths, including those around Walden Pond in Concord and Olmsted Park in Boston. Representatives from DCR and the MassTrails team attest to the quality and longevity of the product.

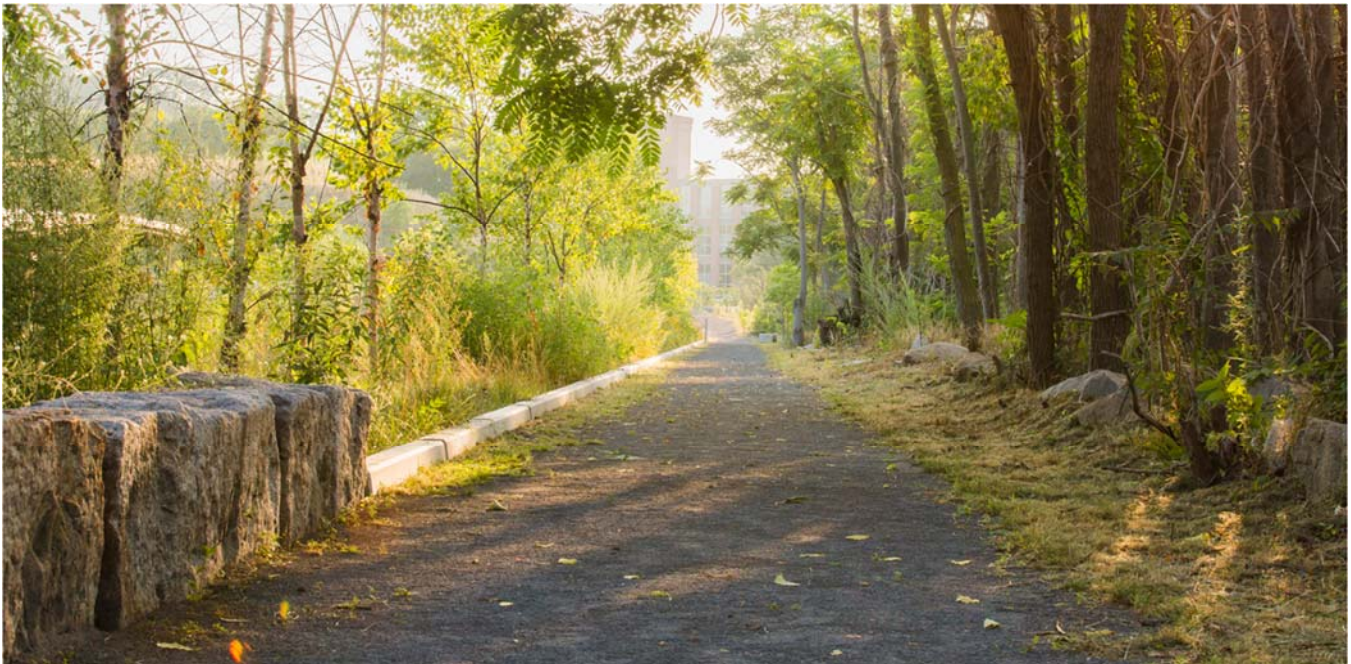


Figure 13 Decomposed granite trail at Ellen Swallow Richards Park in Lawrence, MA (Source: STIMSON, photo by Ngoc Doan)

⁹ Via email conversation with Department of Conservation and Recreation

On the Salem branch of the trail, stakeholders noted the metal bridge deck to be troublesome for accessibility as it is currently a tripping hazard and can be slick when wet. By replacing the metal bridge deck with a wood bridge, the bridge can better complement its surroundings while providing safer passage.

Stakeholders also expressed interest in formalizing the segment of trail that connects the Salem branch and the Swampscott branch on the western side of the substation, near the Village Street bridge. As this segment of trail is in close proximity to Wye Pond, additional design will be needed to ensure proper drainage and to prevent erosion of the new trail. Once formalized, wayfinding signage should be installed on both branches to guide trail users to their destinations.

Additionally, there several major utility projects around the Wye which are likely to occur in the next 5 years according to the Municipal Light Department. A large sewer main underneath the trail is near the end of its useful life, as is the substation. All trail designs in this area, as well as the access points to this area, should be designed to allow access for the necessary vehicles and machinery without damaging utilities underneath the trail. The regrading and resurfacing of the trail on this segment should be performed in conjunction with these projects to the extent feasible.

Informal Access Points

The informal access points allow for greater access to the trail from neighborhoods, particularly between Smith Street and Clifton Avenue, where there is a long distance between street crossings. Once the trail has been stabilized, additional improvements to these access points can be made. Where possible, these access points should be cleared of protrusions, regraded, and stabilized to minimize future erosion from stormwater runoff. Where the grade is too steep to prevent this, wooden or stone steps may be added to aid access and prevent erosion.



Figure 14 Informal access path to the trail on the Swampscott Branch

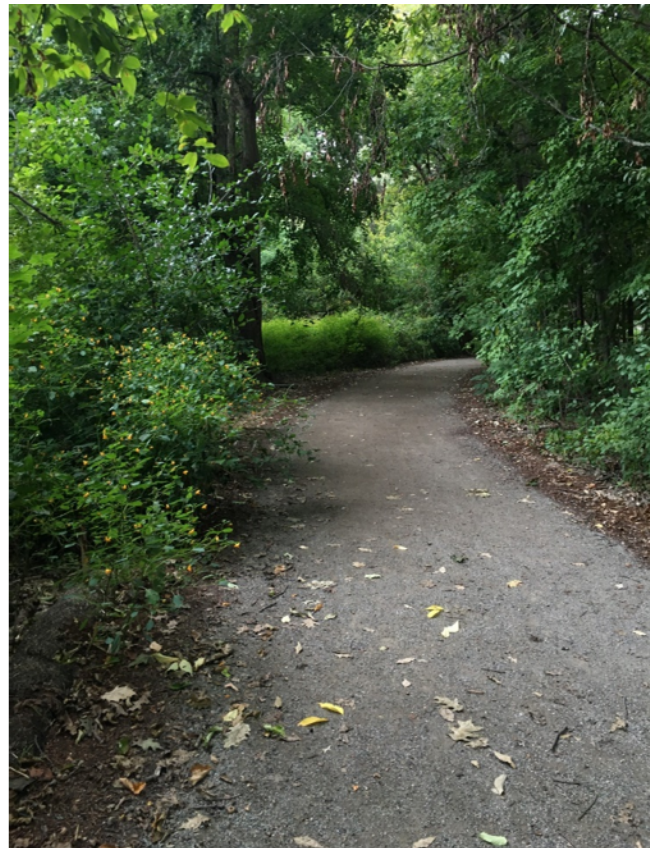


Figure 15 Organic-Lock trail in Boston's Olmsted Park

Trail Cross-section

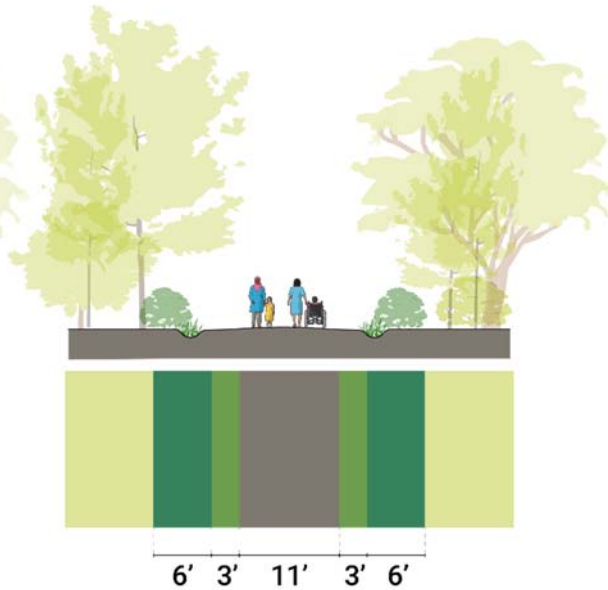
The existing trail cross-section varies between 4 feet and 10 feet wide, limiting passing opportunities and sometimes causing conflicts between trail users. A consistent message heard throughout the public engagement was to widen the trail to a more consistent width. The proposed cross-section, shown below, maintains an 11-foot wide trail where feasible and calls for 2-foot wide clear zones on either side to limit encroachment of plants. The American Association of State Highway and Transportation Officials (AASHTO) calls for a preferred trail width of 11 feet in the proposed 2020 Guide for the Development of Bicycle Facilities.¹⁰ A consistent, 11-foot wide trail wherever feasible will allow for groups of trail users to more comfortably pass each other, whether they are walking, running, on bikes, or using mobility devices.

¹⁰ AASHTO Task Force on Geometric Design. "DRAFT AASHTO Guide for the Development of Bicycle Facilities." American Association of State Highway and Transportation Officials, Washington, DC: 2020.



Corridor and slope revegetation

Where corridor is wide and level, consider restoration plantings along trail as well as on slopes as needed. Crown trail for drainage to both sides.



Drainage swales

Crown trail for drainage to both sides. Clear debris and stone dust depositions from swales. Revegetate swales as needed with native wet-tolerant species.



Slope revegetation

Plant quick-growing native groundcover and shrubs to stabilize steep slopes and minimize erosion. Fill gaps in canopy with native trees.



With constraint on one side

Maintain 2' clear zone between trail and side constraint (for example, the rock outcrop by Harbor Glade). Grade trail with cross slope (2% max) to drain toward the open side of the trail.

- Existing vegetation
- Proposed restoration plantings
- Mow/trim strip
- Trail

Ecological Design and Sustainability

Ecological landscape design practices should be used to maintain the trail's stability and natural character. Native plantings in swales or on slopes can serve as multifunctional green infrastructure: detaining stormwater runoff or reducing erosion of the trail surface and berm, providing habitat resources for local wildlife, and beautifying the corridor for the community. Reducing trail runoff and erosion not only benefits trail users, but also mitigates impacts of the trail on adjacent ecosystems. Revegetating trampled or eroded areas, in concert with trail surface improvements and realignment (e.g. at road crossings) will enhance habitat and help protect existing ecological communities in the corridor. Native groundcover plants can also reduce the need for mowing along the trail. Attractive plantings with colorful flowers or fall foliage can make trail crossings and access points inviting and celebratory. Removing invasive species is critical to ensure that native plantings can flourish. At the Lead Mills Conservation Area, clearing invasive brush from the fence would have the added benefit of opening up scenic harbor views for trail users to enjoy.

