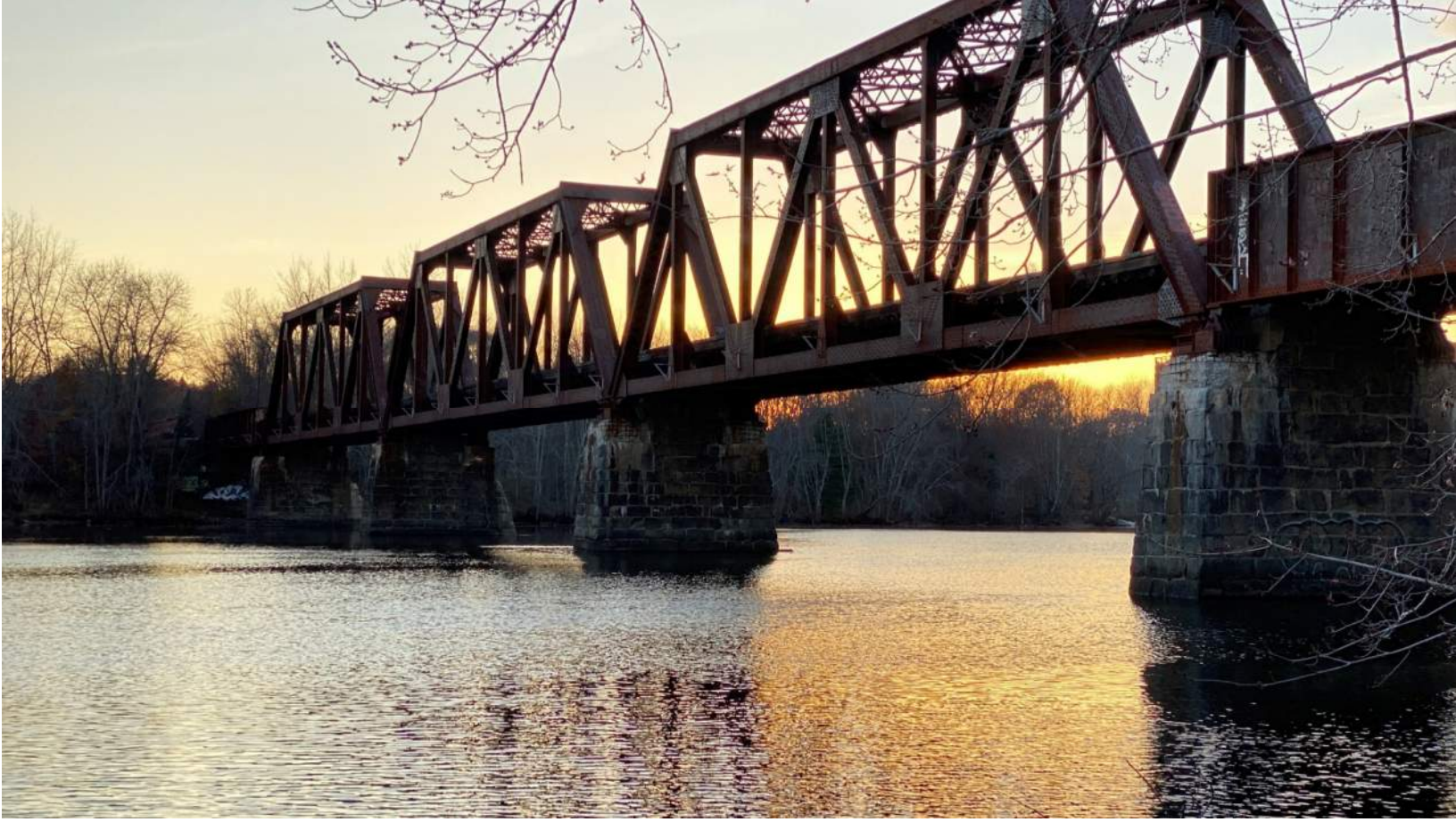

Feasibility Study

Eastern Trail Connectivity Feasibility Study

West Cole Road in Biddeford to Thornton Academy in Saco

PREPARED FOR

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Introduction

The Eastern Trail is a vital multi-use trail of state-wide significance in Maine. Extending 65 miles from Kittery to South Portland, approximately 22 of those miles have been previously constructed as an off-road connection from Kennebunk to South Portland, with gaps in the off-road segments being filled by a scenic on-road route that mostly follows quiet country roads. With a desire for a continuous off-road connection starting in Kittery, this feasibility study provides the exploration of an alternate route over the Saco River and through the most significant population density along the trail. This 3-mile corridor continues to advance the vision of the East Coast Greenway that started in the early 1990's to create a continuous, traffic-free trail from Florida to Maine linking 25 major eastern seaboard cities.

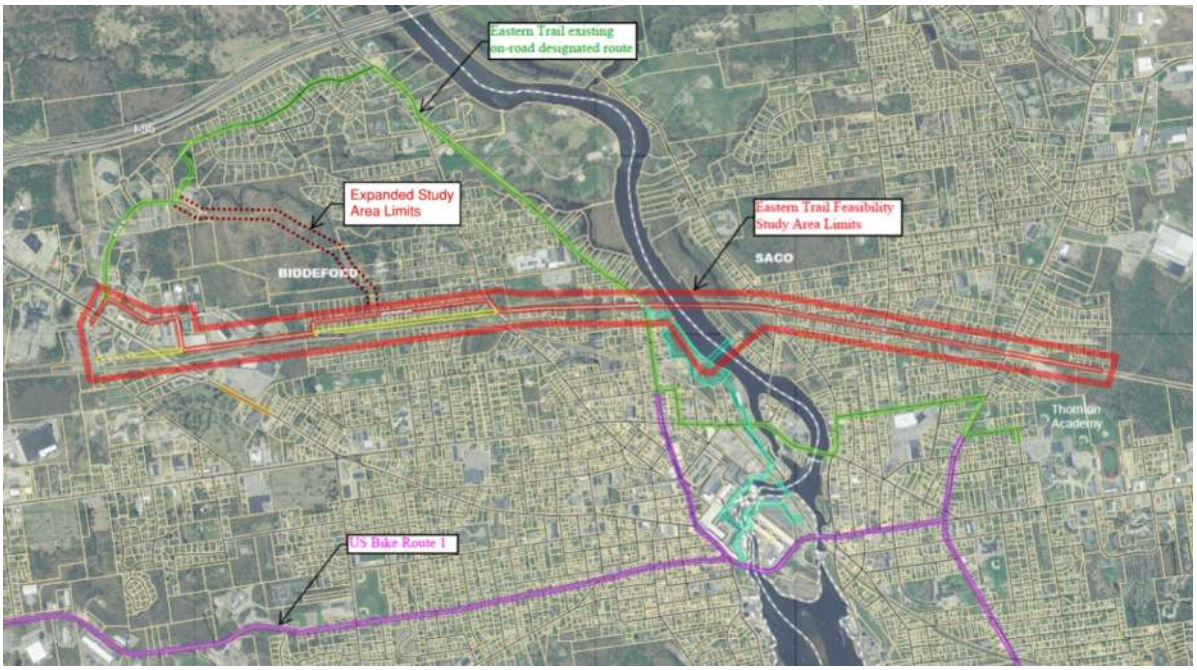
VHB is working with the municipalities of Biddeford and Saco, in collaboration with The Eastern Trail Alliance (ETA), Eastern Trail Management District (ETMD), and the Maine Department of Transportation (MaineDOT) to conduct a Bicycle and Pedestrian Trail Connectivity Feasibility Study along the Eastern Trail. This team of professionals form the project Technical Advisory Committee (TAC), which collectively evaluate the inventory of data and provide input and guidance on the alternatives evaluated to confirm they meet the purpose and need.

The study's purpose is to evaluate and analyze alternatives to bridge the gap in the Eastern Trail off-road segments from West Cole Road in Biddeford to Thornton Academy in Saco. This "Over the River" section adds 3 miles of the Eastern Trail and connects the existing 16 miles of trail to the north with 6 miles of trail to the south. Creating this connection results in 7 communities linked for off-road, human-powered travel.

This study discusses the project purpose and need and identifies challenges and opportunities along the study area. It also evaluates the feasibility, cost, and impacts of alternatives in key locations and recommends solutions for further project development.

1.1 Project Description

The study area includes a three-mile gap centralized by the Saco River, connecting existing Eastern Trail off-road segments beginning in the City of Biddeford and continuing northwest to the City of Saco. Approximately 1.75 miles south of the existing railroad truss bridge over the Saco River, the study area begins where the existing Eastern Trail off-road segment ends, at West Cole Road in Biddeford. Following the existing rail corridor north of the Saco River Bridge for approximately 1.2 miles the study area proceeds until tying into the Eastern Trail segment behind Thornton Academy in Saco, just east of North Street. The study area focuses on the railroad corridor, as a rail-with-trail option, and includes several adjacent properties and nearby on-road facilities. The below graphic illustrates the Eastern Trail study area.



Eastern Trail Study Areas

1.2 Local Concerns

An important initial step in the project development process is to invite input from the local community, including public officials, residents, and other interacted groups. This provides both the TAC and the consultant team an understanding of the public's vision for the project, their concerns, and any local information that may impact the study corridor as well as the feasibility of alternatives being considered.

An initial public meeting was held on November 30, 2021, which was conducted virtually as an online interactive webinar. Represented among the attendees were Town Representatives, members from the Eastern Trail Alliance, and local community members with focused interest around the Eastern Trail and this section of the Study. VHB presented the project corridor, existing conditions observed, and findings from coordination with key property owners within the study limits. Questions and comments were received from the participants regarding local concerns and developments that may

impact the future Eastern Trail through this corridor. The major take-away from this first public meeting yielded an overwhelming general support for this project to move forward.

Following the initial public meeting VHB prepared an Alternatives Analysis Memorandum to define the possibilities for the Eastern Trail within the study limits and provided the Memorandum to the TAC for review. VHB then led a discussion with a presentation of the conceptual alternatives for each segment of the project and solicited input from the TAC to determine the recommended alternatives.

On March 8, 2022, a second virtual public meeting was held to solicit public input on the alternatives developed and the Recommended Alternatives chosen. The support for the trail remained positive and the recommended alternatives received favorable comments to move the project forward with an emphasis on creating an entirely off-road corridor for the Eastern Trail.

1.3 Project Purpose and Need

Purpose

Develop a continuous bicycle and pedestrian facility that will safely accommodate all ETMD approved trail uses within the project study limits.

Need

65 miles of continuous off-road multi-use trail from Kittery to Portland would complete the vision for the Eastern Trail. Currently the project study location is serviced by an on-road route connecting two off-road trail segments at either terminus of the study. This study provides design recommendations to proceed toward preliminary design for the 3-mile off-road Eastern Trail connection centralized by the crossing of the Saco River.

2

Data Collection and Design Considerations

Prior to developing alternatives, it is first necessary to document the existing physical, environmental, operational and land use conditions for these segments. This was accomplished through a cursory evaluation of the various features within the project area using readily available resources as well as field-based observations and measurements. The following section describes the results of this data gathering. A more detailed summary of existing conditions within specific segments of the project is provided in the Alternatives Analysis sections to follow.

2.1 Summary of Data Collection

2.1.1 Base Mapping

At this time, ground survey has not been conducted for this study area. Available town and state GIS data, aerial survey files and ortho-photography was combined to develop the base map shown within the Conceptual Plans of Recommendations in Appendix A3. Full ground Survey would be completed as part of the Preliminary Design of the chosen preferred alternative.

2.1.2 Field Reviews

VHB engineers, alongside Eastern Trail, municipal, and MaineDOT representatives conducted field reviews to evaluate and document existing conditions. The work included collecting photographs of existing conditions along the corridor, measurements and assessment of key features, and conversations with project stakeholders. A GIS mapping tool was utilized to document and photograph the corridor geospatially. This data has been processed in a GIS interface to create a map of the study area.

2.1.3 Wetlands

During VHB's field review, a few locations were observed to have standing water adjacent to the rail corridor. Wetland avoidance strategies were discussed and noted afield. Where avoidance is not feasible, mitigation techniques, such as steepening slopes or constructing retaining walls would be considered. As part of a future preliminary design phase, wetland specialists would field review and delineate the preferred Eastern Trail Corridor, and following the delineation, specific wetland impacts would be identified for mitigation and permitting purposes.

2.1.4 Registered Historic Properties

No properties along the railroad corridor are currently listed in the National Register of Historic Places. Biddeford and Saco both have Historic Districts that intersect the study area along Elm Street and North Street. Although no specific places are identified along the study corridor, numerous buildings on the Saco side of the corridor are identified in the Maine Department of Transportation's online GIS database as having historical significance or currently under study to determine historic significance. The GIS database also indicates that the railroad truss bridge over the Saco River has historic significance. These become relevant when considering the secondary alternatives of infrastructure upgrades to support roadside trail connections versus utilizing the railroad corridor.

2.1.5 Traffic

Existing traffic statistics along roadways within the study area, including Average Annual Daily Traffic (AADT) counts and high crash locations are available using the MaineDOT's online Public Map Viewer. No on-site traffic counts were obtained as part of this study. Although vehicular crashes are recorded at the study area intersections, no high crash locations, bicycle nor pedestrian crash locations were noted within the railroad corridor study alternative.

On-street alternatives being considered do involve several high crash locations in the vicinity of Diamond Street, Elm Street and Pine Street in Biddeford. There are also one pedestrian and two bicycle related crashes in this vicinity.

2.1.6 Right-of-Way

Right-of-way lines for the railroad corridor and nearby streets, along with property lines for abutting parcels were obtained from the Maine State GIS database. These lines would need to be confirmed with ground survey and further research as part of a future preliminary design phase.

VHB was informed that Five Star Holdings LLC on Enterprise Drive in Biddeford is planning to do infrastructure upgrades to the road and property. An alternative considered utilizing this property as an Eastern Trail connection from West Cole Road to the railroad corridor before crossing under Route 111.

Five Star Holdings LLC off West Cole Road, Indian Cliff Development Corp. off Barra Road, Portland Gas Light Company and Central Maine Power off Westmore Avenue, Dever Trust Agreement off South Street, and Gagne Realty Holdings LLC off North Street are all properties that are adjacent to Eastern Trail alternatives being explored. There is also a City of Biddeford owned parcel as well as a City of Saco owned parcel along either side of the Saco River that may be considered for an alternative route avoiding the railroad truss bridge.

2.2 Observed Current Conditions

2.2.1 Corridor Description

For the purposes of this study, the preferred Eastern Trail location is intended to follow along the existing Rail Corridor. This corridor retains the vast majority of the historic railroad ballast, timber ties, and tracks through the center of the right-of-way. A Unitil gas line parallels the railroad tracks near the western property boundary throughout the Biddeford section of the corridor. On the Saco side the Unitil Gas line follows the eastern boundary of the Rail Property through the end of the corridor.

Rail embankments range from 0-15' with about 10% of the Biddeford section and 0% of the Saco section being in a cut slope. Vegetation within the rail embankments range from minimal to low as the corridor is still an active Rail Line. Larger caliper trees and denser vegetation was observed along the edges of the Railroad Right of Way.

Four box culverts were inventoried within the study area in Saco. All four culverts were in fair to good condition. While no culverts were inventoried along the Biddeford Rail Corridor, several utility manholes were observed along the western property boundary between the Route 111 Bridge and South Street.

2.2.2 Signage and Lighting

Crosswalks and some street lighting exist in the vicinity of the South Street, Main Street, and Lincoln Street crossings. Westmore Avenue has intermittent street lighting mounted on the utility poles that run adjacent to the roadway. Signing at all crossings within the corridor is railroad related only. In addition to the inadequate signing and striping currently available for trail crossings, auxiliary safety measures will be investigated at the challenging crossings of Main Street and Lincoln Street.

2.2.3 Crossings and On-road Facilities

The study area intersects six roadways, two of which have bridges over the railroad. The project starts on the north side of West Cole Road in Biddeford, at the intersection with the private road, Enterprise Drive. There is a development plan for Enterprise Drive and the surrounding land that this project takes into consideration.

From the north end of Enterprise Drive the study corridor travels under Route 111 adjacent to the railroad tracks, and heads northerly paralleling the railroad tracks toward South Street. In this section of the corridor between Route 111 and South Street the trail must cross at least one set of railroad tracks. If the existing rail line can shift to the east under the Route 111 bridge, the trail would only require crossing a rail spur to the Westfield Inc. property.

At South Street the roadway travels across an approximately thirty-two-foot span bridge over the railroad tracks. Once north of South Street the corridor continues until crossing Main Street just before reaching the Saco River Railroad Bridge. Main Street has a challenging sight distance for trail users trying to cross, resulting in the need to further investigate additional safety measures at the crossing.

North of the Saco River Railroad Bridge the rail corridor crosses Lincoln Street, Bradley Street, and North Street all at grade. The Lincoln Street crossing is the only challenging crossing of the three,

where supplemental safety measures may be warranted. On the northeast corner of the North Street crossing there is a Unitil Station for the underground gas line that must be avoided with the trail.

An alternative study alignment was discussed along Westmore Avenue in Biddeford. The roadway has approximately a twenty-six-foot pavement width from curb to curb with a five-foot paved sidewalk on the west side. On-street parking is utilized intermittently, and the speed limit is 25 miles per hour. Aerial utility lines parallel the roadway with poles ranging from five to ten feet offset from the eastern curb line. Access to Westmore Avenue from the rail corridor could potentially be via a Portland Gas Light Company parcel at the southern end of the roadway or a Central Maine Power Co parcel approximately mid-way up Westmore Avenue on the western side.

2.2.4 Saco River Bridge

The Saco River Bridge is currently owned and operated on by CSX, as a connection providing industrial freight services to the City of Saco. By the Eastern Trail utilizing an existing river crossing, there wouldn't be a need for new piers in the river, which significantly reduces cost, hydraulic, and environmental impacts. VHB had previously confirmed with Pan Am Railways, the former owner and operator, that they were willing to consider the possibility of supporting the new bike/ped bridge on the existing railroad bridge. However, now that Pan Am has been acquired by CSX, further communication with CSX is required. Through on-site investigations, review of the existing bridge plans, and conversations with Pan Am, VHB understands that the concrete pier caps are in very poor condition with extensive delamination and spalling that has resulted in partial loss of support for some of the stringer and truss bearings. CSX has recently indicated that they intend to complete the repairs to the pier caps in fall 2022. CSX has also indicated that they are considering replacing the track and ballast on the bridge due to its deteriorated condition.

2.2.5 Railroad Facilities

Most of the Eastern Trail corridor under evaluation for this study includes existing railroad tracks currently owned and operated by CSX, formerly Pan Am Railways. As a result, a major segment of this study will include an evaluation of rail-with-trail as an alternative that will be carried forward. As mentioned above, the active rail corridor provides industrial freight services between a rail yard adjacent to and just north of the Biddeford Ice Arena and the Saco Industrial Park. This track typically sees approximately 1 train per week.

2.3 Design Considerations

2.3.1 Design Parameters

Trail Surface

This study corridor of the Eastern Trail is intended to maintain similar standards to the previously constructed off-road segments of the corridor for specific sections of the trail. For the northern limits of the study corridor, the trail will be surfaced with a 2"-3" depth Aggregate Surface Course designed for trail uses. By maintaining this surface material like the previously completed trail section abutting this study corridor in Saco, the trail users will experience a cohesive feeling between the various segments. The trail surface material may vary where the trail user counts are anticipated to be much

greater than most of the other corridors, and where the trail is being constructed adjacent to roadway corridors.

One of the recommended alternatives for the southernmost segment of trail within this study corridor follows West Cole Road and Barra Road like the current Eastern Trail alignment. The trail facilities will be greatly improved upon along this current alignment, and the trail surface material of pavement will be utilized to increase durability and resilience from the byproducts of the roadway corridor that is adjacent.

From South Street in Biddeford to North Street in Saco the trail navigates through an urban environment where trail user numbers are anticipated to be significantly higher than other sections of the Eastern Trail. Due to the increased demand for the trail facility and the increased effect of use, paving this section of trail may be an appropriate action to increase service life and functionality for trail users. Within the preliminary design phase of this project, the appropriate trail surface will be further evaluated for these segments.

Trail Width

This segment of trail is proposed to be twelve feet wide in most locations. Preferred multi-use trail widths range from ten to twelve feet, with an allowable minimum width of eight feet. Within the limits described above where the trail is adjacent to a roadway corridor, the trail width may be reduced to ten feet. A couple notable pinch points were observed where a trail width reduction could reduce impacts to wetlands, right-of-way, or other complicated resources. The majority of the previously constructed Eastern Trail off-road segments were built to a twelve-foot surfaced width, with grass shoulders. Exact limits of trail width reduction would be further evaluated within the preliminary design phase of this project.

Trail Grade

While design standards allow for grades up to, and sometimes exceeding 5% for long stretches of trail, the conceptual profiles developed for the recommended alternatives are generally well below a 5% longitudinal grade. Locations with challenging grade changes requiring moderate recommended longitudinal slopes for the trail are as follows:

- The terrain within the Indian Cliff Development Corp. parcel at the end of Barra Road and relative to the recommended alternative section B.1 option 2, is currently undeveloped ground. As the existing ground shows within the lidar of the area, slopes up to 5% may be achieved when approaching a bridge over the gulley on the northeastern portion of the property. Once the property is further developed and graded, these elevation changes may be found to be less severe resulting in a more gradual approach to the gulley crossing.
- The rail embankment in the proximity of the Saco River becomes quite steep as approaching the existing railroad bridge from either side. Notably on the northern side of the river, the rail embankment is approximately 20’ tall for several hundred feet before leveling out as it approaches Lincoln Street in Saco. Due to the adjacent wetlands and utility infrastructure, the trail is proposed to be constructed along the rail embankment, which reduces the possibilities of a steeper grade along the trail within this section.

2.3.2 Trail Design Standards and Guidelines

The trail geometric design will generally follow the applicable principles in the 2012 AASHTO Guide for the Development of Bicycle Facilities, 4th Edition, and the supplemental references listed throughout.

Signage and pavement markings, where applicable, will follow the guidance contained within the 2009 Manual on Uniform Traffic Control Devices (MUTCD), as amended.

Where connecting to an at-grade crossing of roadway facilities, sidewalk ramps, crossings, and other applicable impacted facilities will follow the principles in the Americans with Disabilities Act Accessibility Guidelines (ADAAG).

3

Alternatives Analysis

The observations from the data collection phase, combined with applied design principles and public input, shape the range of design solutions that are possible or necessary to satisfy the project Purpose and Need. The following section identifies and evaluates conceptual design solutions, and then identifies the final recommended alternatives that address the project needs and are depicted within the conceptual plans.

3.1 Improvement Alternatives

The study area is a connection of the two existing Eastern Trail off-road segments between Biddeford and Saco. The first segment of this study focuses on the Biddeford side; a 1.65-mile rail corridor connecting West Cole Road to Main Street. The second segment is a 1.35-mile rail corridor starting with crossing the Saco River and ending at Thornton Academy where it connects to the existing Eastern Trail. Both segments are broken into four primary sections, which form the basis of the discussion of alternatives.

Biddeford Segment (West Cole Road to Main Street in Biddeford)

Section B.1 – West Cole Road to Ice Arena (~0.25 Miles)

1.1.1 On-Road Connection

1.1.2 Five Star Holdings to Rail Corridor

1.1.3 Rail Corridor

1.1.4 On-Road Connection to 5 Points Shopping Center

Section B.2 – Ice Arena to Westmore Ave (~0.4 Miles)

1.2.1 Utility Corridor

1.2.2 Rail Corridor

1.2.3 5 Points Shopping Center

Section B.3 – Westmore Ave to South Street (~0.55 Miles)

1.1.5 Westmore Avenue Connection

1.1.6 Freight Rail with Trail

1.1.7 Remove Freight Rail for Trail

1.1.8 Amtrak Rail with Trail

Section B.4 – South Street to Main Street (~0.45 Miles)

1.2.4 On-Road Connection

1.2.5 Freight Rail with Trail

1.2.6 Remove Freight Rail for Trail

Saco Segment (Main Street in Biddeford to Thornton Academy in Saco)

Section S.1 – Saco River Crossing (~0.4 Miles)

2.W.1 On-Road Connection

2.W.2 Freight Rail with Trail on Existing Bridge

2.W.3 Remove Freight Rail for Trail on Existing Bridge

2.W.4 New Trail Bridge

Section S.2 – Lincoln Street to Bradley Street to North Street (~0.7 Miles)

2.1.1 Freight Rail with Trail

2.1.2 Remove Freight Rail for Trail

Section S.3 – North Street Crossing

2.2.1 Railroad Crossing

2.2.2 Remove Freight Rail for Trail

2.2.3 Re-align Freight Rail

Section S.4 – North Street to Thornton Academy (~0.25 Miles)

2.3.1 Freight Rail with Trail to the West

2.3.2 Remove Freight Rail for Trail

2.3.3 Re-align Freight Rail

Biddeford Segment (West Cole Road to Maine Street in Biddeford)

Improvement Alternatives Overview – Biddeford Segment

Biddeford Segment from West Cole Road to Main Street. Section B.1 depicted in red, Section B.2 depicted in blue, Section B.3 depicted in orange, Section B.4 depicted in cyan.

Section B.1 – West Cole Road to Ice Arena (~0.25 Miles)

Existing Conditions:

An on-road trail connection would start at the current terminus to the off-road segment of the Eastern Trail at West Cole Road and head northerly to Route 111 (Alfred Street). Trail users would then cross Route 111 to Barra Road and continue northerly along Barra Road until reaching the existing terminus of Barra Road. From the end of the existing Barra Road, the trail would continue through the planned development of Indian Cliff Development Corp and end at the connection to Westmore Ave via a CMP parcel. West Cole Road is an unstriped, 26-foot-wide paved travel way with a sidewalk connection starting about 460 linear feet from the existing Eastern Trail terminus. When approaching the Route 111 intersection the roadway becomes striped with lane designations for the signalized intersection 50 feet prior to the vehicular stop bar. Pedestrians are conveyed across the westerly and northerly legs of the intersection via crosswalks and pedestrian actuated signal heads. The roadway connections north of the intersection with Route 111 are all striped roadways containing a sidewalk connection to the current terminus of Barra Road.

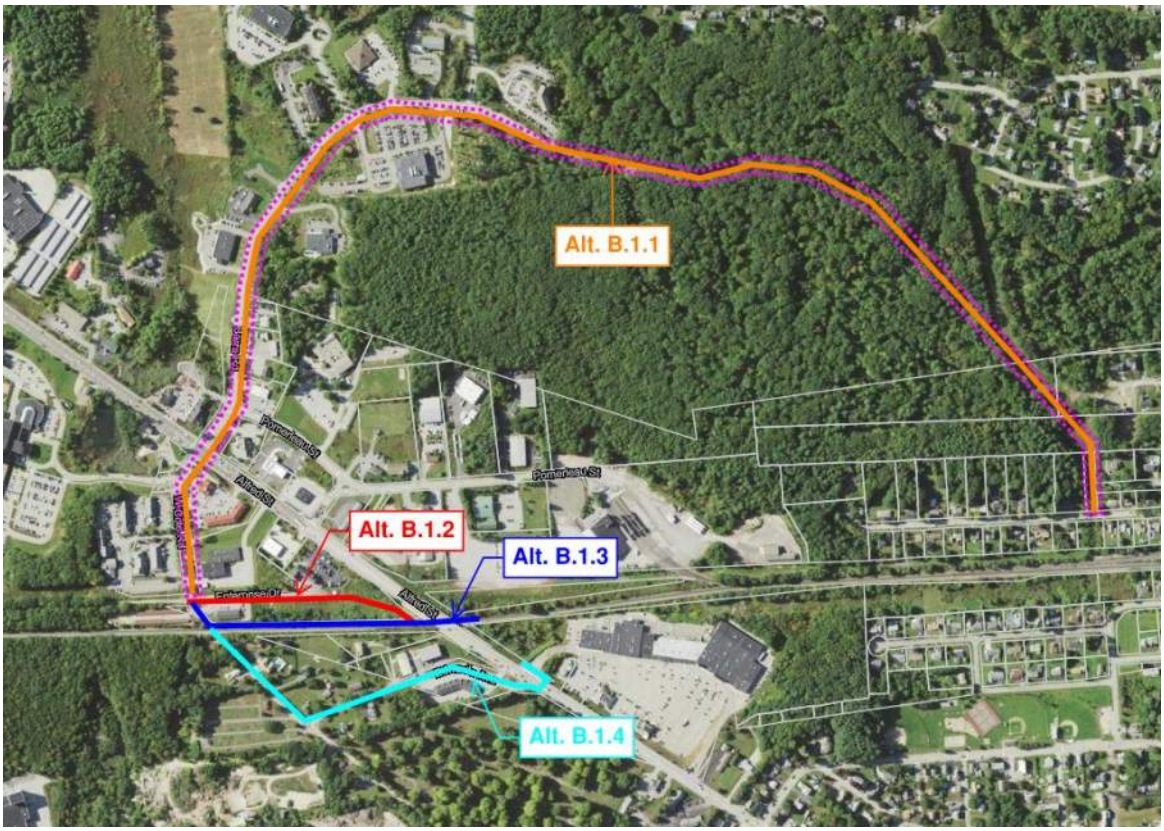
Enterprise Drive is currently a private gravel road directly across from the existing Eastern Trail terminus at West Cole Road and leads to the Five Star Holdings parcel. This parcel is currently developed on the western end and is utilized as a used auto sales company. The eastern half of the property is undeveloped with thick vegetation ranging three to ten feet in height.