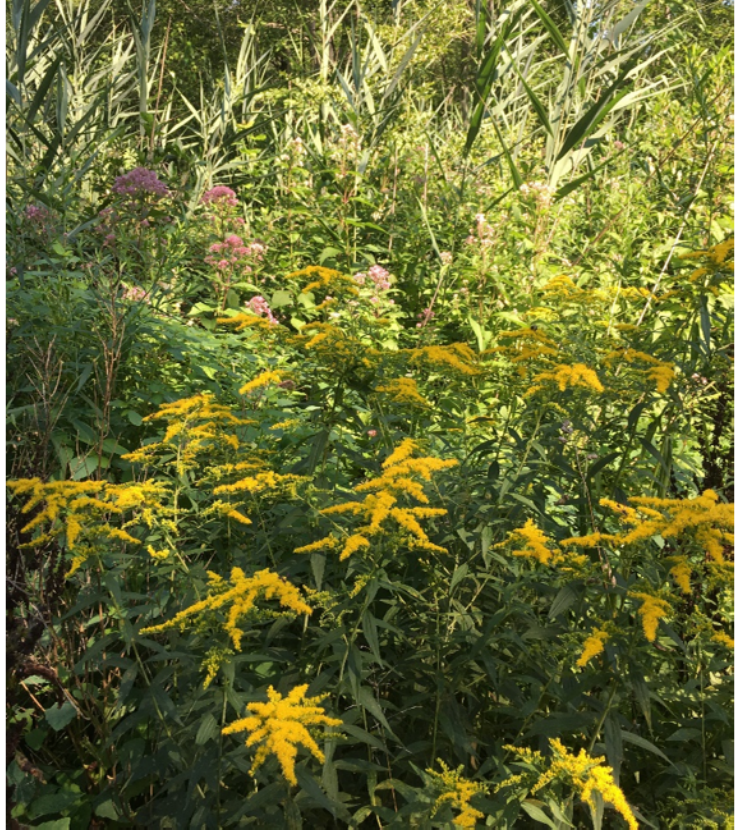


Figure 16 Plants along the trail

Safety Countermeasures

As with any trail in a built-out environment, the Marblehead Rail Trail intersects multiple streets, with each presenting unique challenges. While no two street crossings are the same, the overall goal is the same: to elevate the presence and priority of trail users, increase the measured and perceived safety of the intersections, and allow the trail to be accessed by all users regardless of age, ability, or mode of travel. The following section describes the toolbox of recommended countermeasures to be employed at each trail crossing to realize the stated goals. Full conceptual designs are included in the appendix.

Context-specific safety countermeasures, consistent with state and federal guidelines and best practices, are proposed at each location, dependent on roadway characteristics, conversations with stakeholders, and community feedback. Countermeasures include:

- Trail crossing signs
- Realigned and repainted crosswalks
- Prune/cut back vegetation
- Trail regrading to meet ADA slope requirements
- Curb ramps
- Curb extensions
- Raised crosswalks
- Rectangular Rapid Flashing Beacons (RRFBs)
- Streetlights

These safety countermeasures are proposed in various combinations to provide safe, accessible crossings that rise to the level of need.

Trail crossing signs and **high-visibility crosswalks** create the expectation to drivers that people may be crossing the street. These elements will improve driving yielding behavior.

Pruning and cutting back vegetation will be covered in greater detail in the maintenance plan section, however it warrants mentioning as a safety countermeasure. Cutting back vegetation at the trail crossings will allow trail users to identify approaching vehicles without encroaching into the roadway. It also allows drivers to see trail users attempting to cross the street earlier, giving drivers more time to react and yield to people crossing.

Curb extensions visually and physically narrow the roadway, creating safer and shorter crossings for trail users while increasing the available space for amenities. They can calm vehicle traffic while making trail users more visible to drivers. Depending on the location, curb extensions may also tighten intersection curb radii, which encourages slower turning speeds.

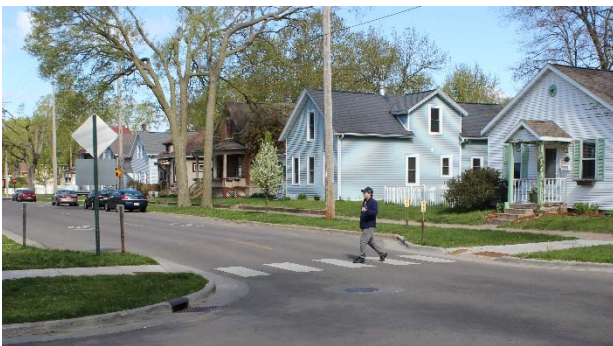


Figure 17 Curb extensions narrowing the crossing distance in a neighborhood in La Crosse, WI



Figure 18 Curb ramp providing access to the Salem Bike Path in Salem, MA

Curb ramps allow for universal accessibility to the trail by removing the curb and providing a gentle transition up to the sidewalk or trail. There are currently curb ramps that act as a driveway for utility vehicles, however these often do not align with the trail access points and are not compliant with accessibility standards. All curb ramps proposed will provide safe and comfortable access for trail users as well as utility vehicles and will include detectable warning strips which make crossings accessible to people with visual impairments.

As noted, the steep slopes approaching many of the trail crossings pose risks for trail users, and act as barriers to trail use for people with disabilities. **Regrading these slopes for compliance with ADA guidelines** will make crossings safer and more integrated with the overall trail experience, and allow users of all abilities to enjoy the trail. More moderate slopes will also support the sustainability of the trail surface by reducing erosion.

Raised crosswalks reinforce slow speeds and encourage drivers to yield to trail users at the crosswalk. They are typically flush with the sidewalk and/or trail, creating a continuously level surface for trail users.

Rectangular Rapid Flashing Beacons (RRFBs) may also be used in conjunction with raised crosswalks at street crossings with assumed higher volumes of vehicles. An RRFB, which can be activated with pushbuttons or automated (e.g., video or infrared), further alerts drivers that trail users are crossing and must be yielded to. RRFBs can be particularly useful at night or during dawn or dusk hours when trail users may be difficult to see.

Streetlights are present at all trail crossings within the study area, save for at West Shore Drive, Bessom Street, and Seaview Ave. Adequate lighting is imperative to ensure trail users are seen by approaching vehicles as they cross streets.



Figure 19 Trail crossing with RRFBs in Kirkland, WA



Figure 20 Raised crosswalk in Washington, D.C.

Amenities for Trail Users

Wayfinding signage and other trail amenities are proposed in various locations along the trail and at crossings, with careful consideration to not clutter the trail. The goal is to provide modern amenities and useful signage while maintaining the natural character of the trail. Proposed amenities include:

- Wayfinding signage
- Information kiosks
- Trash bins
- Bike racks
- Benches



Figure 21 Trash bins and other trail amenities situated at a street crossing on a trail in Newburyport, MA

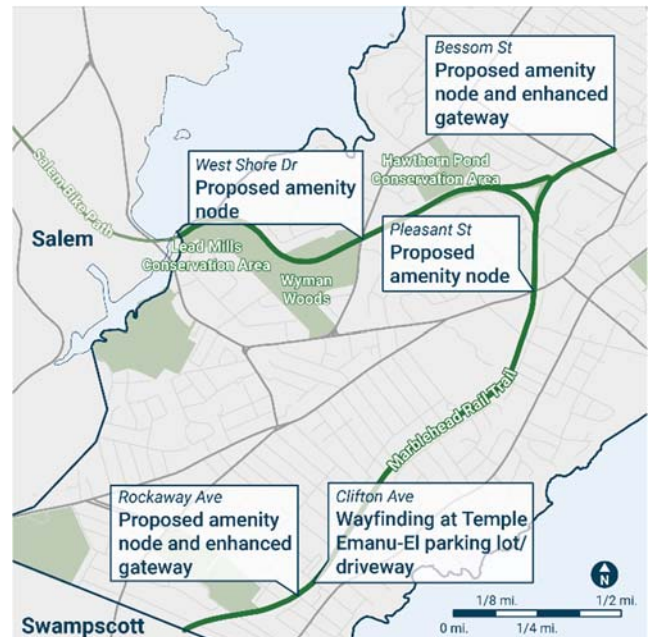


Figure 22 Key amenity recommendations

To avoid altering the secluded feel of the trail, these features should be consolidated as much as possible in **amenity nodes** at select intersections where more space is available. These nodes can be described as “gateways” or prominent entranceways to the trail, reflecting the character of Marblehead and its neighborhoods. The following entrances to the trail are proposed to host these amenity nodes:

- Bessom Street
- West Shore Drive

- Pleasant Street
- Rockaway Avenue

Specific amenity recommendations for these intersections are further described in the next section.

According to the Draft MassDOT Bike Wayfinding Design Guide¹¹, there are four fundamental sign types, three of which are useful for the Marblehead Rail Trail:

1. **Confirmation signs** let trail users know they are on a specific trail while alerting drivers to trail users' presence. These signs may identify an official name for the trail, or help with branding and promoting a trail's unique identity.
2. **Decision signs** provide guidance at decision points, where trail users must decide which way to proceed.
3. **Turn signs** indicate to trail users when the only option to remain on a route is to turn.
4. **Street name signs** aid in orientation by providing the names of streets at crossings.

Enhancements, such as semicircular branded markers or blade-style decision signs may be used. Within the draft guidance, MassDOT does allow some alterations to the standard wayfinding to account for branded or historic-style signage. The guidance suggests that historic-style wayfinding can be established through material choices, through supplemental signs such as information kiosks and granite or other gateway markers, and through historic-style posts.

¹¹ MassTrails Initiative. "DRAFT Bike Wayfinding Design Guide" August, 2020.

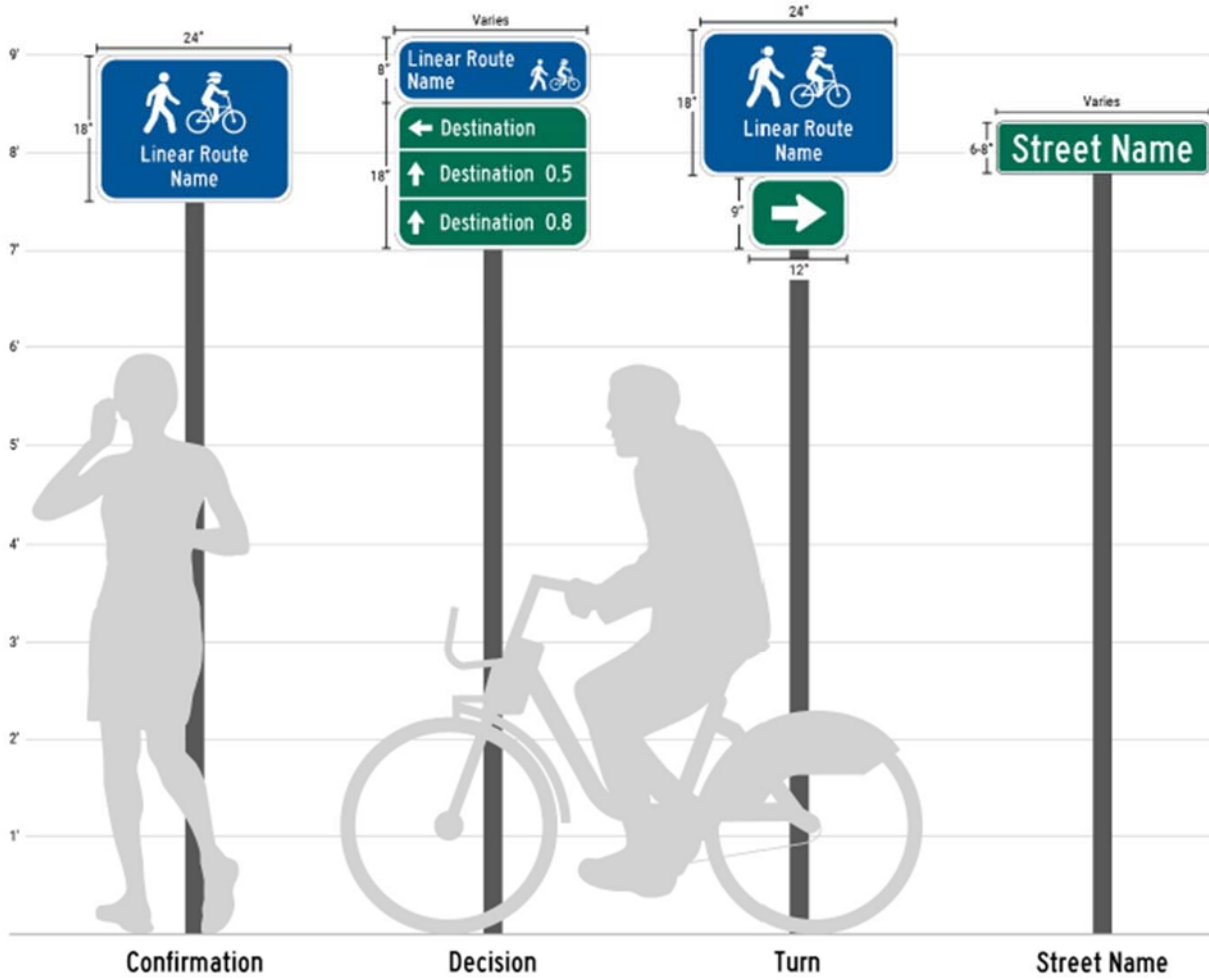


Figure 23 Four fundamental sign types

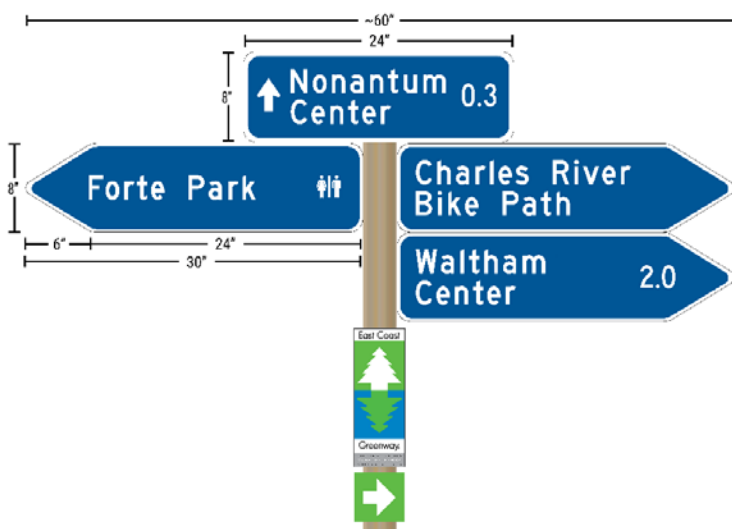


Figure 24 Blade-style decision sign

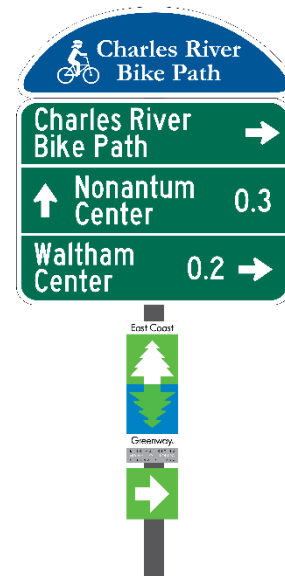


Figure 25 Decision sign with semi-circle enhancement

Wayfinding signs are proposed in some manner at every street crossing. Street name signs and confirmation signs are proposed at every crossing to help trail users orient themselves within the network and to elevate the presence of the trail. Decision signs are proposed for intersections where trail users are more likely to depart from the trail to access destinations. These intersections include Bessom Street, Maverick Street, Pleasant Street, and where the trail splits at the Wye. Specific destinations are described in greater detail in the next section.

Information kiosks, or boards, can hold a wealth of information about the trail. Through the community engagement process, specific types of information were identified as being most useful. This includes a map with QR code to access the map digitally, history of the trail, wildlife and natural floral identification, trail etiquette, and announcements of trail closures for maintenance.

Trash bins are proposed to encourage proper disposal of dog waste and other items. Collection of the waste within the bins is further discussed in the maintenance plan.



Figure 26 Trail information kiosk in Hilton Head, SC



Figure 27 Basic wayfinding signage at a trail crossing in Boulder, CO

Bike racks are requested by community members so that they may more easily explore Marblehead without a vehicle. The trail can be used as a spine in the transportation network, with parking for bikes strategically placed to facilitate further exploration on foot if riding in vehicle traffic is not desired.

Benches can be selectively placed to allow trail users to rest and enjoy the trail as needed. Benches along the corridor send the message that this trail welcomes people of all ages and abilities. Community members expressed the desire for natural looking benches to provide respite while not disturbing the character of the trail. Large granite blocks or carved logs may be used to meet both functional and aesthetic goals.

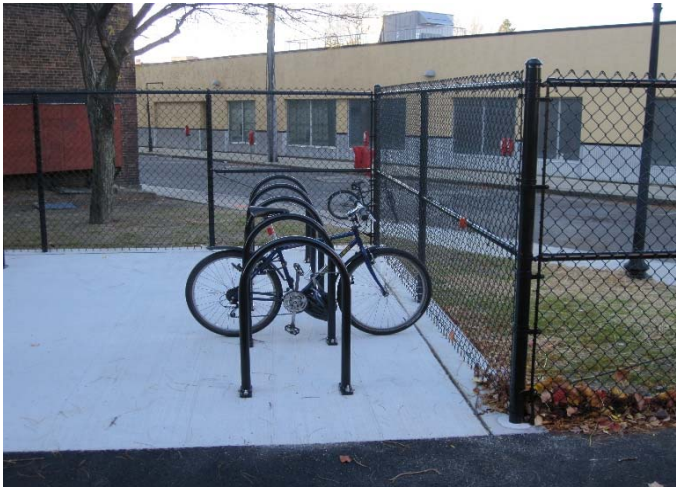


Figure 28 Bike parking along the Somerville Community Path near the Davis Square commercial district



Figure 29 Bench on a Massachusetts DCR trail

Trail lighting was indicated by 16% of survey respondents as a desired addition to the trail. People who elaborated on this preference in their written comments mentioned the trail feeling uncomfortable for some women after dark and the trail being less useful for commuting during the winter. While street crossings and amenity nodes should be lit, the addition of lighting along the trail itself is not proposed at this time. To address these concerns, the Town of Marblehead may seek to provide lighting along the trail in the future; here are some additional considerations and costs to anticipate:

- Lighting may encourage more activity along the trail at night
- The community may have expectations about police presence and patrolling on the trail
- Lighting features may need to be designed and situated carefully to avoid disturbing native wildlife or nearby landowners.
- The cost of installing and maintaining lighting features

Street Crossing Recommendations

Specific safety countermeasures and amenities for trail users are recommended for each street crossing to address existing issues and optimize the experience of trail users through its many unique contexts.

In addition, better access management tools (physical partitions to prevent non-motorized vehicles from using the trail) and strategies should be applied at all street crossings. Currently, the trail is closed to non-authorized motor vehicles at crossings by several means, typically wooden posts and cables or chain link fences. Trail users access the trail by navigating around these posts/fences, but these cut-through paths are narrow, steep, and often eroded by runoff. Vegetation often encroaches on these narrow spaces and guy-wires for utilities poles constitute

tripping hazards where they connect to the ground and pose an issue for vertical clearance where they cross the entry point. A different way of managing access could better meet the goals of this plan.

Collapsible bollards are proposed as a replacement for the existing wooden post and chain and chain link fence systems to provide better access for trail users while allowing utility maintenance vehicles and emergency response vehicles to access the trail as needed. These bollards, similar to ones installed in nearby Peabody, have the ability to be unlocked and unpinned, allowing the bollard to lie flat on the ground and permit authorized



Figure 30 Cable and wooden post with narrow opening for trail users at Maverick St crossing



Figure 31 Narrow opening for trail users at Pleasant St crossing with utility wires

motor vehicles onto the trail. When upright and locked, unauthorized vehicles are prevented from using the trail. Additionally, a flush, decorative median of granite cobblestone is proposed around the bollard to better notify trail users that they are approaching a street crossing and encourage slower speeds. A pavement apron will be provided between the street or back of sidewalk and the bollard for stability and ease of maintenance. The proposed access management system will provide wider trail access to those walking, running, biking, and rolling.

Conceptual designs for each street crossing, as described below, can be found in Appendix B.