To the east of Enterprise Drive and the Five Star Holdings parcel is the rail corridor. The rail corridor holds a single track aligned slightly to the west of center of the approximately 66-foot-wide right-of-way. Along the edges of the rail ballast, wet areas and invasive species were observed during field investigations. Heading northerly the rail corridor passes under a 75-foot span bridge carrying Route 111 traffic with an approximately 50-foot clear width between faces of abutments.

A secondary on-street connection crosses the rail corridor from West Cole Road to Cole Road, then travels easterly toward the intersection with Edwards Avenue. Trail users would head northerly along Edwards Avenue to the intersection with Route 111 and cross to the 5 Points Shopping Center parcel. The connection from West Cole Road to Cole Road is not currently a signalized railroad crossing.

Cole Road and Edwards Avenue are unstriped, paved travel ways until about 350 linear feet south of the intersection with Route 111. The Route 111 intersection currently has pedestrian accommodations via a crosswalk and pedestrian actuated signal heads on the northern leg only.

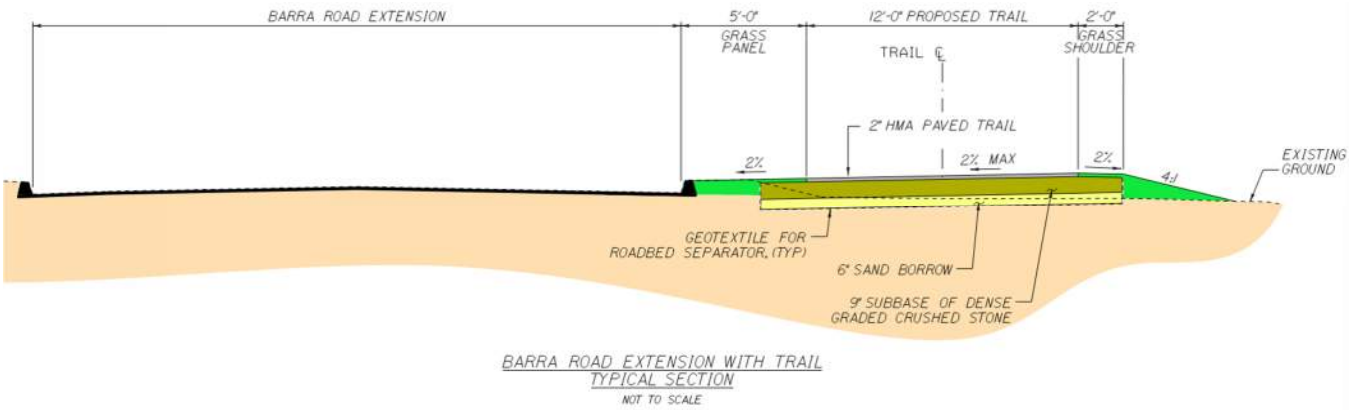
Conceptual Alternatives:



Alternative B.1.1 depicted in orange, Alternative B.1.2 depicted in red, Alternative B.1.3 depicted in blue, Alternative B.1.4 depicted in cyan. Magenta shape delineates the recommended alternatives.

- **Alternative B.1.1 On-Road Connection** – Several levels of corridor enhancement, each with their own design life, are available for an on-road connection of this alternative. Regardless of the intended level of service of the selected design, an on-road connection would benefit from crossing upgrades and added signs for Bicycle Facilities with supplemental striping to inform roadway users of the shared facility designation. Supplemental solutions that should be considered if this alternative is to have a longer lifespan would be additional sidewalk enhancements to enhance the connection for pedestrian trail users. Any supplemental features expanding on the existing footprint of the roadway infrastructure is subject to right-of-way and/or utility impacts.

With minimal right-of-way and/or utility impacts along the roadway, a ten- to twelve-foot-wide side path could be a very feasible option. An existing sidewalk facility is present much of this roadway corridor, which could be expanded on to create the desired width providing a safe corridor for pedestrians and bicyclists off the adjacent roadways. The areas of West Cole Road where sidewalk is incomplete would be the areas where utility and/or right-of-way impacts would be most likely. This on-road alternative would also provide better access to the local YMCA facility, several adjacent businesses, and the Biddeford Ice Arena.



Alternative B.1.1 typical section

Advantages:

- Trail user familiarity as this is the current on-road route for the Eastern Trail
- Creates connectivity to additional communities
- Avoids the highspeed/higher volume section of the rail corridor
- Removes section B.2 and reduces the length of section B.3
- Enhanced user experience between the Barra Road and Westmore Avenue corridor

Disadvantages:

- Dependent on a private development with ROW agreements
- Requires an at-grade crossing of Route 111
- Maintains a close proximity to a roadway for the majority of the connection

Recommendations:

Although the corridor follows the roadway for a large portion of this section, there are adequate opportunities to enhance the adjacent sidewalk facility to create a side path that satisfies the purpose and need. A vital component of this alternative becoming a viable route for the Eastern Trail is the development at the current terminus of Barra Road coming to fruition. Due to the unknown timing of this development, it is recommended that this alternative be left on the table until the project is funded for preliminary engineering services and shall be referred to as Alternative Option 1. At the time of preliminary design of this project, Sections B.1 and B.2 should be re-assessed by the engineer to determine the viability of a connection between Barra Road and Westmore Avenue.

› **Alternative B.1.2 Five Star Holdings to Rail Corridor** – VHB has been informed of a re-development of the Five Star Holdings parcel and the Enterprise Drive corridor. For the purposes of this study, VHB assumes this alternative would be constructed as a trail facility to the east of Enterprise Drive, separated by a vegetated buffer. A probable trail base construction would consist of removal of the organic matter from the surface to a depth of about six inches, followed by the installation of a geotextile material, six inches of sand and nine inches of subbase material all below a preferred surface treatment. If the trail is constructed on earth that was previously developed, the sand layer may be omitted.

Amtrak Rail Corridor Under Route 111

This alternative requires entering the rail corridor to utilize the crossing under Route 111. The railroad track alignment would have to be shifted upwards of ten feet to accommodate both facilities under the Route 111 bridge while avoiding railroad crossings. If the trail construction can utilize an existing ballast base, the top eight inches of the ballast would be graded and shaped to create a sturdy base for the trail, then choked with a granular material such that no additional material could be compacted into the ballast. In locations where the trail shares the active Amtrak rail corridor, a fenced barrier should be installed between the two facilities to promote a safe environment.

Advantages:

- Reduces length of facility within RR corridor

Disadvantages:

- Requires shift in RR alignment under Route 111 bridge
- Requires locating short segment of trail adjacent to high-speed passenger rail
- Dependent on a private development with ROW agreements

Recommendations:

This is not the recommended alternative for this study section. Communications regarding the private development do not support a trail alignment through the property. Impacts to the RR alignment under Route 111 would be challenging to receive approval and be costly to the project.

› **Alternative B.1.3 Rail Corridor** – Trail construction along the Amtrak rail corridor would begin with the clearing and grubbing of the remainder of the railroad right-of-way west of the tracks. A trail alignment would then be constructed paralleling the tracks approximately 20 feet offset to the west. Trail construction would be as described in Conceptual Alternative Section B.1.2. As the trail approaches the Route 111 overpass, a railroad alignment shift would have to occur to convey both rail and trail facilities under the bridge. If problematic natural resource or right-of-way challenges are faced between West Cole Road and the Route 111 overpass, the rail alignment shift could begin further to the south to accommodate these challenges.

Advantages:

- Retains an off-road designated trail corridor
- Removes the need for an at-grade crossing of Route 111
- Minimal, if any, ROW impacts anticipated outside of the Rail Corridor

Disadvantages:

- Requires shift in RR alignment under Route 111 bridge
- Requires locating short segment of trail adjacent to high-speed passenger rail
- Most likely requires a reduction of trail width under Route 111 bridge

Recommendations:

Further coordination with VHB Rail Engineers, MaineDOT, and CSX has highlighted significant complications with a track re-alignment through this high-speed section of the rail. Due to this and the other disadvantages highlighted within this alternative, this is not the recommended alternative.

› **Alternative B.1.4 On-Road Connection to 5 Points Shopping Center** – An on-road trail connection to the 5 Points Shopping Center parcel via Edwards Avenue has a similar variety of enhancement options to the corridor as described in Alternative B.1.1. Due to the railroad crossing and lack of current infrastructure supporting pedestrians and cyclists present along this connection, there would be an additional effort for the enhancements described in Alternative B.1.1.

Advantages:

- Reduces length of facility within RR corridor
- Creates a connection to an additional community east of the rail corridor

Disadvantages:

- Requires RR crossing at the end of W Cole Road
- Requires Route 111 at grade crossing
- Does not truly satisfy the purpose and need without a separated facility for trail users

Recommendations:

This is not the recommended alternative for this study section. A RR crossing at this location would be challenging and costly. To enhance the roadway connection to satisfy the purpose and need would likely require additional ROW impacts and/or significant roadway reconstruction.

Section B.2 – Ice Arena to Westmore Ave (~0.4 Miles)

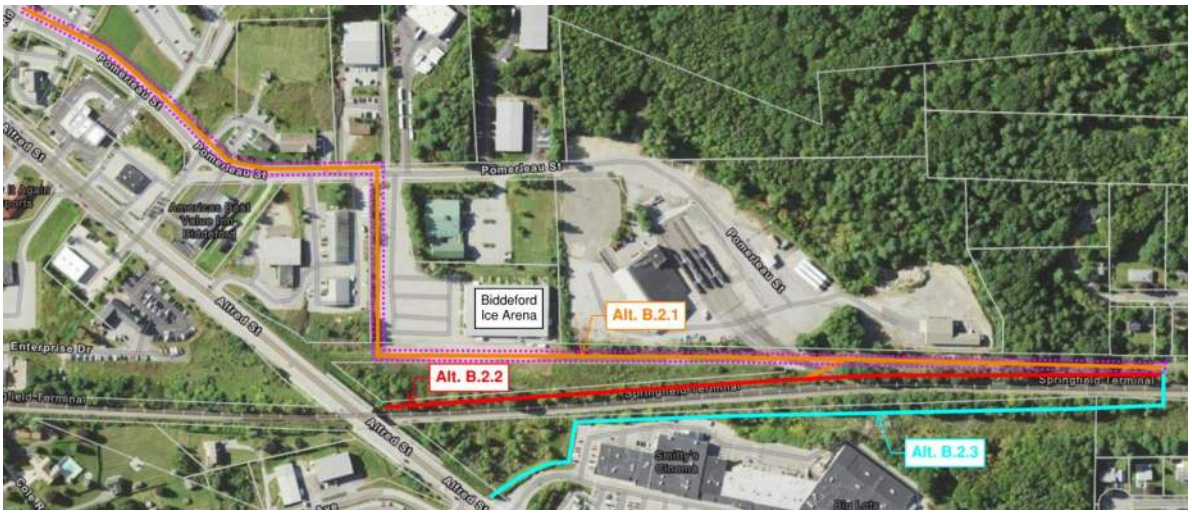
Existing Conditions:

This section of the Eastern Trail study area is intended to follow along the railroad corridor. This rail corridor holds a single track aligned approximately within the center of the railroad right-of-way. Along the edges of the rail ballast, wet areas and invasive species were observed during field investigations. At the approximate midpoint of this corridor section, a spur rail alignment services Westfield Inc. (CHS Propane) to the west.

Within a portion of the rail corridor to the west is a Unitil gas line easement and to the east is the 5 Points Shopping Center parcel. The Unitil easement is comprised of a 10-15 foot wide lightly vegetated, earthen embankment with utility delineators and manholes present through the center of the embankment. This embankment is an old railroad embankment, and the land is still owned by the railroad. The 5 Points Shopping Center parcel is a fully developed parcel on the southern half and heavily wooded on the northern half.

An on-road connection from Alternative B.1.1 utilizes Pomerleau Street to connect trail users through the Biddeford Ice Arena parcel to the Unitil gas line easement. Pomerleau Street has an approximate

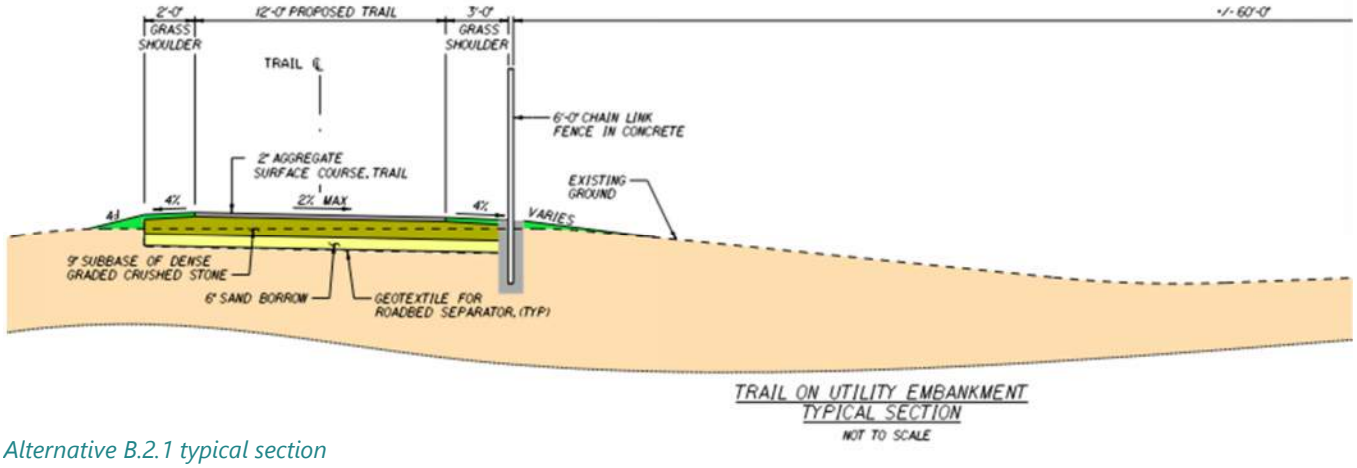
pavement width of 30 feet with an existing sidewalk connection from Barra Road to the Biddeford Ice Arena. Utility poles are primarily present along the north side of the roadway and the existing ROW is centered on Pomerleau Street with an approximate width of 49.5 feet.



Alternative B.2.1 depicted in orange, Alternative B.2.2 depicted in red, Alternative B.2.3 depicted in cyan. Magenta shape delineates the recommended alternatives.

Conceptual Alternatives:

› **Alternative B.2.1 Utility Corridor** – The construction of a side path along Pomerleau Street could satisfy the purpose and need by tightening up the roadway facility, utility relocations, and/or ROW encroachments. The side path would be constructed like as described in alternative B.1.1. Trail construction atop the utility corridor would create a separated alignment from the rail without the need for the installation of a barrier separating the two facilities. A probable trail base construction would consist of excavating the top six inches of existing material, followed by the installation of a geotextile material, six inches of sand, and nine inches of subbase material all below a surface treatment.



Alternative B.2.1 typical section

Advantages:

- Increases the separation between the trail and rail facilities

Disadvantages:

- Requires an agreement with the railroad to maintain the trail within their ROW
- Requires crossing the rail spur to Westfield Inc.
- Possible conflicts with the underground utilities present

Recommendations:

Due to the unknown timing of the Barra Road Extension development, it is recommended that this alternative be left on the table until the project is funded for preliminary engineering services and shall be referred to as Alternative Option 2. At the time of preliminary design of this project, Sections B.1 and B.2 should be re-assessed by the engineer to determine the viability of a connection between Barra Road and Westmore Avenue. Due to the added separation between the rail and trail facilities, this is the recommended alternative for this study section, if needed. Due to the change in elevation between the rail and utility embankments, and the challenging spur crossing, the recommended alignment of the trail does not deviate from Alternative B.2.2 until the spur crossing.

› **Alternative B.2.2 Rail Corridor** – Trail construction adjacent to the rail alignment utilizes the same methodology as described in Conceptual Alternatives Section B.1.2. The trail would be aligned on the western edge of the rail corridor between the Amtrak alignment and the utility corridor. In locations where the trail shares the active Amtrak rail corridor, a fenced barrier should be installed between the two facilities to promote a safe environment.

Advantages:

- Reduces possibility of utility conflicts

Disadvantages:

- Maintains a close proximity to the rail corridor
- Requires an agreement with the railroad to maintain the trail within their ROW
- Requires crossing the rail spur to Westfield Inc.

Recommendations:

This is not the recommended alternative for this section of trail due to the proximity of the rail alignment.

› **Alternative B.2.3 5 Points Shopping Center** – A trail through the 5 Points Shopping Center parcel would be aligned to follow the edge of existing pavement on the westerly side. Where feasible this trail would have a small, vegetated buffer between both the pavement and the adjacent rail corridor. Construction would start with clearing and grubbing of all trees and vegetation along the trail corridor. The trail would then be constructed as described in Conceptual Alternative Section B.1.2. A rail crossing would be required with this alternative to make a connection back to the westerly side by the limits of the 5 Points Shopping Center parcel.

Advantages:

- Creates a connection to additional communities
- Promotes a buffer between the RR corridor and trail corridor

Disadvantages:

- Tree clearing required

- Additional RR crossing required

Recommendations:

Although the connectivity to additional communities is desirable, the constructability of this alternative requiring an additional RR crossing is very low. This is not the recommended alternative for this section of trail.

Section B.3 – Westmore Ave to South Street (~0.55 Miles)

Existing Conditions:

Utility Corridor Adjacent to the Rail Corridor

This section of the Eastern Trail study area begins at the Portland Gas Light Company (PGLC) parcel toward the southern end of Westmore Avenue and is intended to follow along the railroad corridor through the intersection with South Street. At the PGLC parcel there is currently a ten- to fifteen-foot-wide access road off Westmore Avenue, leading to the utility corridor that parallels the railroad alignment. This section of the rail corridor holds a single-track alignment which splits approximately 300 feet in. A freight line servicing Saco businesses continues along the northerly alignment and Amtrak services veers off and continues a more easterly route.

The Utility corridor merges with the freight railroad corridor approximately 1,200 linear feet north of the PGLC access road. This shared corridor passes under a 28-foot span bridge carrying South Street (approximately 22-foot clear width between faces of abutments), with approximately 250 linear feet of ledge south of the underpass and 150 linear feet of ledge north of the underpass. To the east, the Amtrak alignment passes under a 76-foot span bridge carrying South Street (approximately 40-foot clear width between faces of abutments). Between the two rail corridors, just to the north side and adjacent to South Street, is state owned land split by Western Avenue. Both parcels are vegetated and sloped toward the rail corridors as Western Avenue is on an approximately twelve-to-fifteen-foot higher embankment.

Westmore Avenue parallels the freight railroad alignment to the west and provides an at-grade roadway connection to South Street. Traffic utilizing Westmore Avenue is limited to the residents of the street, as the roadway dead-ends just south of the Portland Gas Light Company parcel. This roadway corridor has an approximately twenty-six-foot pavement width from curb to curb with a five-foot paved sidewalk on the west side. On-street parking is utilized intermittently, and the speed limit is 25 miles per hour. Aerial utility lines parallel the roadway with poles ranging from five to ten

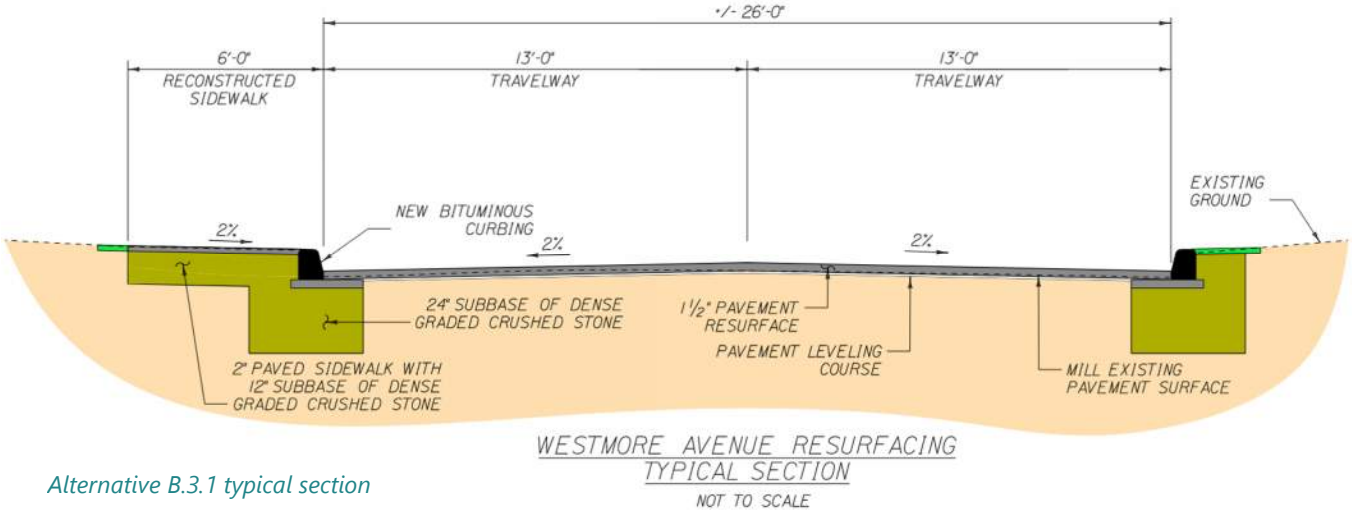
Westmore Avenue

feet offset from the eastern curb line. There are currently sidewalk ramps and a painted crosswalk connecting the sidewalk on the west side of Westmore Avenue to the sidewalk on the north side of South Street. Various types of pavement distress were observed along Westmore Avenue with multiple pavement patches present creating a challenging riding surface for bicyclists.

Conceptual Alternatives:

Alternative B.3.1 depicted in blue, Alternative B.3.2 depicted in orange, Alternative B.3.3 depicted in red, Alternative B.3.4 depicted in cyan. Magenta shape delineates the recommended alternatives.

› **Alternative B.3.1 Westmore Avenue Connection** – Several levels of corridor enhancement are available for an on-road connection via Westmore Avenue, of which would determine the longevity and safety of this alternative. Regardless of the intended level of service of the selected design, an on-road connection would benefit from crossing upgrades at the Portland Gas Light Company parcel as well as the intersection with South Street. Added signs for Bicycle Facilities with supplemental striping to inform roadway users of the shared facility designation would be a minimal upgrade to enhance the corridor safety and serviceability. Supplemental solutions that should be considered are repaving the roadway and sidewalk to create a safer and more enjoyable connection for trail users. The foremost Westmore Avenue connection upgrade would require shifting the roadway and constructing a "sidepath" to get trail users completely off the travel way. This improvement would most likely involve some right-of-way or utility impacts.



Alternative B.3.1 typical section

Advantages:

- Removes trail users from the high speed, high volume, rail corridor
- Creates a connection to an additional residential community

Disadvantages:

- Does not fully satisfy the projects purpose and need without additional ROW impacts

Recommendations:

Although this on-road connection does not fully satisfy the project's purpose and need without accruing ROW impacts, it does create a separated corridor from the railroad. Westmore Avenue is a low speed, low volume, residential, dead-end roadway that can safely support Eastern Trail users. This is the recommended alternative for this section while the Saco Industrial Rail Line remains an active resource for the Saco Community.

› **Alternative B.3.2 Freight Rail with Trail** – A freight rail with trail alternative would utilize the single freight railroad corridor for both facilities. The trail would be constructed directly to the west of the rail alignment utilizing the same methodology as described in Conceptual Alternatives Section B.1.2.

Maine DOT Minimum Standards for Development of "Trail with Rail" suggests a fifteen-foot buffer between the edge of trail and the near rail if no fence is present. With a fence, this minimum offset reduces the setback width to 10.5 feet. The most restrictive pinch point within the study area is the freight rail corridor under South Street. Due to the existing bridge span and narrow railroad envelope under the bridge, the railroad alignment can only be realigned to provide an approximately 4-foot-wide space for the trail under current conditions. Additionally, with the ledge present north and south of this roadway overpass, the railroad alignment shift and reduced trail width would most likely extend for upwards of 500 feet.

If a reduced trail width and railroad alignment shift is unacceptable, then replacement of the South Street bridge with a larger span bridge creating a larger envelope for the rail with trail corridor would be another option to consider. This would require several hundred linear feet of ledge blasting, new bridge wingwalls, abutments, and superstructure, as well as most likely right-of-way impacts.

Advantages:

- Retains an off-road facility for the Eastern Trail
- Reduces the need to navigate the large grade change between the rail corridor and South St.

Disadvantages:

- Requires significant ledge removal, ROW impacts, and a completely new bridge for South St.

Recommendations:

This is not the recommended alternative for this study section. A rail with trail alternative would only become feasible with the replacement of the existing South Street bridge with a larger span that can adequately support both facilities passing below.

› **Alternative B.3.3 Remove Freight Rail for Trail** – By removing the freight rail, the trail construction can utilize the entire width of the corridor as well as the existing ballast for a trail base. After the track, timber and debris is removed from the corridor, the trail would be constructed as described in Conceptual Alternative Section B.1.2.

Advantages:

- Existing RR ballast and infrastructure utilized to support the trail
- Reduced concern about possible conflicts with the Unitil Gas Line
- ROW and RR impacts no longer required

Disadvantages:

- Freight RR services to Saco eliminated
- Requires removal and disposal of existing RR ties

Recommendations:

Although the removal of the Saco Freight Rail Line for the Eastern Trail was initially evaluated, it has been dismissed from the evaluation at this time due to the overwhelming desire for the rail to continue servicing that line.

› **Alternative B.3.4 Amtrak Rail with Trail** – Construction of the trail adjacent to the Amtrak alignment would be as described in Conceptual Alternatives Section B.1.3 including a possible Amtrak alignment shift for the South Street overpass. Once on the north side of South Street, the trail would deviate from the rail alignment to ramp up to Western Avenue within the Maine State parcel. The trail would then cross Western Avenue and ramp back down to the freight railroad corridor, also within the Maine State parcel to avoid right of way impacts. As part of this alternative, the trail would have to cross the freight railroad tracks where they split from the Amtrak alignment, and again once reaching the north side of South Street.

Advantages:

- Retains an off-road trail facility
- Avoids the South Street Overpass pinch point
- Connects an additional community to the Eastern Trail

Disadvantages:

- Additional crossings of the Freight RR line required
- Longer Rail-with-Trail facility along the high-speed Amtrak section
- Possible RR shift required

Recommendations:

Due to the high-speed rail section the trail would be in close proximity to for a longer duration with this alternative, the trail user's experience would be negatively impacted with this alignment. Additional complications with the potential RR and natural resources impacts result in this alternative not being recommended for this section.