Figure 32 Collapsible bollard in Peabody, MA

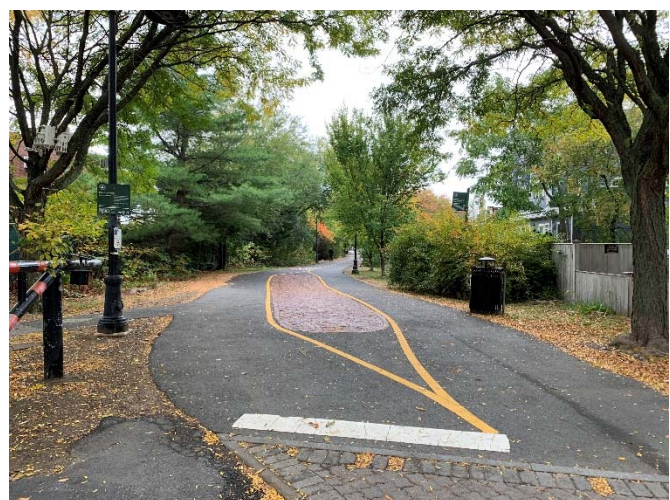


Figure 33 Brick and cobblestone inlay in Somerville, MA

Bessom Street

While the trail terminates at Bessom Street, trail users' journeys do not. A high-visibility crosswalk and trail crossing signs are proposed to alert drivers that people may be crossing the street either to access the parking lot or to continue onto Bessom Street. A streetlight should be added to the utility pole on the eastern side of the street to better illuminate the crosswalk. The Bessom Street entrance is the beginning of the trail in Marblehead, and as such is proposed as an amenity node. A prominent gateway sign is proposed to proudly show off the trail, as well as trash bins and bike racks for those wishing to securely lock their bikes and explore downtown Marblehead on foot. Decision wayfinding signs are proposed to direct trail users towards downtown Marblehead, in addition to the gateway sign and street name.

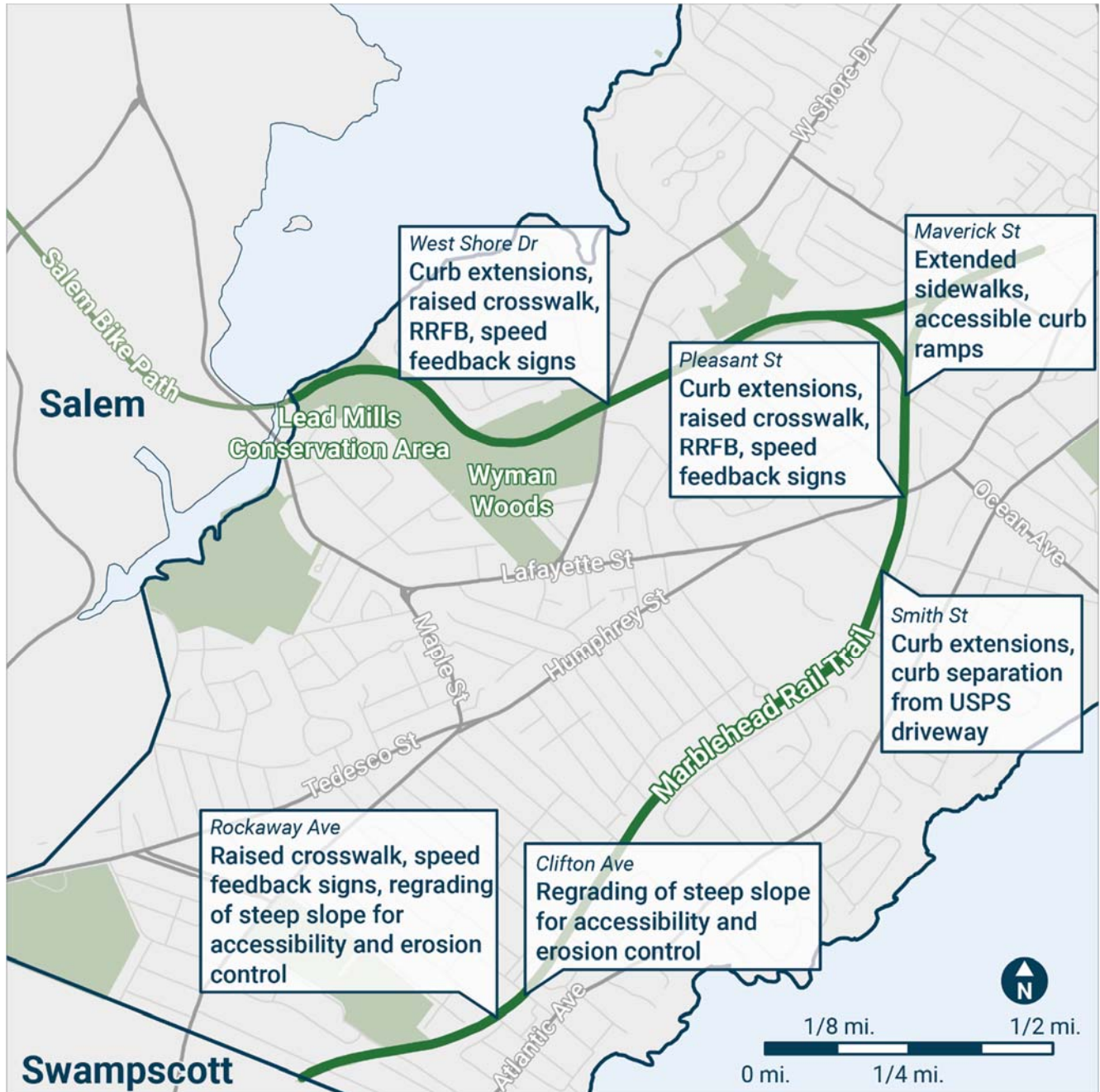


Figure 34 Summary of key recommendations for safety countermeasures

West Shore Drive

Proposed improvements to the West Shore Drive crossing include the addition of curb extensions, a raised crosswalk, an RRFB, a streetlight, and vehicle speed feedback signs. These proposed countermeasures will make trail users more visible to drivers, while providing the additional benefit of traffic calming. The West Shore Drive entrance is proposed as an amenity node for its importance as the only street crossing on the Salem branch within the Marblehead town limits, as well as for its proximity to the Tower School. With the proposed curb extensions, there will be sufficient room for an information kiosk and trash bin. The placement of bike parking should be discussed with representatives from the Tower School if sufficient bike parking is not already available to the school community.

At present, the trail widens considerably at the roadway, but with a resurfaced trail and redesigned access gate, a significant portion of the right of way can be planted with native meadow species. This beautification and habitat restoration effort could be an opportunity for hands-on learning and community service for students from the Tower School.

Maverick Street

On Maverick Street, the crosswalk should be realigned with the trail, and trail crossing signs added. Currently, the sidewalks on Maverick Street end at Prince Street, approximately 100 feet southeast of the trail crossing. The sidewalks should be extended to the trail with new accessible curb ramps to better accommodate people walking from Maverick Street to the trail. Decision wayfinding signs are proposed to direct trail users to the Abbott Public Library.

Centering the trail in the right of way at this location offers an opportunity for ecological restoration plantings on either side of the roadway. The north side of the crossing, where the trail slopes away from the roadway, may be a suitable location for a raingarden.

Pleasant Street

For the Pleasant Street crossing, large curb extensions are proposed to provide more queuing space for trail users, as well as additional space for amenities. A raised crosswalk is proposed to increase the visibility of trail users, better establish trail users within the roadway, and create an uninterrupted path of travel that amplifies the priority of trail users in the crossing. These improvements, coupled with an RRFB and vehicle speed feedback signs, will help to calm traffic, lower vehicle speeds, and improve motorist yielding to trail users. The Pleasant Street entrance is proposed as an amenity node due to its location on the trail network and on the bus network, as well as its proximity to the Devereux School, the Hotel Marblehead, and the Abbott Public Library. With the proposed curb extensions, there will be sufficient room for an information kiosk, trash bin, and decision wayfinding signs alerting trail users to those destination.

The Pleasant Street crossing is another prime location for restoration plantings, particularly on the north side, where flowering shrubs and perennials could beautify a busy corner.

Smith Street

For the Smith Street crossing, curb extensions are proposed to allow trail users to be more visible to drivers before they enter the crosswalk. The curb extensions stretch from the trail to Devereux Street to allow for better sight distance, discourage drivers from parking too close to the crosswalk, and create additional space for people walking, biking, and rolling. New curb ramps and crosswalks are proposed at Devereux Street to complement the curb extensions. This concept also includes granite curbing to provide better distinction and separation between the United States Postal Service's driveway and the trail.

Plantings at Smith Street can buffer the trail from the USPS driveway on the south side of the road. On the north side, revegetation along the trail can reduce mowing needs and restore wildlife habitat and natural beauty.

Clifton Avenue

The proposed Clifton Avenue crossing will realign the crosswalk with the trail, as well as offer wayfinding signs and pavement markings through the Temple Emanu-El driveway, leading to the trail entrance at the northern end of the driveway. While it appears the driveway is within the utility corridor right-of-way, additional analysis may be needed to confirm.

The steep slope of the trail at the Temple parking lot must be regraded for accessibility and erosion control.

Rockaway Avenue

For the Rockaway Avenue crossing, a raised crosswalk is proposed, as well as a realignment of the crosswalk to better line up with the trail. Vehicle speed feedback signs are also proposed to calm traffic. The Rockaway Avenue entrance is proposed as an amenity node due to its distance from the Pleasant Street amenities, while also acting as a gateway treatment to the trail in Marblehead. While Seaview Avenue is the closest street crossing in Marblehead to the Swampscott town line, the open space adjacent to the trail at Rockaway Avenue presents a better opportunity.

The steep approach to Rockaway on each side of the road will need regrading for the purposes of trail durability and accessibility. New plantings will help with slope stabilization, and restore a natural character to this crossing, which now feels like a gap in the green corridor.

Seaview Avenue

A high-visibility crosswalk and trail crossing signs are proposed to alert drivers that people may be crossing Seaview Avenue. Trail washout is significant on the south side of Seaview; the trail should be regraded here to shed stormwater, and the Town may want to consider this location for a raingarden or bioswale to divert stormwater from the trail.