Section B.4 – South Street to Main Street (~0.45 Miles)

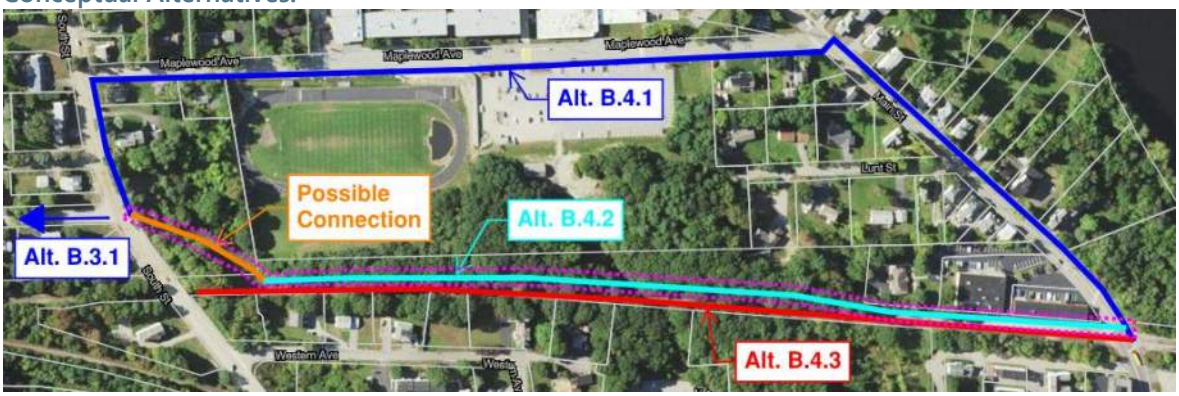
Existing Conditions:

This section of the Eastern Trail study area begins on the north side of South Street and is intended to follow along the freight railroad corridor through the intersection with Main Street. Multiple ledge and rock outcroppings were observed throughout this section along the rail corridor. Approximately 200 linear feet north of South Street, the railroad right of way widens on the western side providing a multitude of options for the trail alignment to avoid rock outcrops and possible natural resources. The parcel to the northwest of the freight rail corridor within this 200 linear foot section is mostly undeveloped, and heavily wooded, with a single house on the western most portion of the parcel. The Unitil gas line deviates from the freight rail corridor to avoid the ledge around the South Street crossing, and proceeds through the eastern portion of this parcel before entering back into the rail corridor. The northern most 400 linear feet of this section is currently being used as parking and

access to the adjacent businesses. An existing crosswalk on Main Street creates access to these businesses from the northern sidewalk, on the western edge of the railroad right-of-way. Sight distance is poor at this crossing due to adjacent buildings proximity to Main Street and the horizontal curve along Main Street at the location of the railroad crossing.

Maplewood Avenue parallels the freight railroad alignment to the west and provides an at-grade roadway connection from South Street to Main Street. Traffic utilizing Maplewood Avenue is high, but speeds remain low due to Biddeford High School. South Street and Main Street also share a high traffic capacity but have a less restrictive corridor to control traffic speed. This roadway corridor has varying pavement widths with nothing less than thirty-two feet observed from curb to curb with paved sidewalks. On-street parking is utilized on Maplewood Avenue as well as Main Street, and the speed limit is 25 miles per hour for all three roadways. Aerial utility lines parallel all three roadways with poles ranging from five to ten feet offset from the curb line. There are currently sidewalk ramps and a painted crosswalk through all applicable intersections. Various pavement conditions were observed along the roadway and sidewalk corridors.

Conceptual Alternatives:



Alternative B.4.1 depicted in blue, Alternative B.4.2 depicted in cyan, Alternative B.4.3 depicted in red, A connection from Alternative B.3.1 to the Freight Rail Corridor is depicted in orange. Magenta shape delineates the recommended alternatives.

› **Alternative B.4.1 On-Road Connection** – An on-road Eastern Trail connection via Maplewood Avenue utilizes the same methodology as described in Conceptual Alternatives Section B.3.1.

Advantages:

- ROW and RR challenges are avoided
- Creates a connection to Biddeford High School

Disadvantages:

- Does not satisfy the purpose and need
- High volume roadway causing additional safety concerns with a shared facility

Recommendations:

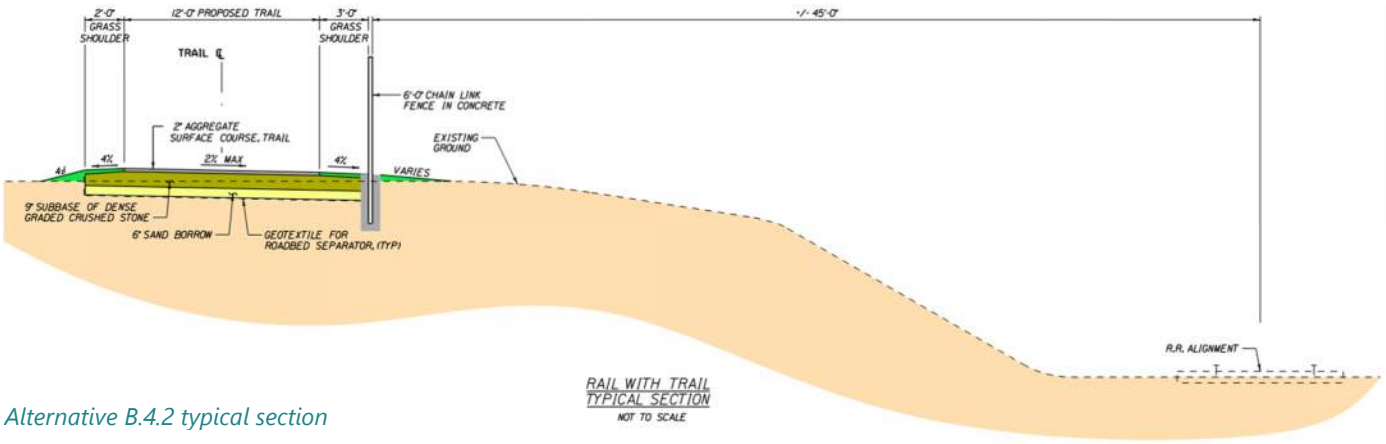
This alternative does not satisfy the purpose and need for the corridor, therefor it is not considered a long-term solution nor recommendation for this section.

› **Alternative B.4.2 Freight Rail with Trail** – Trail construction adjacent to the freight rail alignment utilizes the same methodology as described in Conceptual Alternatives Section B.3.2. Due to the less restrictive right-of-way available through this section, the trail alignment would likely be able

to re-route around challenging locations like ledge outcrops and natural resources within the corridor.

With the adjacent parcel to the west being the Biddeford High School and the undeveloped portion of the DTA parcel, there are possibilities to create alternate accesses from the roadway corridors with a right-of-way agreement. This alternative provides an opportunity for connectivity with the Biddeford High School which has a large parking lot west of the railroad corridor. If the trail comes from the east, as laid out in Conceptual Alternatives Section B.3.4, the trail will have to cross the freight rail alignment within this section.

Utilizing the existing crosswalk on Main Street does not satisfy the safety standards of the Eastern Trail without additional improvements. Since the objects obstructing the sight distance of the roadway users on Main Street are unable to be altered to improve the sight distance, additional measures should be installed to alert roadway users of the trail crossing. Intersection safety improvement options include a re-aligned crossing to better facilitate the Trail Users within the western portion of the railroad corridor, additional signage along the roadway to inform vehicles of the upcoming crossing, advanced flashing beacon assemblies to inform roadway users of the crossing ahead, and Rectangular Rapid Flashing Beacon (RRFB) assemblies that can be activated by trail users queued to cross the roadway.



Alternative B.4.2 typical section

Advantages:

- Adequate space for both facilities within rail ROW
- Provides opportunity to create a connection to Biddeford High School

Disadvantages:

- Requires a ROW agreement to complete the connection from South Street to the Rail Corridor
- Requires crossing the rail line at Main Street

Recommendations:

This trail alignment provides an off-road facility for Eastern Trail users and an opportunity for a connection with Biddeford High School. The parcel requiring a right-of-way agreement to make the connection from South Street to the rail corridor is believed to have no infrastructure in the recommended location of the trail except for an underground gas line which mostly follows the rail corridor. The crossing of the rail at Main Street can be achieved within the existing footprint of the paved roadway and sidewalk that is present already. Further discussion with CSX should be

had during the next phase of design to confirm viability, but due to the relatively navigable nature of both obstacles, this is the recommended alternative for this study section.

› **Alternative B.4.3 Remove Freight Rail for Trail** – Trail construction along the freight rail alignment utilizes the same methodology as described in Conceptual Alternatives Section B.3.3. Main Street crossing improvements described in Conceptual Alternatives Section B.4.2 would also be implemented as part of this alternative.

Advantages:

- Existing RR ballast and infrastructure utilized to support the trail
- Reduced concern about possible conflicts with the Unitil Gas Line
- ROW and RR impacts no longer required

Disadvantages:

- Freight RR services to Saco eliminated
- Requires removal and disposal of existing RR ties

Recommendations:

Although the removal of the Saco Freight Rail Line for the Eastern Trail was initially evaluated, it has been dismissed from the evaluation at this time due to the overwhelming desire for the rail to continue servicing that line.

Saco Segment (Main Street in Biddeford to Thornton Academy in Saco)

Improvement Alternatives Overview – Biddeford Segment

Figure 2: Saco Segment from Maine Street in Biddeford to Thornton Academy. Section S.1 depicted in pink, Section S.2 depicted in red, Section S.3 depicted in orange, Section S.4 depicted in blue.

Section S.1 – Saco River Crossing (~0.4 Miles)

Existing Conditions:

Section S.1 focuses on an Eastern Trail connection from Biddeford to Saco across the Saco River. An existing railroad truss bridge spans the river, which was originally constructed in 1928. The bridge consists of 3 main through-truss spans and 2 through-girder approach spans. The truss spans are each approximately 130 feet long and the approach spans are each approximately 100 feet long for a

total bridge length of approximately 590 feet. The superstructure is supported on two stone masonry abutments and four stone masonry piers. Each substructure unit has a concrete bridge seat. The superstructure appears to be in fair condition overall with no noted significant deficiencies. The pier caps are in poor condition overall with extensive spalling. The spalling at the pier caps appears to have partially undermined the bearings at some locations.

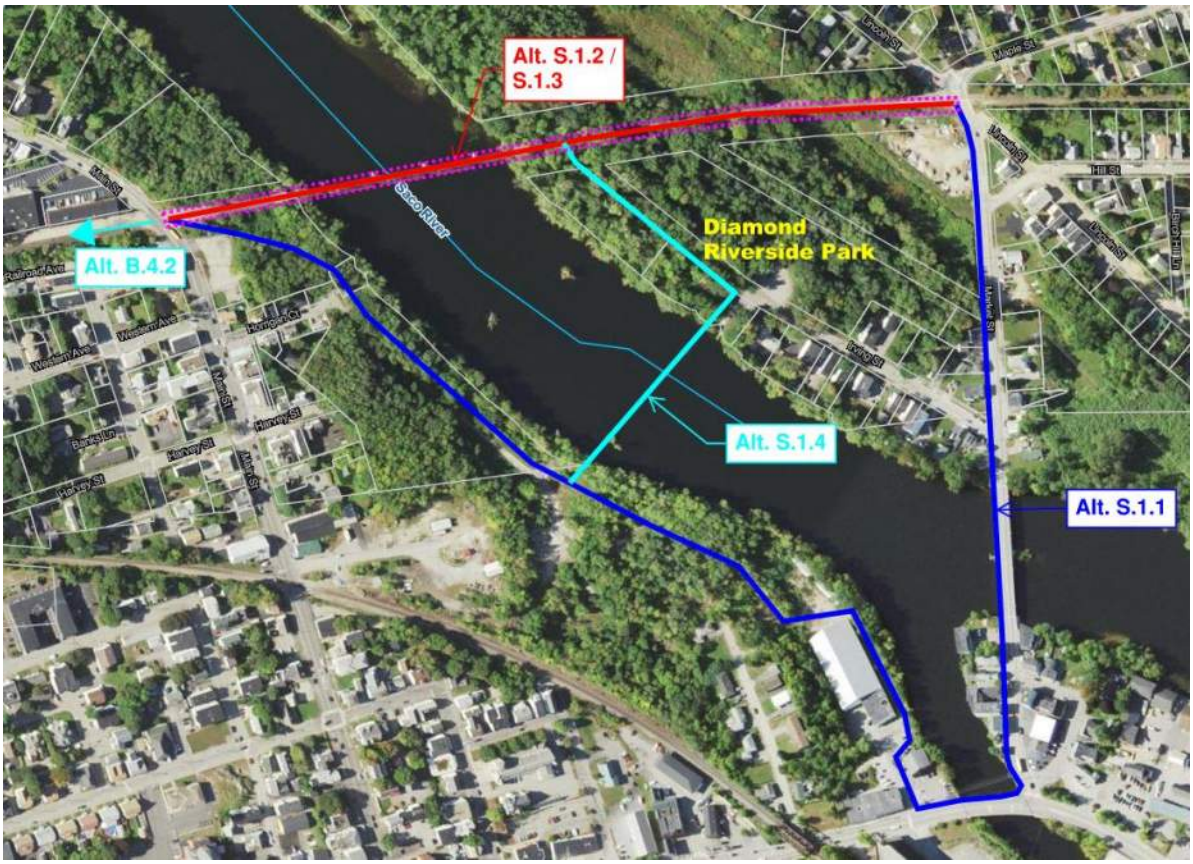
A Biddeford town maintenance road leads from the parking lot adjacent to the rail alignment at the Biddeford bridge approach, down to the Saco River, and follows the river easterly for approximately 1000 feet before heading away from the river and back to Main Street. An overgrown trail connection continues easterly along the river from the town maintenance road to Diamond Street.

Elm Street, Pine Street, and Market Street form roadway connections across the Saco River. Pavement widths range from thirty to thirty-six feet with a six- to seven-foot-wide raised sidewalk. Once across the river, Market Street or Irving Street could be utilized to return to the rail corridor. Irving Street follows the river and leads to Diamond Riverside Park. This roadway facility consists of a thirty-foot paved travel way with bituminous curbing on either side. A three- to five-foot-wide grass panel separates a five-foot paved sidewalk from the roadway on either side of the road. Market Street has an approximately thirty-two-foot paved width, with a bituminous curb and seven-foot sidewalk on the westerly side.

Biddeford Town Maintenance Road Adjacent to Saco River

Diamond Riverside Park is a mixture between grassed and wooded area. An existing, overgrown trail connects the grassed playground area to the railroad embankment where the existing Saco River Bridge abutment is located. The rail embankment from the Saco River truss bridge, north to the intersection with Lincoln Street is approximately twenty feet higher than the surrounding area. The surrounding area in this section of the corridor is undeveloped, wooded, wetlands. The Unitil gas line parallels this rail corridor on the eastern side at the bottom of the embankment.