Additional Recommendations

Throughout the process of speaking with city staff, utility company representatives, stakeholder groups and community members, and with the support of best practice research, additional recommendations were formed to add value to an already successful trail and develop a framework for managing the trail as it connects to a regional system and use increases. These recommendations go beyond the realm of infrastructure to establish a forum for dialogue around trail improvements and connections moving forward. Recommendations include:

- Form a committee to help determine next steps for trail development, programming and management, such as the “Friends of the Marblehead Rail Trail”. Members could include representatives from the community, as well as elected town officials.
 - » Time frame: Short-term
 - » Responsible parties: Selectboard, Sustainable Marblehead, others
- Schedule reoccurring meetings between the Water & Sewer Commission, Electric Light Commission, Selectboard, and new trail committee to discuss further improvements and resolve issues in a timely manner.
 - » Time frame: Short-term
 - » Responsible parties: Water & Sewer Commission, Electric Light Commission, Selectboard, “friends committee” to be determined
- Create a town-wide pedestrian and bicycle plan to better connect residents to the trail and fully leverage the trail as an asset within a broader walking and biking network.
 - » Time frame: Medium-term
 - » Responsible parties: Town of Marblehead
- Revisit Memorandum of Agreement between the Water & Sewer Commission, Electric Light Commission, and Selectboard to ensure it meets the current needs of both the utilities and the trail users. For example, benches within the right-of-way are currently not allowed.
 - » Time frame: Medium-term
 - » Responsible parties: Water & Sewer Commission, Electric Light Commission, Selectboard.
- Schedule annual coordination meetings with trail committees representing nearby/connected trails (Salem, Swampscott, etc.) to foster coordination across municipal boundaries and work to provide a consistent experience for trail users throughout the broader regional network.
 - » Time frame: Long-term
 - » Responsible parties: Town of Marblehead, “friends committee” to be determined

Case Study: Bike to the Sea

As the Town of Marblehead pursues forming a “Friends of the Marblehead Rail Trail” or similar committee, there are several local precedents for this kind of organization to use as a model. Bike to the Sea (B2C) is a 501(c)(3) nonprofit corporation that was founded in 1993 to organize bike safety efforts in the Medford, Everett, Malden, Revere, Saugus, and Lynn communities.¹² Their mission includes advocating for a safe, continuous shared-use route from Everett to the seashore in Nahant, which is under development in the form of the Northern Strand Community Trail, a rail trail running along the former Saugus Branch Railroad.

¹² <https://biketothesea.org/about-us/>

B2C coordinates residents across municipalities to advocate for the expansion and maintenance of the Northern Strand Community Trail and communicates updates about trail construction and care to the broader community. They also organize around advancing other causes for people walking and biking, like accommodations for active commuters at MBTA stations, and host group rides to encourage community members to explore the trail network. B2C is supported by sponsorships and annual memberships, which offer members discounts at participating bike shops and free registration for group rides.

E-Bikes and Trails

As electric bicycles or “e-bikes” gain popularity and become commonplace in many communities, it is important to understand the kinds of e-bikes that exist and clarify their place on trails. The Massachusetts law which currently governs e-bikes was written to apply to mopeds and scooters, and advocates are proposing updates which would bring Massachusetts into line with laws passed in Arizona, California, Colorado, Connecticut, Tennessee, and other states¹³. The proposed updates may be approved before the end of 2020 and differentiate between low-speed and higher-speed e-bikes, formalizing the way these bikes are already used. In typical regulations and in the proposed Massachusetts version, e-bikes are defined as two or three-wheeled devices with a saddle, pedals for human propulsion, and an electric motor with a power output not exceeding 750 watts, and can be described by one of the following classes:

- Class 1: E-bikes equipped with a motor that provides assistance only when the rider is pedaling, and stops providing assistance when the rider reaches 20 mph
- Class 2: E-bikes equipped with a throttle-actuated motor that stops providing assistance when the rider reaches 20 mph
- Class 3: E-bikes equipped with a motor that provides assistance only when the rider is pedaling, and stops providing assistance when the rider reaches 28 mph

This classification of e-bikes allows for different types of e-bikes to be regulated separately. For example, in the state of California, Class 1 and 2 e-bikes are permitted on shared-use paths and trails while Class 3 e-bikes are only allowed to operate on roadways and on-street bike lanes.¹⁴ In the absence of local ordinances the proposed regulation for Massachusetts will likely regulate the classes similarly, while allowing municipalities to permit or restrict e-bikes on specific bikeways as needed.

For the purpose of the Marblehead Rail Trail, it is recommended that the Town continue to allow e-bikes on the trail, with their riders subject to the same common courtesies and expectations as riders of non-motorized bikes. E-bikes are uniquely suited to serve the needs of trail users of all ages and abilities, as they are popular among older adults and families who use e-bikes for errands and transporting children. If the use of e-bikes operated at high speeds becomes an issue on the Marblehead Rail Trail in the future the Town can educate the community further on respectful e-bike use and/or pursue local-level regulation to complement state law.

¹³ <https://www.massbike.org/ebikes>

¹⁴ <https://peopleforbikes.org/our-work/e-bikes/policies-and-laws/>

Appendix A: Maintenance Plan Guidance

A maintenance plan for the Marblehead Rail Trail will ensure the trail's long-term sustainability and unique value for years to come. Trails, like streets, are public rights-of-way that need regular maintenance and repairs to remain in working order for people of all ages and abilities to use in safety and comfort. If trails are not maintained well, poor trail conditions can contribute to path users becoming injured and can even be a legal liability for the responsible agency. The Massachusetts Architectural Access Board and Americans with Disabilities Act both require that trails are maintained to remain accessible for people with disabilities. Additionally, the infrastructure and amenity recommendations in this plan will require increased operations and investment over time. A detailed maintenance plan will be necessary to protect this public investment in a responsible and economically efficient manner. A welcoming, accessible, well-kept trail will have lasting value for recreation, active transportation, and ecological conservation in Marblehead.

The Maintenance Plan Guidance identifies the responsible organization and specific actions needed to keep the Marblehead Rail Trail operating safely and comfortably for path users. Setting up a regular inspection, repair, and maintenance schedule with clearly defined responsibilities will allow agencies to make repairs before safety issues arise. Prompt and efficient repairs save time and money, allowing for other trail improvements or conservation efforts that the community may choose to pursue in the right-of-way. This Maintenance Plan is meant to be a living document and should be revisited annually to ensure proper adherence and to account for any changes that occur.

Maintenance activities can be separated into three categories:

1. Path operations
2. Landscaping
3. Amenities maintenance

Path operations includes clearing the trail of leaves and debris, keeping the trail surface smooth and level, and ensuring signs for trail crossings remain clear and consistent. Landscaping includes pruning woody vegetation and mowing grass along the trail, keeping plantings healthy, and ensuring proper drainage from the trail to surrounding landscape. Given the extent of conserved lands abutting the Marblehead Trail, landscape maintenance may also include invasive species removal and other ecological conservation initiatives. Amenities maintenance includes picking up trash and litter, repairing damaged benches and other trail amenities, and ensuring wayfinding signs and information kiosks are clear and legible.

Other Maintenance Responsibilities

Some maintenance tasks on the trail fall to the utilities departments that now own the former railroad right of way. Upkeep of trail access management features—whose key function is to restrict non-utilities vehicle access--will be the responsibility of the utilities departments. Maintenance of curb ramps, crosswalks, flashing beacons, and other traffic safety measures at roadway crossings will be performed by the Highway and Public Works Departments.

Maintenance Plan Goals

- Provide a safe and comfortable trail experience for people to travel throughout Marblehead, to access neighboring communities, and for recreation
- Establish the Marblehead Rail Trail as an ecologically sustainable open space
- Determine clear responsibilities for trail maintenance, ensure regular inspection of trail conditions, and establish maintenance schedules
- Ensure the trail upkeep costs are managed efficiently

Community Support

As the trail becomes more widely used by community members and visitors, it may be advisable to form a dedicated group or agency for trail upkeep and management. Many municipalities have had success with “Friends” groups; Marblehead should consider forming a Friends of the Marblehead Rail Trail group to assist with trail maintenance, improvements, and programming. A “Friends” group can consolidate trail-care concerns that are currently managed by various Town agencies and private partners, improving consistency and efficiency of trail operations and maintenance. Additionally, organizations and companies abutting the trail may be interested in ‘adopting’ segments of the trail to use for educational purposes, such as schools. See Additional Recommendations section for more on Friends groups.

Maintenance Actions and Schedule

This section outlines guidance regarding the individual maintenance activities needed to support path operations, landscaping, and amenities. For each activity, the responsible agency or agencies, specific actions, and their recommended frequencies are listed. Refinement of these core responsibilities and coordination between all responsible parties should occur as the maintenance plan is operationalized. In addition to these regular maintenance activities, the trail and right-of-way conditions should be inspected weekly by Public Works Committee staff to identify and document issues that may need to be responded to sooner than the regular maintenance frequency listed below. It is imperative for the multiple managing entities to coordinate efforts and have clarity on responsibilities and expectations.

Path operations

	Responsible Agency	Actions	Frequency
Leaf/Trail Clearance and Sweeping	Public Works Committee	<ul style="list-style-type: none"> Rake or blow leaves off trail Remove objects from trail Clear debris from sidewalks and curb ramps at crossing locations 	Weekly
Pavement and Surface Maintenance	Public Works Committee	<ul style="list-style-type: none"> Fill holes in trail surface Smooth trail grading Replace damaged tactile warning surfaces at crossings 	Monthly
	& Highway Department	<ul style="list-style-type: none"> Repair pavement, raised crosswalks, sidewalks, and curb ramps at street crossings 	Annually
		<ul style="list-style-type: none"> Resurface trail 	Every five years
Signage and Pavement Markings	Highway Department	<ul style="list-style-type: none"> Ensure signs are visible to vehicle traffic and conform to MUTCD guidelines Replace, re-orient, and clean signs as needed 	Check signage and pavement marking conditions annually Make repairs as needed

Access Management	Municipal Electric Light Department, Water & Sewer Commission	<ul style="list-style-type: none"> Refresh pavement markings at crossing locations 	Every five years
		<ul style="list-style-type: none"> To be determined with type of access management 	

Landscaping

	Responsible Agency	Actions	Frequency
Trim Vegetation	Public Works Committee & Trees Department	<ul style="list-style-type: none"> Trim shrubs and small branches encroaching on the trail clear zone 	Check weekly and trim as needed May through October
		<ul style="list-style-type: none"> Prune trees and large shrub limbs encroaching on the trail clear zone 	Check monthly and trim as needed June through October
Mowing	Public Works Committee	<ul style="list-style-type: none"> Mow large grass areas adjacent to trails with a lawn mower 	Monthly from April through October
Weeding	Public Works Committee	<ul style="list-style-type: none"> Trim weeds encroaching on the trail clear zone Spray problematic weed areas with organic herbicide as approved by Town 	Monthly May-October
Plantings	Public Works Committee & Trees Department	<ul style="list-style-type: none"> Plant new vegetation where plants and trees have died or in requested areas 	Annually

Amenities

	Responsible Agency	Actions	Frequency
Litter/Trash Bin Pick-up	Public Works Committee	<ul style="list-style-type: none"> Clear litter from along the trail 	Weekly
		<ul style="list-style-type: none"> Empty trash bins and replace trash bags 	Weekly
		<ul style="list-style-type: none"> Replace bins as needed 	Check conditions annually in the Spring
Streetlights	Municipal Electric Light Department	<ul style="list-style-type: none"> Check that lights function Replace bulbs and fix other electrical issues as needed Ensure lights are timed to turn on at sunset and turn off at sunrise, or at the agreed-upon intervals, every day (optional) 	Twice per year
Benches	Public Works Committee	<ul style="list-style-type: none"> Repair damaged bench parts Replace benches as needed Paint over faded or graffitied benches 	Check conditions annually in the Spring Make repairs as needed
Signage/Trail Wayfinding/Kiosks	Public Works Committee	<ul style="list-style-type: none"> Repair or replace damaged signs and information kiosks Paint faded or graffitied information kiosks 	Check conditions annually in the Spring Make repairs as needed

Utility Maintenance Actions

As the Marblehead Rail Trail is first and foremost a utility corridor, the occasional need for maintenance or emergency repair must be efficiently accommodated in the design of the trail. To limit the conflicts between utility workers and trail users, the following steps should be taken whenever possible:

- Notify the public at least 2 weeks in advance of planned work via appropriate social media channels, the Town website, and posted flyers at the entrances to the trail and information kiosks
- During maintenance, physically block the entrances, including informal access points, to the trail via sawhorses with an explanation of work, duration of work, and contact if trail access is still restricted past stated completion of work. Trail access to be restored promptly upon completion of work.
- Similar to road closures, provide a signed detour route that bypasses the closed section of trail. Ideally this detour would be accessible.