Conceptual Alternatives:



Alternative S.1.1 depicted in blue, Alternative S.1.2 and S.1.3 is depicted in red, Alternative S.1.4 is depicted in cyan. Magenta shape delineates the recommended alternatives.

› **Alternative S.1.1 On-Road Connection –** An on-road Eastern Trail connection could first start by utilizing the maintenance roadway and overgrown existing trail corridor connecting to Diamond Street in Biddeford. An established trail facility would be constructed through this area adjacent to the Saco River utilizing similar design techniques as described in Conceptual Alternatives Section B.1.2. Once the trail meets Diamond Street, the suggested on-road route would utilize Diamond Street, Elm Street, Pine Street, and Market Street to cross the Saco River and reach the intersection of Market Street, Lincoln Street, and the Railroad Corridor. The bridge infrastructure upgrades required to create a separated space for the trail users crossing the river would increase the project costs significantly. Minor upgrades that should be considered include the addition of signs for Bicycle Facilities with supplemental striping to inform roadway users of the shared facility designation. Supplemental upgrades to Market Street to be considered would include infrastructure modifications to widen the seven-foot sidewalk to a ten-foot width and designate the corridor as a "sidepath". This would require a shift in the roadway alignment but would allow the bicyclists to travel outside of the motorist's facility and increase the corridor safety.

Advantages:

- Reduced scope and cost to implement
- Could be a short-term or phased solution

Disadvantages:

- Does not satisfy the purpose and need
- Minimally reduces conflict between roadway and trail users

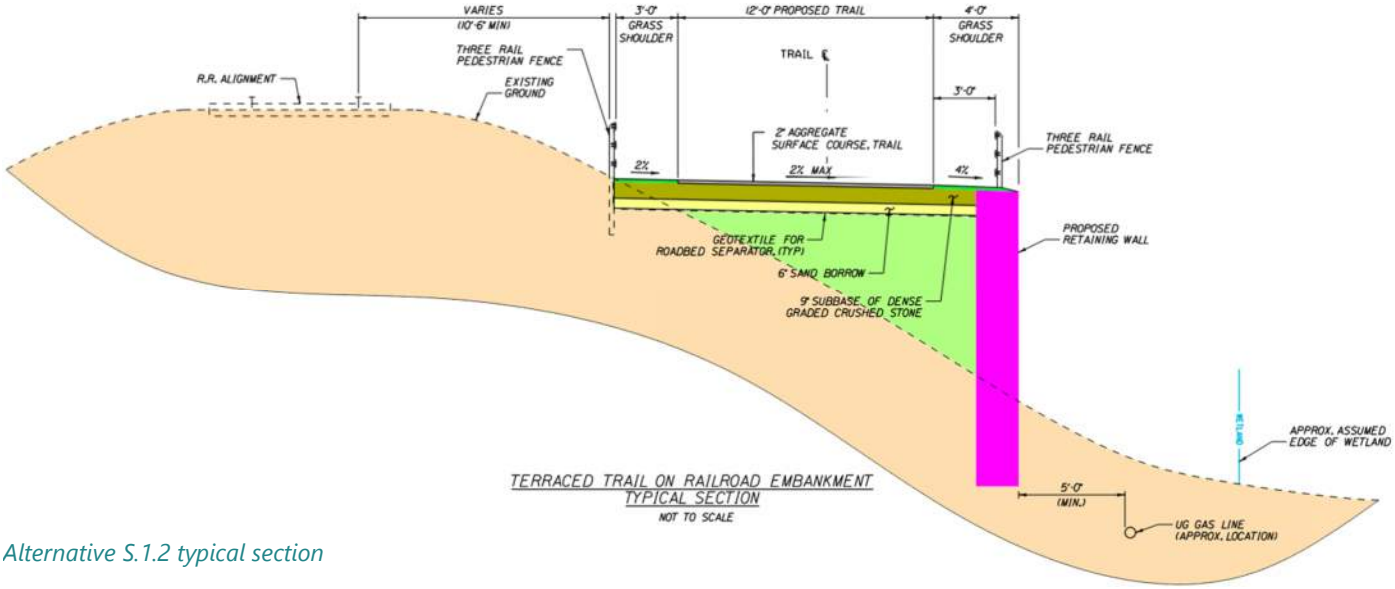
Recommendations:

This alternative does not satisfy the purpose and need for the corridor, therefor it is not considered a long-term solution or recommendation for this section.

- **Alternative S.1.2 Freight Rail with Trail on Existing Bridge** – Any utilization of the existing railroad truss bridge over the Saco River would require repairs to the bridge substructure. Concrete work on the existing piers and pier caps would likely lead to additional repairs to the bridge seats and bearings. The existing superstructure would then be modified by cantilevering a supplemental superstructure to support the Eastern Trail. This additional superstructure would provide a separated pathway, with fencing on both sides for trail users.

CSX Rail with National Park Service Trail in Harper's Ferry, West Virginia

The railroad embankment leading to the Saco River Bridge in either direction, would be expanded upon to create an adjacent corridor for trail users. A variety of options are available for this pending the level of separation desired between the two facilities. A shared facility at the top of the railroad embankment would reduce the impacts to adjacent wetlands, tree clearing, and other natural resources, but would require additional considerations for the safety of trail users within the required railroad offsets as described in Conceptual Alternatives Section B.3.2. A terraced trail alignment would also reduce impacts to natural resources and provide a greater separation between the two facilities but would also give the trail users a different feel while along this section of the trail as they are confined by the rail embankment on one side. By constructing the trail at the toe of the slope there would be a higher likelihood of major natural resource impacts and possible utility impacts to the Unitil gas line.



Alternative S.1.2 typical section

Advantages:

- Provides a reduced footprint to minimize impacts to ROW, natural resources, and the gas line
- Reduced price in comparison to constructing a new bridge

Disadvantages:

- Relies on rail infrastructure to support the trail
- May result in a reduced width superstructure pending condition of existing rail bridge

Recommendations:

This alternative satisfies the purpose and need for the corridor while reducing the construction costs, possible natural resource impacts, and possible utility impacts. Further discussion with CSX is needed before the next phase of design to confirm viability, but this is considered the recommended alternative for this section. Due to the unknown characteristics of the adjacent wetlands, it is recommended that once the project is funded for preliminary engineering services, a value engineering exercise is conducted to determine the foremost alignment for the trail between the Saco River Bridge and Lincoln Street. This exercise should also address the type of infrastructure most feasible to support the trail with the chosen alignment.

› **Alternative S.1.3 Remove Freight Rail for Trail on Existing Bridge** – By removing the freight rail, the trail construction can utilize the entire width of the corridor as well as the existing ballast as a trail base. After the track, timber and debris is removed from the corridor, the trail would be constructed as described in Conceptual Alternatives Section B.1.2. Appropriate bicycle/pedestrian railings would also be constructed along the edge of the ballasted sections.

In addition to track, timber, and debris removal from the existing Saco River Bridge, repairs described in Conceptual Alternatives Section S.1.2 would be required to maintain an adequate structure for trail use over the Saco River.

Saco River Railroad Bridge

Advantages:

- Existing RR ballast and infrastructure utilized to support the trail

  Reduced concern about possible conflicts with the Unitil Gas Line

Disadvantages:

- Freight RR services to Saco eliminated
- Requires removal and disposal of existing RR ties

Recommendations:

Although the removal of the Saco Freight Rail Line for the Eastern Trail was initially evaluated, it has been dismissed from the evaluation at this time due to the overwhelming desire for the rail to continue servicing that line.

› **Alternative S.1.4 New Trail Bridge** – A likely location to install a new pedestrian bridge over the Saco River to support the Eastern Trail would be in the location of the Biddeford Maintenance Road and Diamond Riverside Park, approximately 800 feet to the east of the existing Saco River

Bridge supporting the freight rail line. Connections to this location on the Biddeford side would be as described in Conceptual Alternatives Section S.1.1. On the Saco side a connection from the railroad alignment to the bridge would be developed through the wooded section of Diamond Riverside Park. From Diamond Riverside Park, north to Lincoln Street the trail could be constructed in a variety of locations along the railroad embankment as described in Conceptual Alternatives Section S.1.2.

A new bridge would span approximately 550 feet over the Saco River. Due to the required length of the structure, a multi-span structure would be required with piers in the river, similar to the existing railroad bridge. The bridge could maintain a 12-foot trail width over the river with appropriate railings on each fascia or a narrower bridge could be used as a cost saving measure if necessary. A traditional steel girder/concrete deck superstructure or prefabricated truss superstructure would likely be the most cost-effective alternative for the new bridge. These superstructure spans typically range between 75 and 125 feet long and would require between 4 and 7 spans depending on the final span arrangement. These superstructures would likely be supported on concrete abutments at each end and concrete piers in the Saco River. The cost for these types of structures would be approximately $450/SF. If a 12-foot-wide trail is maintained over the river, a new bridge would be approximately $2.5M-$3.0M.

Alternatively, a "signature" bridge, such as an arch or suspension bridge, could be constructed to span over the river. This configuration would likely require shorter approximately 100-foot-long approach span at each end and an approximately 350-foot-long main span over the river. While this would reduce the number of piers in the river, the cost for these types of structures would be approximately $650/SF or more, depending on the type of bridge, aesthetics, etc. If a 12-foot-wide trail is maintained over the river, a new "signature" bridge would be approximately $4.0M or more. The final bridge configuration (number of spans/span arrangement, substructure type, superstructure type, etc.) would be determined in a future phase.

Advantages:

- Independent facility for Eastern Trail users
- No restrictions on width of trail superstructure

Disadvantages:

- Environmental permitting challenges of constructing new piers within the river
- Notably more expensive
- Additional impacts required for trail connections on either side of the bridge

Recommendations:

Due to the construction costs and probable permitting complications this is not the recommended alternative for this section of the study corridor.

Section S.2 – Lincoln Street to Bradley Street to North Street (~0.7 Miles)

Existing Conditions:

This study area of the Eastern Trail is intended to follow along the Freight Railroad Corridor. The railroad right-of-way maintains an approximately 66' width through this section with the rail alignment being centered within that right-of-way. The Unitil gas line generally runs along the eastern edge of this section. This corridor is primarily at grade with the surrounding area upwards to

a ten-foot-high embankment. Generally low brushy vegetation, private fence lines, and some larger caliper trees are present along the edges of the Railroad Right of Way.

Conceptual Alternatives:

› **Alternative S.2.1 Freight Rail with Trail** – A freight rail with trail alternative would utilize the single freight railroad corridor for both facilities. The trail would be constructed directly to the west of the rail alignment utilizing the same methodology as described in Conceptual Alternatives Section B.1.2. The available space from the near rail to the edge of right-of-way is approximately thirty feet. With the minimum "Trail with Rail" offsets discussed in Conceptual Alternative Section B.3.2, utilizing a fence as a barrier between the trail and rail results in approximately fifteen to twenty feet for the Eastern Trail and Unitil gas line to co-exist. If the trail is constructed on the eastern side of the railroad tracks, multiple crossings of the track would be required within this study area. "Rail with Trail" options would most likely require culvert modification or replacements along the rail corridor. Additional upgrades at proposed trail crossing locations at Lincoln Street and Bradley Street would also be required.

Advantages:

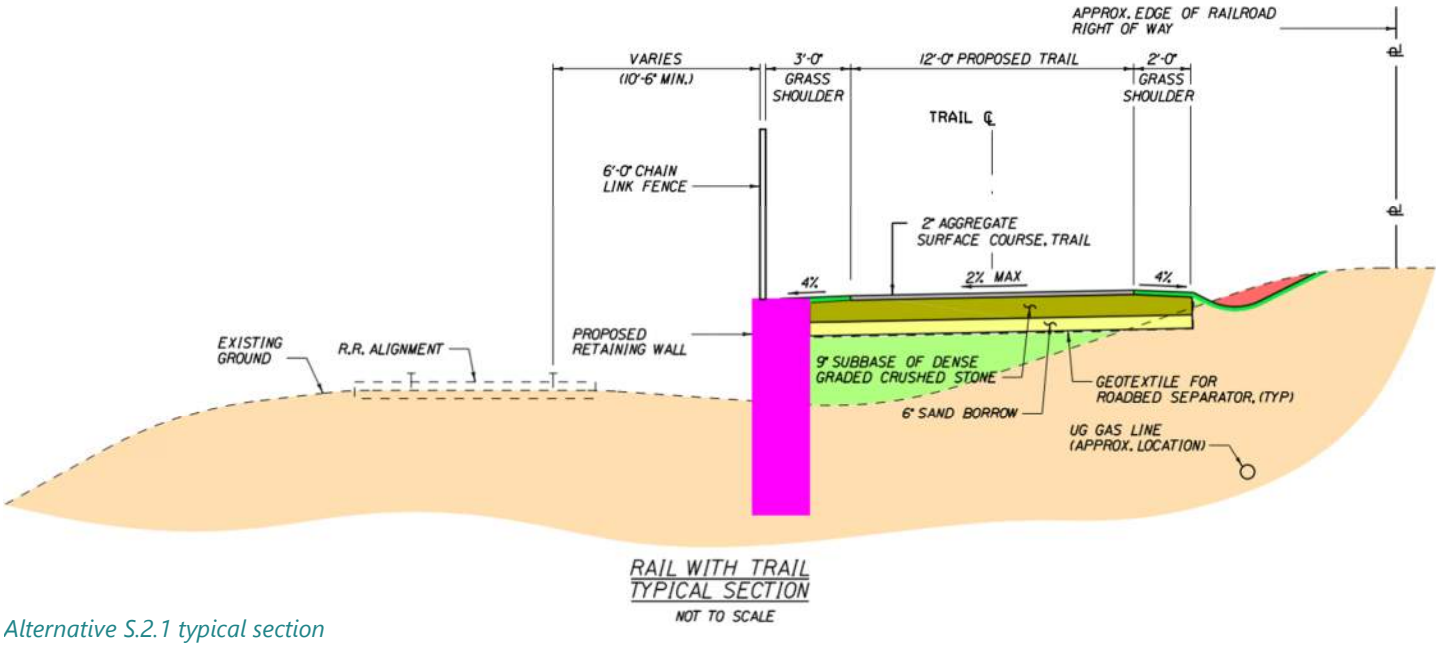
- Provides an off-road connection for Eastern Trail users

Disadvantages:

- Shared corridor between rail and trail
- May limit the possible width of trail due to ROW and Utility constraints

Recommendations:

Further discussion with CSX should be had during the next phase of design to confirm viability. This is the recommended alternative for this study section. Although there may be minor restrictions to the trail width through this section, this alternative most closely satisfies the purpose and need for the study corridor while minimizing impacts to the railroad.