It is understood that when emergencies occur, completion of all the action items above may not be possible.

Appendix B: Concept Designs

Note:
 • Maintain wooden fence around trail entrance



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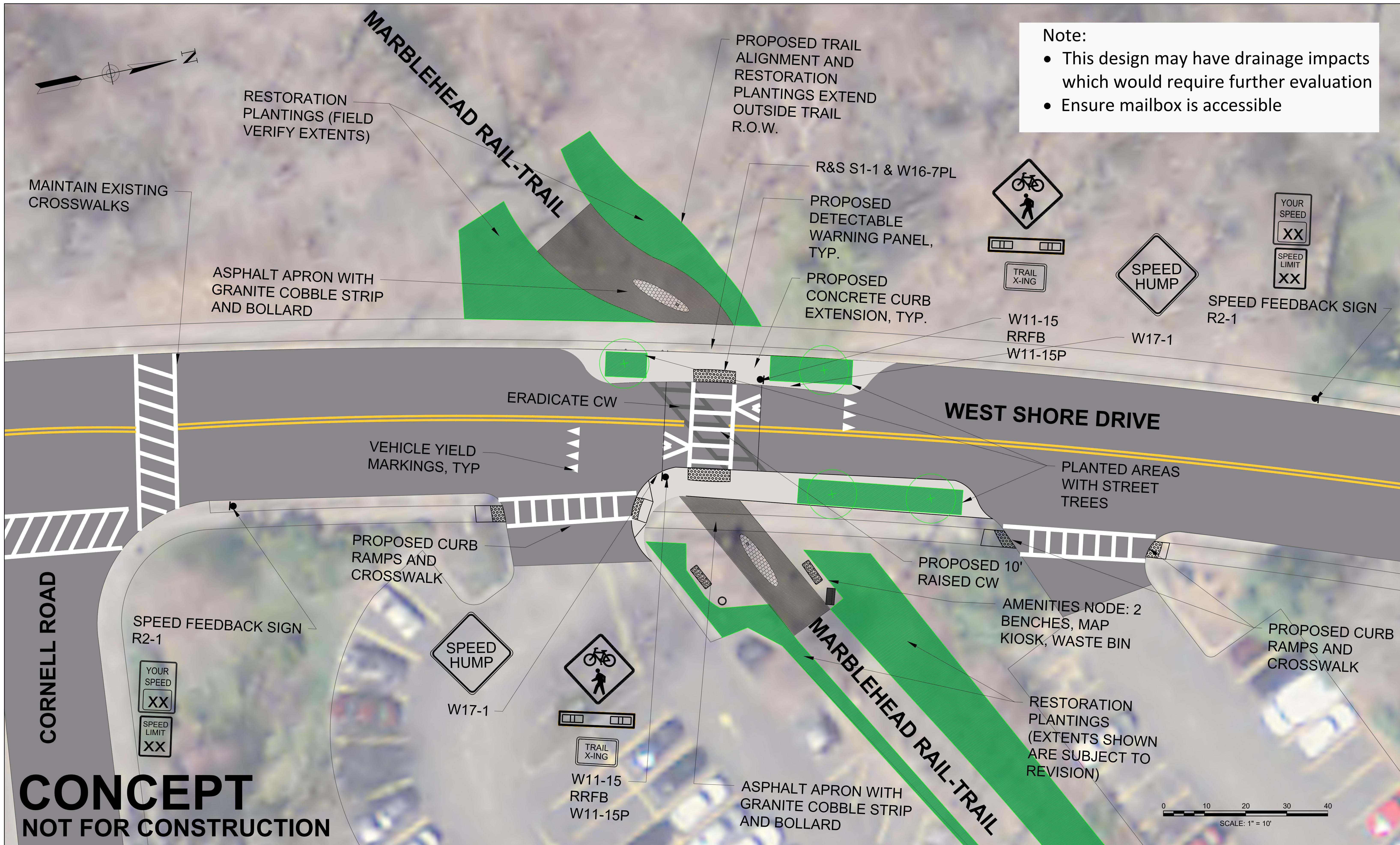
BESSOM STREET

This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

MARBLEHEAD COMPLETE
 STREETS IMPROVEMENTS
 MARBLEHEAD, MA

DSGN	DATE
DR	10/2020
CHK	SHEET NO.
APVD	1 OF 9

TOOLE
DESIGN
 2 OLIVER STREET, SUITE 305
 BOSTON, MA 02109
 PHONE: 617.619.9910
 FAX: 301.927.2800
 www.tooledesign.com



Note:

- This design may have drainage impacts which would require further evaluation
- Ensure mailbox is accessible

**CONCEPT
NOT FOR CONSTRUCTION**

WEST SHORE DRIVE

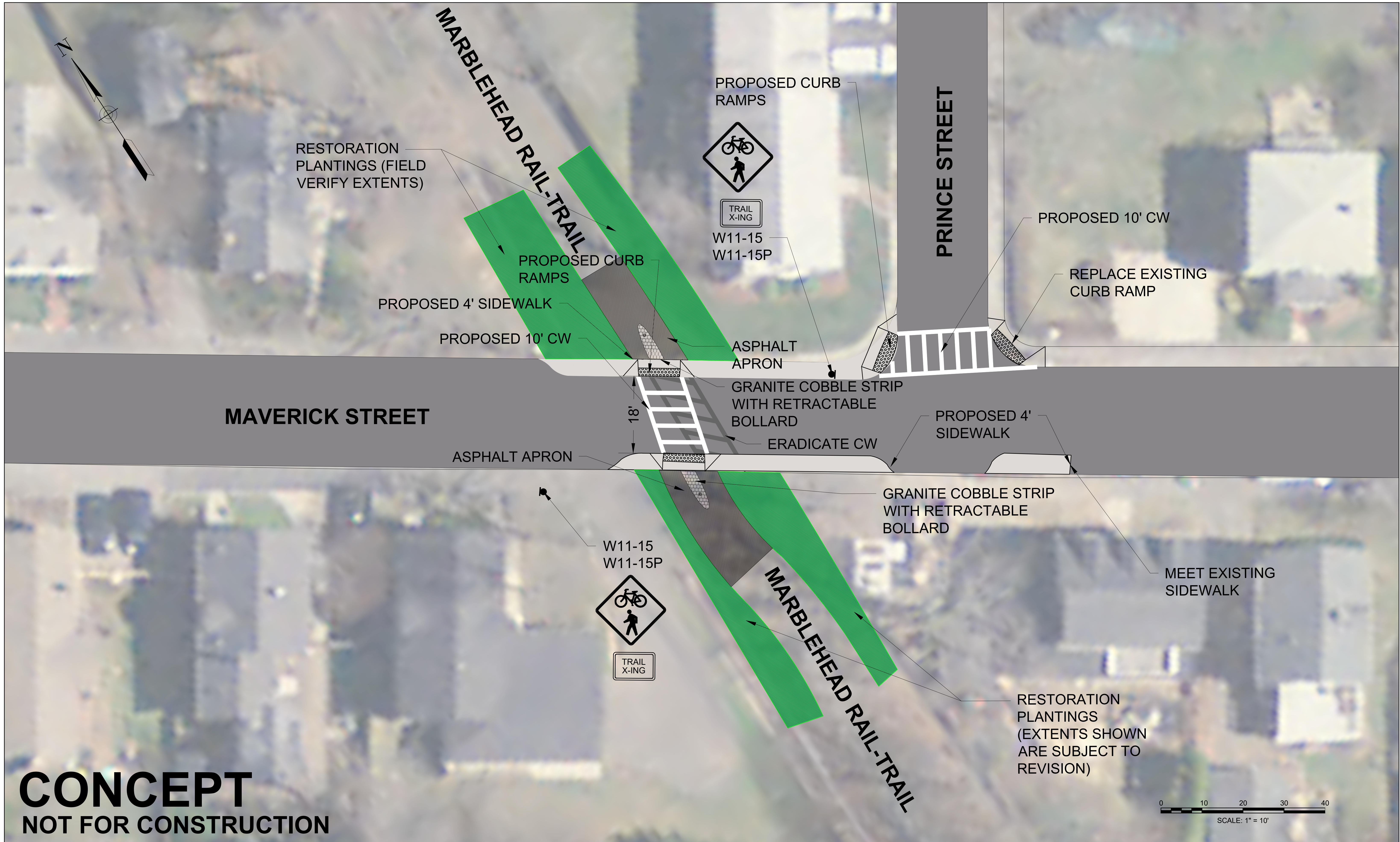
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MARBLEHEAD COMPLETE
STREETS IMPROVEMENTS
MARBLEHEAD, MA

DSGN	DATE	10/2020
DR		
CHK	SHEET NO.	2 OF 9
APVD		

**TOOLE
DESIGN**

2 OLIVER STREET, SUITE 305
BOSTON, MA 02109
PHONE: 617.619.9910
FAX: 301.927.2800
www.tooledesign.com



CONCEPT
NOT FOR CONSTRUCTION

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MAVERICK STREET

MARBLEHEAD COMPLETE
STREETS IMPROVEMENTS
MARBLEHEAD, MA

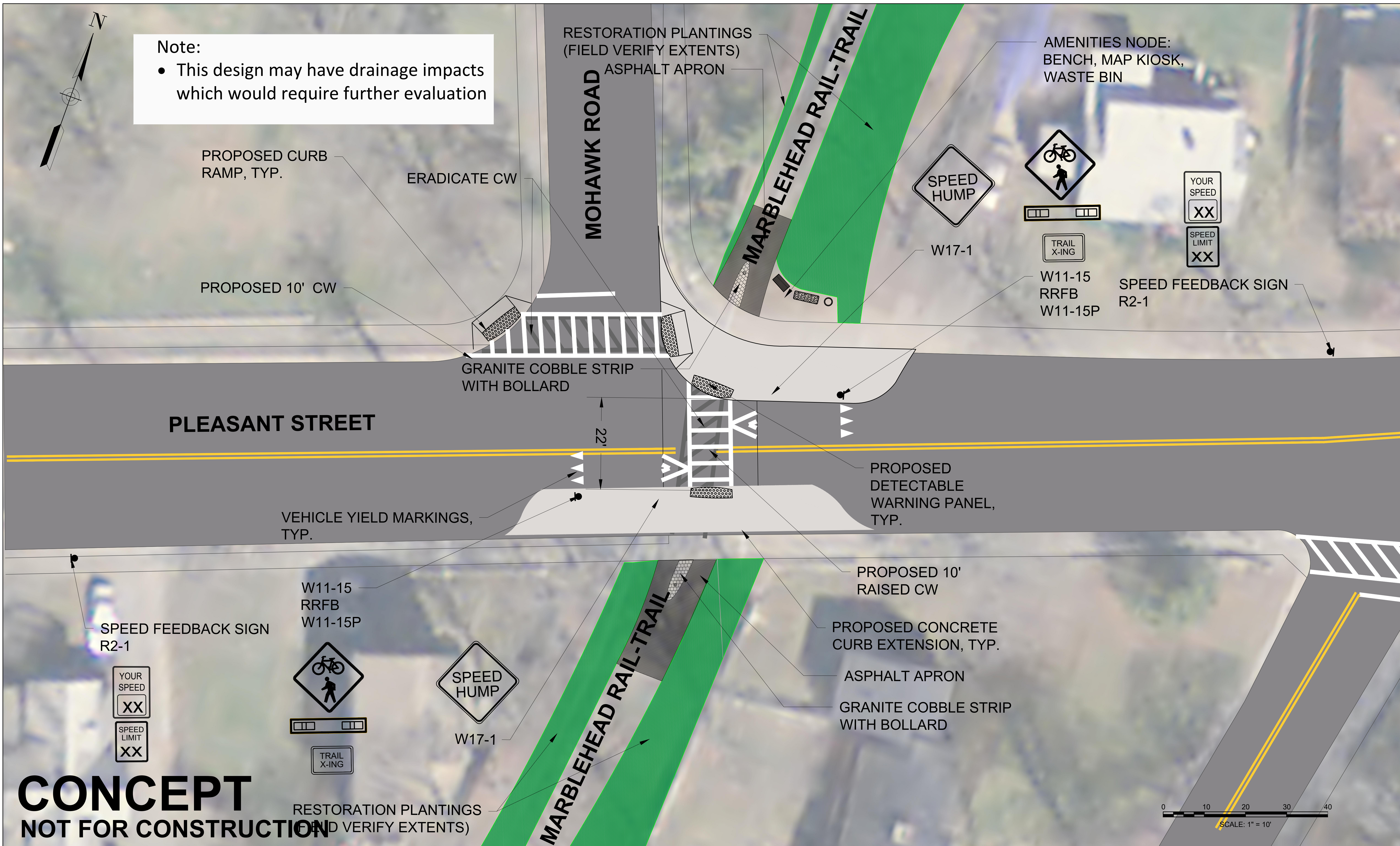
DSGN	DATE
DR	10/2020
CHK	SHEET NO.
APVD	3 OF 9

TOOLE DESIGN
2 OLIVER STREET, SUITE 305
BOSTON, MA 02109
PHONE: 617.619.9910
FAX: 301.927.2800
www.tooledesign.com

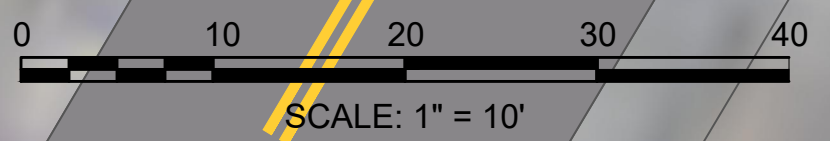


Note:

- This design may have drainage impacts which would require further evaluation



**CONCEPT
NOT FOR CONSTRUCTION**



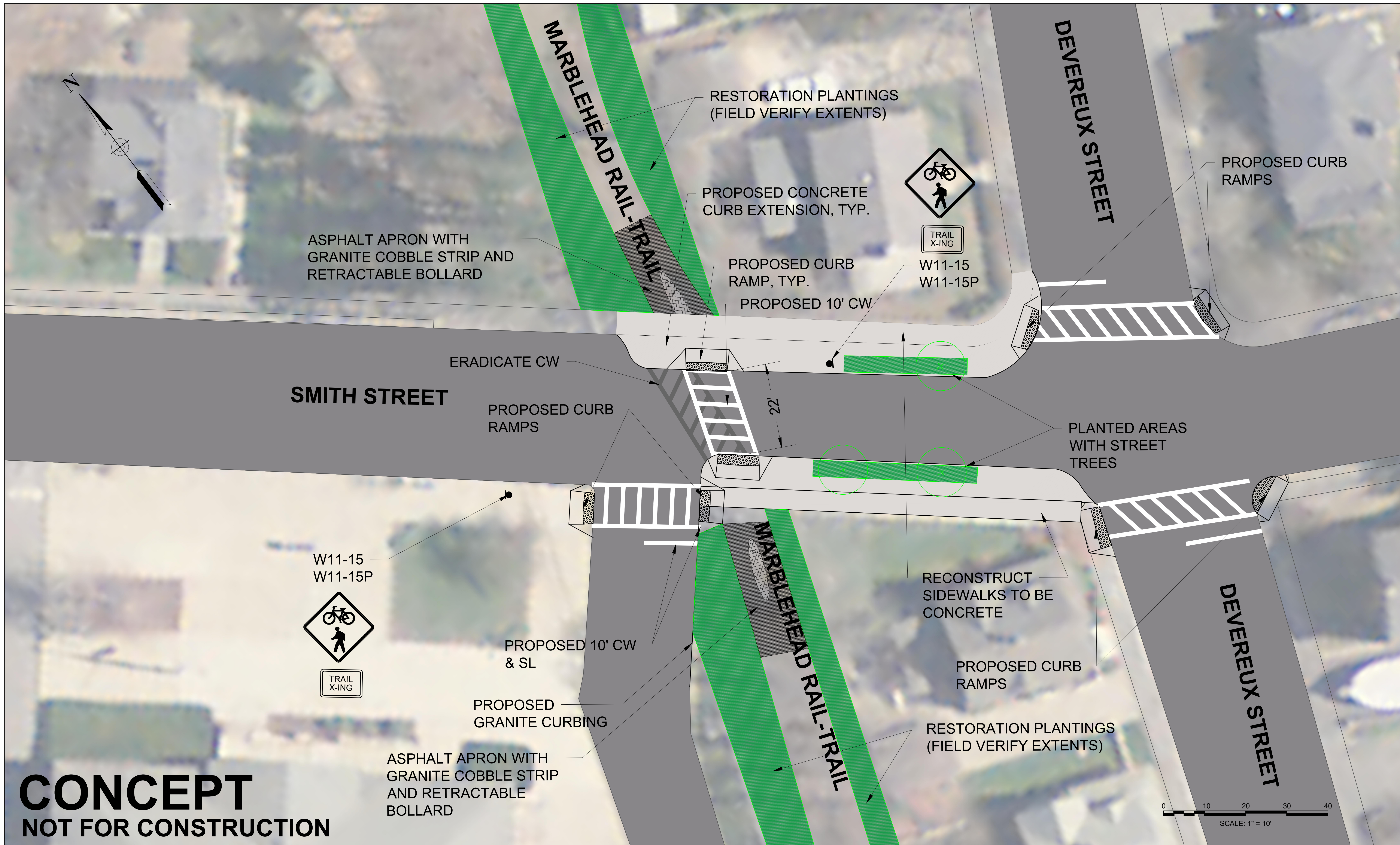
This preliminary concept is for planning purposes only. Field verification, site condition assessments, engineering analysis, and design are necessary prior to implementing recommendations contained herein.