Alternative S.2.1 typical section

› **Alternative S.2.2 Remove Freight Rail for Trail** – By removing the freight rail, the trail construction can utilize the entire width of the corridor as well as the existing ballast for a trail base. After the track, timber, and debris is removed from the corridor, the trail would be constructed as described in Conceptual Alternatives Section B.1.2. Additional upgrades at proposed trail crossing locations at Lincoln Street and Bradley Street would also be required.

Advantages:

- Existing RR ballast and infrastructure utilized to support the trail
- Reduced concern about possible conflicts with the Unitil Gas Line and ROW

Disadvantages:

- Freight RR services to Saco eliminated
- Requires removal and disposal of existing RR ties

Recommendations:

Although the removal of the Saco Freight Rail Line for the Eastern Trail was initially evaluated, it has been dismissed from the evaluation at this time due to the overwhelming desire for the rail to continue servicing that line.

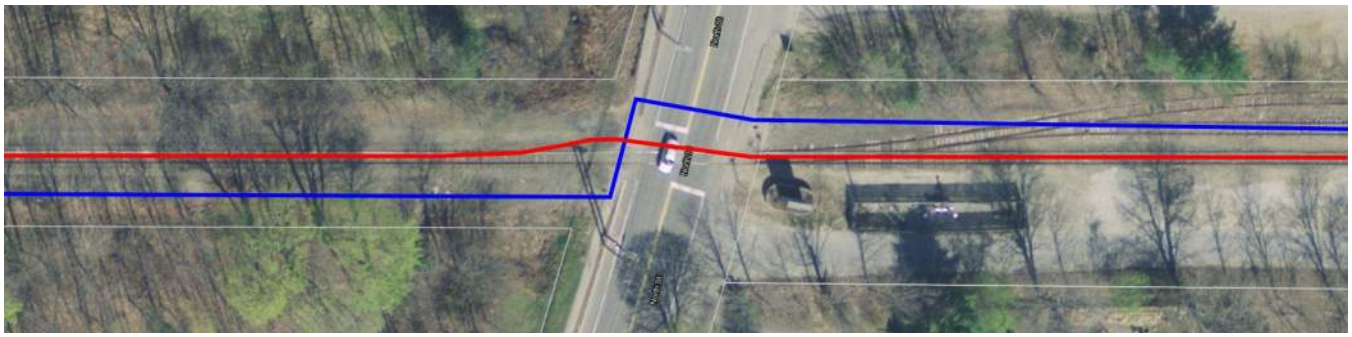
Section S.3 – North Street Crossing

Existing Conditions:

North Street Crossing, Looking North

This study area of the Eastern Trail is intended to follow along the Freight Railroad Corridor. The railroad right-of-way maintains an approximately sixty-six-foot width south of the intersection with North Street; the rail alignment being centered within that right-of-way. North of the intersection with North Street, the railroad right-of-way expands to an approximately 86' width as multiple rail sidings and spurs deviate from the centralized main line. The Unitil gas line generally runs along the eastern edge of the sixty-six-foot right-of-way leading to this intersection. On the northerly side of the intersection a Unitil gas substation is present between the access road for Gagne & Son and the railroad main track alignment. This railroad corridor is primarily at grade with the surrounding area. Generally low brushy vegetation and some larger caliper trees are present along the edges of the Railroad Right of Way.

Conceptual Alternatives:



The proposed trail alignment for Alternative S.3.1 is depicted in blue,
The proposed trail alignment for Alternative S.3.2 is depicted in red

› **Alternative S.3.1 Freight Rail with Trail** – As the Eastern Trail approaches the intersection with North Street from the south, if the trail alignment is to the east of the rail alignment, the trail would cross the rail alignment with improvements to the existing sidewalk on North Street. A new pedestrian crossing would be installed west of the train crossing, and the trail alignment would remain to the west, heading north from the North Street intersection. Trail construction adjacent to the railroad alignment utilizes the same methodology as described in Conceptual Alternatives Section B.1.2. Trail offsets from the active rail alignments would be upheld to the minimum "Trail with Rail" offsets discussed in Conceptual Alternative Section B.3.2.

Advantages:

- Reduced possible ROW impacts
- Reduced possible gas infrastructure impacts

Disadvantages:

- Requires multiple rail crossings
- Requires the removal of the rail siding alignment

Recommendations:

Due to the required multiple rail impacts with the crossings and removal of the siding alignment the constructability of this alternative is not favorable. This is not the recommended alternative for this study section.

› **Alternative S.3.2 Remove Freight Rail for Trail** – By removing the freight rail, the trail construction can utilize the entire width of the corridor as well as the existing ballast for a trail base. After the track, timber, and debris is removed from the corridor, the trail would be constructed as described in Conceptual Alternatives Section B.1.2. A slight deviation from the rail alignment at the intersection allows for a safer roadway crossing for trail users, while maintaining an adequate offset from the Unitil facilities.

Advantages:

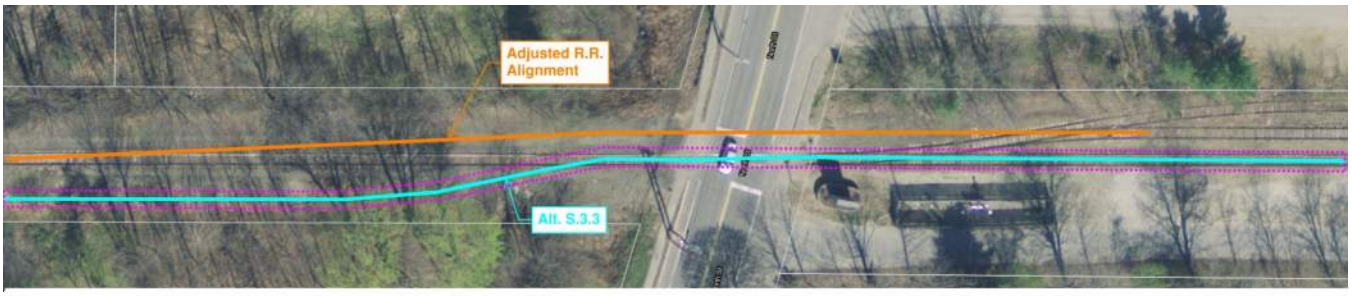
- Existing RR ballast and infrastructure utilized to support the trail
- Reduced concern about possible conflicts with the Unitil Gas Line and ROW

Disadvantages:

- Freight RR services to Saco eliminated
- Requires removal and disposal of existing RR ties

Recommendations:

Although the removal of the Saco Freight Rail Line for the Eastern Trail was initially evaluated, it has been dismissed from the evaluation at this time due to the overwhelming desire for the rail to continue servicing that line.



The proposed trail alignment for Alternative S.3.3 is depicted in cyan, proposed railroad alignment for Alternative S.3.3 is depicted in orange. The magenta shape delineates the recommended alternatives.

› **Alternative S.3.3 Re-align Freight Rail** – A shift in the railroad alignment through the North Street intersection, would promote a retention of the Eastern Trail alignment to the east of the railroad tracks alleviating multiple crossings of the track through this corridor. The railroad siding alignment just north of North Street would be carried through the intersection and then tapered into the mainline alignment south of the intersection. The mainline railroad alignment would be utilized as the new trail alignment through the intersection and the trail would be constructed as described in Conceptual Alternatives Section B.1.2. This new rail alignment allows for approximately thirty feet of width between the nearest rail and the fence around the adjacent Unitil gas substation, located to the east.

Advantages:

- Avoids multiple rail crossings
- Creates a consistent corridor for trail users through the adjacent study sections

Disadvantages:

- Requires a negotiated realignment of the railroad
- Possible pinch point with the Unitil Gas Line infrastructure
- Increased construction costs

Recommendations:

Although the construction costs and possible conflicts are higher for this alternative, the connectivity between other sections' recommended alternatives and the lack of multiple rail crossings required, makes this the recommended alternative for this section of trail. Further discussion with CSX should be had during the next phase of design to confirm viability.

Section S.4 – North Street to Thornton Academy (~0.25 Miles)

Existing Conditions:

This study area of the Eastern Trail is intended to follow along the Freight Railroad Corridor. The railroad right-of-way varies throughout this stretch but retains a minimum width of approximately 49' through this section. The Unitil gas line generally runs along the eastern edge of this section, and the remainder of the right of way is occupied by a railroad main alignment and siding alignment. This

corridor is primarily at grade with the surrounding area with minimal embankments upwards to five feet in height. Generally low brushy vegetation and some larger caliper trees are present along the edges of the Railroad Right of Way.

Conceptual Alternatives:

The proposed trail alignment for Alternative S.4.1 is depicted in blue,
The proposed trail alignment for Alternative S.4.2 is depicted in red

- **Alternative S.4.1 Freight Rail with Trail to the West** – Trail construction adjacent to the railroad alignment utilizes the same methodology as described in Conceptual Alternatives Section B.1.2. Trail offsets from the active rail alignments would be upheld to the minimum "Trail with Rail" offsets discussed in Conceptual Alternative Section B.3.2. A west side trail alignment would require the removal of the existing railroad siding alignment and as the trail approaches the terminus of the study area at Thornton Academy, a railroad crossing of the mainline alignment would be required to make the connection to the existing Eastern Trail to the east.

  Advantages:

  - Reduced possible ROW impacts
  - Reduced possible gas infrastructure impacts

  Disadvantages:

  - Requires multiple rail crossings
  - Requires the removal of the rail siding alignment

  Recommendations:

  Due to the required multiple rail impacts with the crossings and removal of the siding alignment the constructability of this alternative is not favorable. This is not the recommended alternative for this study section.

- **Alternative S.4.2 Remove Freight Rail for Trail** – By removing the freight rail, the trail construction can utilize the entire width of the corridor as well as the existing ballast for a trail base. After the track, timber, and debris is removed from the corridor, the trail would be constructed as described in Conceptual Alternatives Section B.1.2.

  Advantages:

  - Existing RR ballast and infrastructure utilized to support the trail
  - Reduced concern about possible conflicts with the Unitil Gas Line and ROW

  Disadvantages:

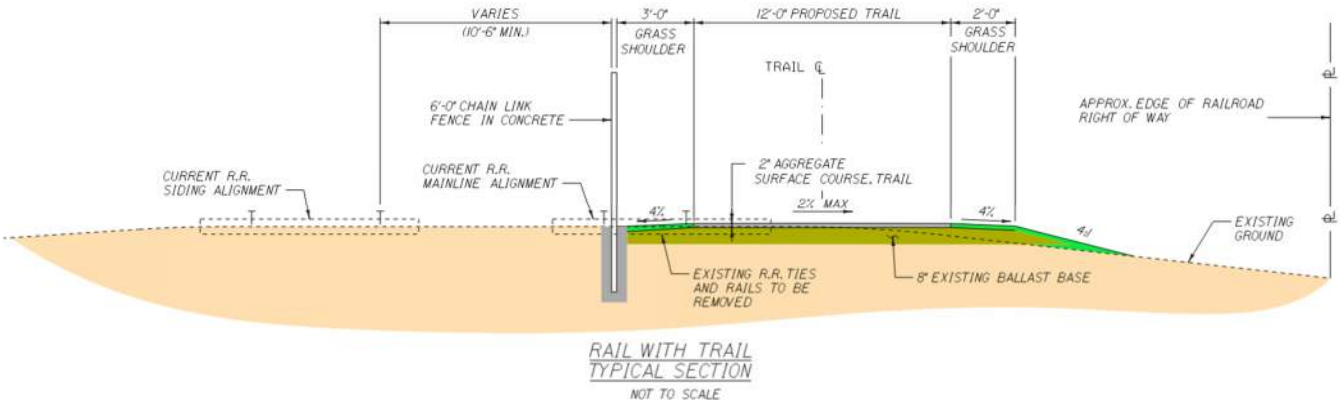
  - Freight RR services to Saco eliminated
  - Requires removal and disposal of existing RR ties

Recommendations:

Although the removal of the Saco Freight Rail Line for the Eastern Trail was initially evaluated, it has been dismissed from the evaluation at this time due to the overwhelming desire for the rail to continue servicing that line.

The proposed trail alignment for Alternative S.4.3 is depicted in cyan, proposed railroad alignment for Alternative S.4.3 is depicted in orange. The magenta shape delineates the recommended alternatives.

› **Alternative S.4.3 Re-align Freight Rail** – The shift in the railroad alignment through the North Street intersection (Conceptual Alternative S.3.3) would promote a retention of the Eastern Trail alignment to the east of the railroad tracks alleviating multiple crossings of the track through this corridor. The railroad siding alignment would become the mainline alignment. The current mainline railroad alignment would be utilized as the new trail alignment and would be constructed as described in Conceptual Alternatives Section B.1.2. Trail offsets from the active rail alignment would be upheld to the minimum "Trail with Rail" offsets discussed in Conceptual Alternative Section B.3.2. There is a possibility to restore/reconstruct an additional siding along the western edge of the right-of-way.



Alternative S.4.3 typical section

Advantages:

- Avoids multiple rail crossings
- Creates a consistent corridor for trail users through the adjacent trail sections

Disadvantages:

- Requires a negotiated realignment of the railroad
- Possible pinch point with the Unitil Gas Line infrastructure
- Increased construction costs
- Possible ROW impacts required

Recommendations:

Although the construction costs and possible conflicts are higher for this alternative, the connectivity between other sections' recommended alternatives and the lack of multiple rail crossings required, makes this the recommended alternative for this section of trail. Further discussion with CSX should be had during the next phase of design to confirm viability.