PLEASANT STREET

MARBLEHEAD COMPLETE
STREETS IMPROVEMENTS
MARBLEHEAD, MA

DSGN	DATE
DR	10/2020
CHK	SHEET NO.
APVD	4 OF 9

TOOLE DESIGN
 2 OLIVER STREET, SUITE 305
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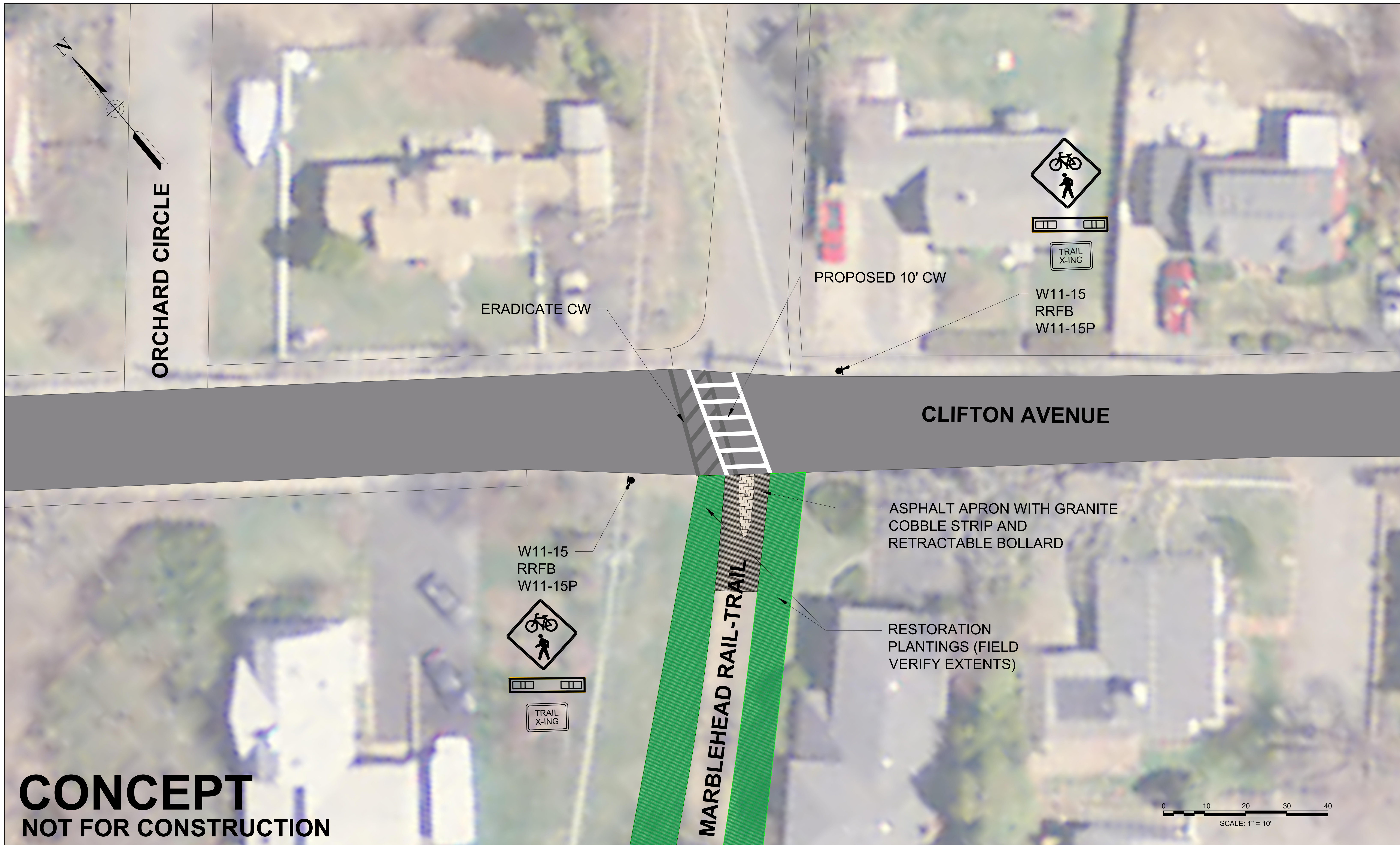
SMITH STREET

MARBLEHEAD COMPLETE
STREETS IMPROVEMENTS
MARBLEHEAD, MA

DSGN	DATE
DR	10/2020
CHK	SHEET NO.
APVD	5 OF 9

**TOOLE
DESIGN**

2 OLIVER STREET, SUITE 305
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CONCEPT
NOT FOR CONSTRUCTION

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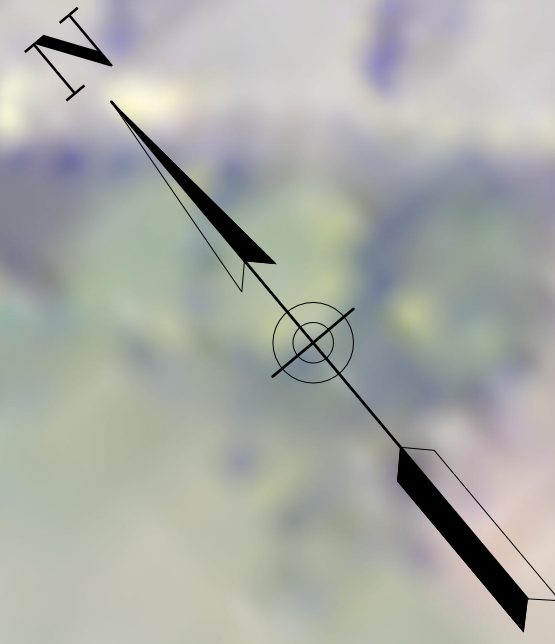
CLIFTON AVENUE

MARBLEHEAD COMPLETE
STREETS IMPROVEMENTS
MARBLEHEAD, MA

DSGN	DATE
DR	10/2020
CHK	SHEET NO.
APVD	6 OF 9

TOOLE
DESIGN

2 OLIVER STREET, SUITE 305
BOSTON, MA 02109
PHONE: 617.619.9910
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RESTORATION PLANTINGS (FIELD VERIFY EXTENTS)

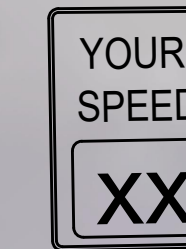
CRITICAL TRAIL REGRADING AREA

AMENITIES NODE: BENCH, MAP KIOSK, WASTE BIN

PROPOSED DETECTABLE WARNING PANEL, TYP.



W11-15 W11-15P



SPEED FEEDBACK SIGN R2-1

Note:

- This design may have drainage impacts which would require further evaluation

ERADICATE CW

PROPOSED 10' RAISED CW

VEHICLE YIELD MARKINGS

ROCKAWAY AVENUE

ASPHALT APRON WITH GRANITE COBBLE STRIP AND BOLLARD

W11-15 W11-15P



TRAIL X-ING

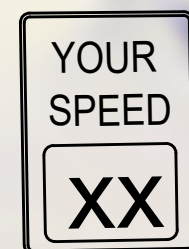
CRITICAL TRAIL REGRADING AREA

RELOCATE GUY WIRE

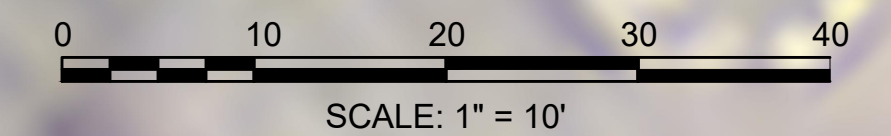
RESTORATION PLANTINGS (FIELD VERIFY EXTENTS)

CARLTON ROAD

SPEED FEEDBACK SIGN R2-1



CONCEPT NOT FOR CONSTRUCTION



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ROCKAWAY AVENUE

MARBLEHEAD COMPLETE STREETS IMPROVEMENTS
MARBLEHEAD, MA

DSGN	DATE	10/2020
DR	SHEET NO.	7 OF 9
CHK		
APVD		

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CONCEPT
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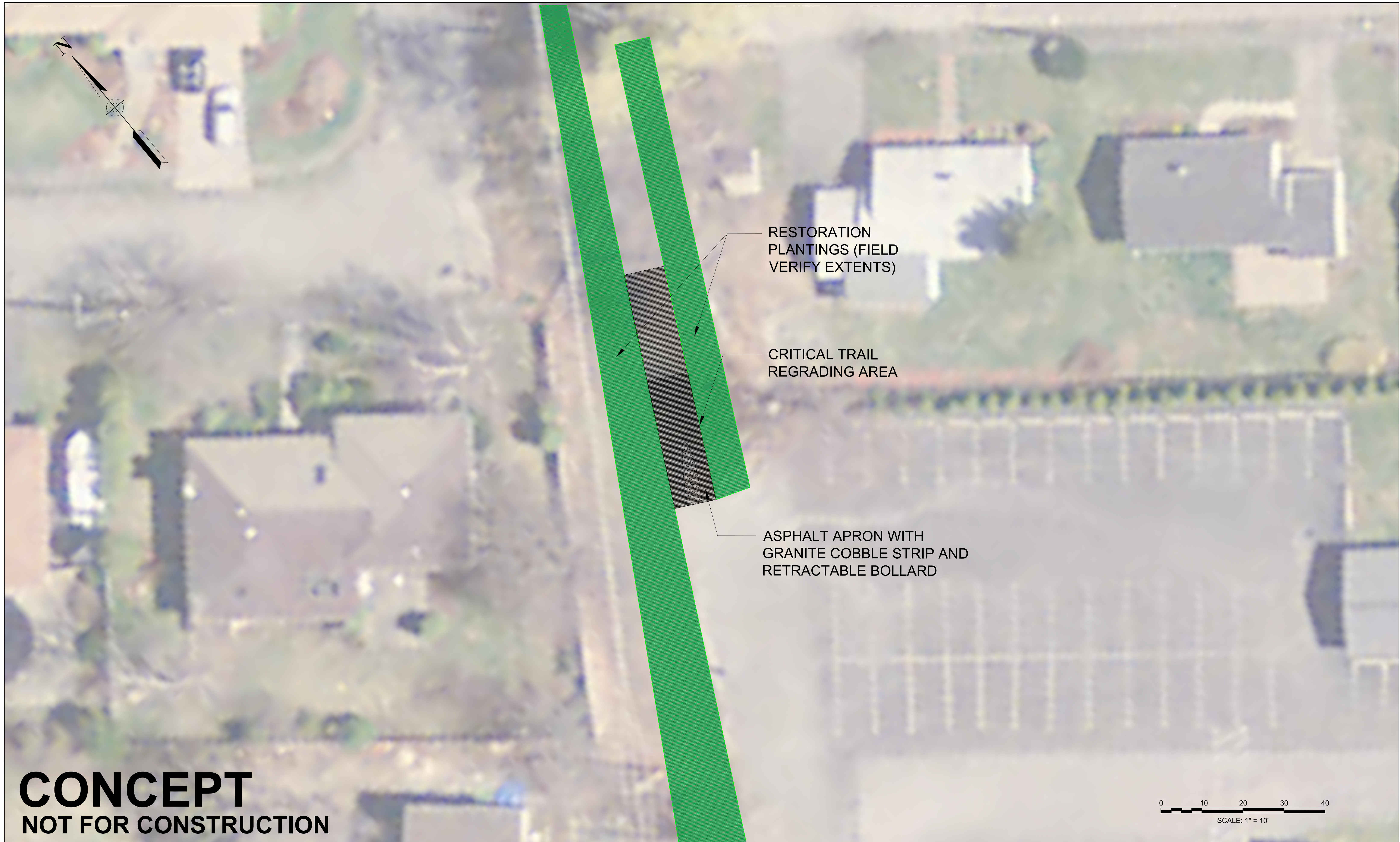
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SEAVIEW AVENUE

MARBLEHEAD COMPLETE
STREETS IMPROVEMENTS
MARBLEHEAD, MA

DSGN	DATE
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APVD	8 OF 9

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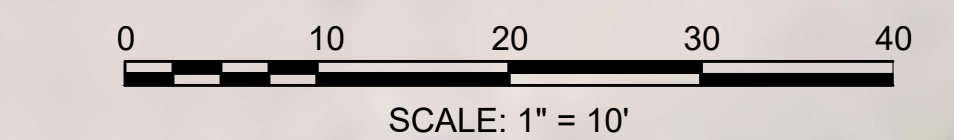
CONCEPT
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CLIFTON AVENUE-DRIVEWAY

MARBLEHEAD COMPLETE
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 MARBLEHEAD, MA

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APVD	9 OF 9



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