3.2 Summary of Recommendations

The study area is a connection of the two existing Eastern Trail off-road segments between Biddeford and Saco. The first segment of this study focuses on the Biddeford side; a 1.65-mile rail corridor connecting West Cole Road to Main Street. The second segment is a 1.35-mile rail corridor starting with crossing the Saco River and ending at Thornton Academy where it connects to the existing Eastern Trail. Two separate routes for the first half of the Biddeford Side starting at West Cole Road in Biddeford have been identified as the "Recommended Alternative". A further analysis of these two corridors would be the first step of the preliminary design phase. Once a finalized route through this first section is identified, it is recommended that the entire 3-mile corridor be progressed to preliminary design to further determine the entire limits of work, property impacts, and natural resource impacts that may affect this project. Additional conversations with CSX should be considered as an early action item to discuss the viability of the Rail-With-Trail "Recommended Alternatives" and the associated potential impacts during the preliminary design phase.

A recommended alternative for each section of the study corridor that best satisfies the Eastern Trail's purpose and need; provides a safe corridor for trail users; identifies the possible right-of-way, environmental, and utility impacts; evaluates the constructability; and compares the estimated construction costs to the other considered alternatives; has been identified. The following table highlights a comparison of alternatives and identifies the recommended alternative for each section of the study corridor.

EASTERN TRAIL FEASIBILITY STUDY

BIDDEFORD SEGMENT - WEST COLE ROAD TO MAIN STREET

PRELIMINARY ALTERNATIVES COMPARISON TABLE

Section B.1	Aspect	Alt. B.1.1 - On-Road Connection	Alt. B.1.2 - Five Star Holdings to Rail Corridor	Alt. B.1.3 - Rail Corridor	B.1.4 On-Road Connection to 5 Points Shopping Center	
West Cole Road to Ice Arena (~0.25 Miles)	Satisfies Purpose & Need	Relatively	Possibly/Eventually	Yes	No	
	Safety & Mobility	Dedicated space for bikes/peds adjacent to roadway with Route 111 Crossing	Dedicated path for bikes/peds	Dedicated path for bikes/peds	Moderate improvement Shared roadway options with Route 111 and R.R. Crossing	
	ROW, Env. & Utility Impacts	ROW and Utility Impacts Anticipated	ROW Impacts Anticipated	Possible Env. Impacts Anticipated	ROW and Possible Utility Impacts Anticipated	
	Constructability	Moderate Construction Complexity and Traffic Impacts	Moderate Construction Complexity and R.R. Impacts	Moderate Construction Complexity and R.R. Impacts	Moderate Construction Complexity and Minimal Traffic Impacts	
	Estimated Cost	Low	High	High	Moderate	
Section B.2	**Aspect**	**Alt. B.2.1 - Utility Corridor**	**Alt. B.2.2 - Rail Corridor**	**Alt. B.2.3 - 5 Points Shopping Center**		
Ice Arena to Westmore Ave. (~0.4 Miles)	Satisfies Purpose & Need	Yes	Yes	Yes		
	Safety & Mobility	Dedicated space for bikes/peds adjacent to roadway	Dedicated path for bikes/peds	Dedicated path for bikes/peds with R.R. Crossing		
	ROW, Env. & Utility Impacts	ROW and Utility Impacts Anticipated	Possible Env. Impacts Anticipated	ROW Impacts Anticipated		
	Constructability	Moderate Construction Complexity and Traffic Impacts	Moderate Construction Complexity	Moderate Construction Complexity and R.R. Impacts		
	Estimated Cost	Low	Moderate	High		
Section B.3	**Aspect**	**Alt. B.3.1 - Westmore Avenue Connection**	**Alt. B.3.2 - Freight Rail with Trail**	**Alt. B.3.3 - Remove Freight Rail for Trail**	**Alt. B.3.4 - Amtrack Rail with Trail**	
Westmore Ave to South Street (~0.55 Miles)	Satisfies Purpose & Need	No	Yes	Yes	Yes	
	Safety & Mobility	Moderate improvement Shared roadway options	Dedicated path for bikes/peds	Dedicated path for bikes/peds	Dedicated path for bikes/peds with R.R. Crossing	
	ROW, Env. & Utility Impacts	Possible ROW or Utility Impacts Anticipated	ROW and Possible Env. Impacts Anticipated	Freight Rail Line Services Eliminated	Possible Env. Impacts Anticipated	
	Constructability	Minimal Construction Complexity and Traffic Impacts	Major Construction Complexity	Moderate Construction Complexity if Approved by R.R.	Moderate Construction Complexity and R.R. Impacts	
	Estimated Cost	Low	Very High	Moderate	High	
Section B.4	**Aspect**	**Alt. B.4.1 - On-Road Connection**	**Alt. B.4.2 - Freight Rail with Trail**	**Alt. B.4.3 - Remove Freight Rail for Trail**		
South Street to Main Street (~0.45 Miles)	Satisfies Purpose & Need	No	Yes	Yes		
	Safety & Mobility	Moderate improvement Shared roadway options	Dedicated path for bikes/peds	Dedicated path for bikes/peds		
	ROW, Env. & Utility Impacts	Possible ROW or Utility Impacts Anticipated	Possible ROW and Env. Impacts Anticipated	Freight Rail Line Services Eliminated		
	Constructability	Minimal Construction Complexity and Traffic Impacts	Moderate Construction Complexity	Moderate Construction Complexity if Approved by R.R.		
	Estimated Cost	Low	Moderate	Moderate		

Feature Color Coding:	More Desireable	Neutral	Less Desireable	Not Considered	Recommended

EASTERN TRAIL FEASIBILITY STUDY

SACO SEGMENT - MAIN STREET IN BIDDEFORD TO THORTON ACADEMY IN SACO

PRELIMINARY ALTERNATIVES COMPARISON TABLE

Section S.1	Aspect	Alt. S.1.1 - On-Road Connection	Alt. S.1.2 - Freight Rail with Trail on Existing Bridge	Alt. S.1.3 - Remove Freight Rail for Trail on Existing Bridge	Alt. S.1.4 - New Trail Bridge	
Saco River Crossing (~0.4 Miles)	Satisfies Purpose & Need	No	Yes	Yes	Yes	
	Safety & Mobility	Moderate improvement Shared roadway options	Dedicated path for bikes/peds	Dedicated path for bikes/peds	Dedicated path for bikes/peds	
	ROW, Env. & Utility Impacts	Possible ROW Impacts Anticipated	Moderate Environmental Impacts Anticipated	Freight Rail Line Services Eliminated	Major Environmental Impacts	
	Constructability	Minor Construction Complexity	Moderate Construction Complexity	Moderate Construction Complexity	Major Construction Complexity	
	Estimated Cost	Low	High	Moderate	Very High	
Section S.2	**Aspect**	**Alt. S.2.1 - Freight Rail with Trail**	**Alt. S.2.2 - Remove Freight Rail for Trail**			
Lincoln Street to Bradley Street to North Street (~0.7 Miles)	Satisfies Purpose & Need	Yes	Yes			
	Safety & Mobility	Dedicated path for bikes/peds with limitations due to RR	Dedicated path for bikes/peds			
	ROW, Env. & Utility Impacts	Possible Environmental Impacts Anticipated	Freight Rail Line Services Eliminated			
	Constructability	Moderate Construction Complexity	Minor Construction Complexity			
	Estimated Cost	Moderate	Moderate			
Section S.3	**Aspect**	**Alt. S.3.1 - Railroad Crossing**	**Alt. S.3.2 - Remove Freight Rail for Trail**	**Alt. S.3.3 - Re-align Freight Rail**		
North Street Crossing	Satisfies Purpose & Need	Yes	Yes	Yes		
	Safety & Mobility	Dedicated path for bikes/peds with additional RR crossings	Dedicated path for bikes/peds	Dedicated path for bikes/peds		
	ROW, Env. & Utility Impacts	None Anticipated	Freight Rail Line Services Eliminated	Freight Rail Line Services Impacted		
	Constructability	Minor Construction Complexity	Moderate Construction Complexity	Major Construction Complexity		
	Estimated Cost	Low	Moderate	High		
Section S.4	**Aspect**	**Alt. S.4.1 - Freight Rail with Trail to the West**	**Alt. S.4.2 - Remove Freight Rail for Trail**	**Alt. S.4.3 - Re-align Freight Rail**		
North Street to Thornton Academy (~0.25 Miles)	Satisfies Purpose & Need	Yes	Yes	Yes		
	Safety & Mobility	Dedicated path for bikes/peds with additional RR crossings	Dedicated path for bikes/peds	Dedicated path for bikes/peds		
	ROW, Env. & Utility Impacts	None Anticipated	Freight Rail Line Services Eliminated	Freight Rail Line Services Impacted		
	Constructability	Minor Construction Complexity with Additional RR Crossing	Moderate Construction Complexity	Minor Construction Complexity		
	Estimated Cost	Low	Moderate	Moderate		

Feature Color Coding:	More Desireable	Neutral	Less Desireable	Not Considered	Recommended

The following is a segment-by-segment summary of recommendations.

Biddeford Segment (West Cole Road to Maine Street in Biddeford) Option 1:

Section B.1 – West Cole Road to Westmore Avenue (~1.4 Miles)

- Construct Alternative B.1.1 (On-Road Connection) – The trail will cross West Cole Road and travel up the northern side of the roadway toward the Route 111 intersection. Intersection improvements to safely convey trail users through the Route 111 intersection, leads to a trail connection heading northerly adjacent to Barra Road.
- The existing Eastern Trail route adjacent to Barra Road would be widened throughout the length of Barra Road.
- At the terminus of the existing Barra Road, the trail will extend through the planned future development, cross a stream and gulley via a proposed prefabricated bridge, and make a connection to Westmore Avenue via the utility corridor on the west side of the roadway.

Section B.2 – Ice Arena to Westmore Ave

- Section B.2 is not applicable as the recommended alternative for Section B.1 bypasses this section.

Section B.3 – Westmore Ave to South Street (~0.35 Miles)

- Construct Alternative B.3.1 (Westmore Avenue Connection) – The trail will connect to the Westmore Avenue corridor from the Utility Parcel approximately halfway up the road on the west side. Pavement and sidewalk rehabilitation along the roadway creates a safer corridor for bicycles to share the roadway and pedestrians to utilize the sidewalk connection.
- At the northern end of Westmore Avenue, an improved crossing for the trail would be constructed on South Street to convey trail users to the northern sidewalk.

Section B.4 – South Street to Main Street (~0.45 Miles)

- Construct Alternative B.4.2 (Freight Rail with Trail) – From the north side of South Street the trail will be constructed down the roadway embankment toward the Freight Railroad Corridor.
- Due to the ledge that was observed adjacent to rail corridor, the trail will be constructed with an approximately 45-foot offset to the west of the rail alignment, atop of the ledge.

Biddeford Segment (West Cole Road to Maine Street in Biddeford) Option 2:

Section B.1 – West Cole Road to Ice Arena (~0.2 Miles)

- Construct Alternative B.1.1 (On-Road Connection) – The trail will cross West Cole Road and travel up the northern side of the roadway toward the Route 111 intersection. Intersection improvements to safely convey trail users through the Route 111 intersection, leads to a trail connection heading northerly adjacent to Barra Road.
- The existing Eastern Trail route adjacent to Barra Road would be widened to the intersection with Pomerleau Street.

Section B.2 – Ice Arena to Westmore Ave (~0.8 Miles)

- Construct Alternative B.2.1 (Utility Corridor) – The on-road route will deviate from Barra Road and continue down the northern side of Pomerleau Street until reaching the Biddeford Ice Arena where trail users would cross Pomerleau Street and the ice arena parcel to reach the Unitil utility corridor.
- Following the Unitil utility corridor the trail must cross a rail spur servicing the Westfield Inc. parcel. This trail alignment would be constructed atop the utility embankment approximately 60-feet to the west of the tracks.

Section B.3 – Westmore Ave to South Street (~0.55 Miles)

- Construct Alternative B.3.1 (Westmore Avenue Connection) – The trail will utilize a utility parcel to deviate from the railroad property and share the Westmore Avenue corridor with the roadway users. This includes pavement and sidewalk rehabilitation along the roadway to create a safer corridor for bicycles to share the roadway and pedestrians to utilize the sidewalk connection.
- At the northern end of Westmore Avenue, an improved crossing for the trail would be constructed on South Street to convey trail users to the northern sidewalk.

Section B.4 – South Street to Main Street (~0.45 Miles)

- Construct Alternative B.4.2 (Freight Rail with Trail) – From the north side of South Street the trail will be constructed down the roadway embankment toward the Freight Railroad Corridor.
- Due to the ledge that was observed adjacent to the rail corridor, the trail will be constructed with an approximately 45-foot offset to the west of the rail alignment, atop of the ledge.

Saco Segment (Main Street in Biddeford to Thornton Academy in Saco)

Section S.1 – Saco River Crossing (~0.4 Miles)

- Construct Alternative S.1.2 (Freight Rail with Trail on Existing Bridge) – The trail will be constructed adjacent to the eastern side of the freight rail corridor embankment to avoid wetlands, large elevation changes at the bridge approaches, and Unitil gas infrastructure.
- Retaining walls are utilized to reduce impacts along the large embankment areas.
- An additional superstructure is constructed to cantilever off the existing Railroad Bridge which carries trail users across the Saco River.

Section S.2 – Lincoln Street to Bradley Street to North Street (~0.7 Miles)

- Construct Alternative S.2.1 (Freight Rail with Trail) – The trail construction will remain adjacent to the eastern side of the freight rail corridor. Right-of-Way and utility challenges pose a possible reduction in the trail width through this section.

Section S.3 – North Street Crossing

- Construct Alternative S.3.3 (Re-align Freight Rail) – The Freight Railroad alignment will be re-aligned through North Street, in line with the rail siding that is present on the northern side of North Street. The existing rail along the primary alignment through North Street will be removed for the trail.

› The trail will be constructed along the existing railroad alignment, east of the rail siding, to avoid impacts to the existing gas line infrastructure.

Section S.4 – North Street to Thornton Academy (~0.25 Miles)

› Construct Alternative S.4.3 (Re-align Freight Rail) – Freight rail operations would continue along the existing siding alignment through this section, with the primary rail alignment being removed for the trail.

› The trail will be constructed along the existing railroad alignment, east of the rail siding. Once the trail alignment reaches the Thornton Academy parcel, the trail deviates from the rail corridor and ties into the existing Eastern Trail near the soccer field.

4

Assessment of Probable Costs

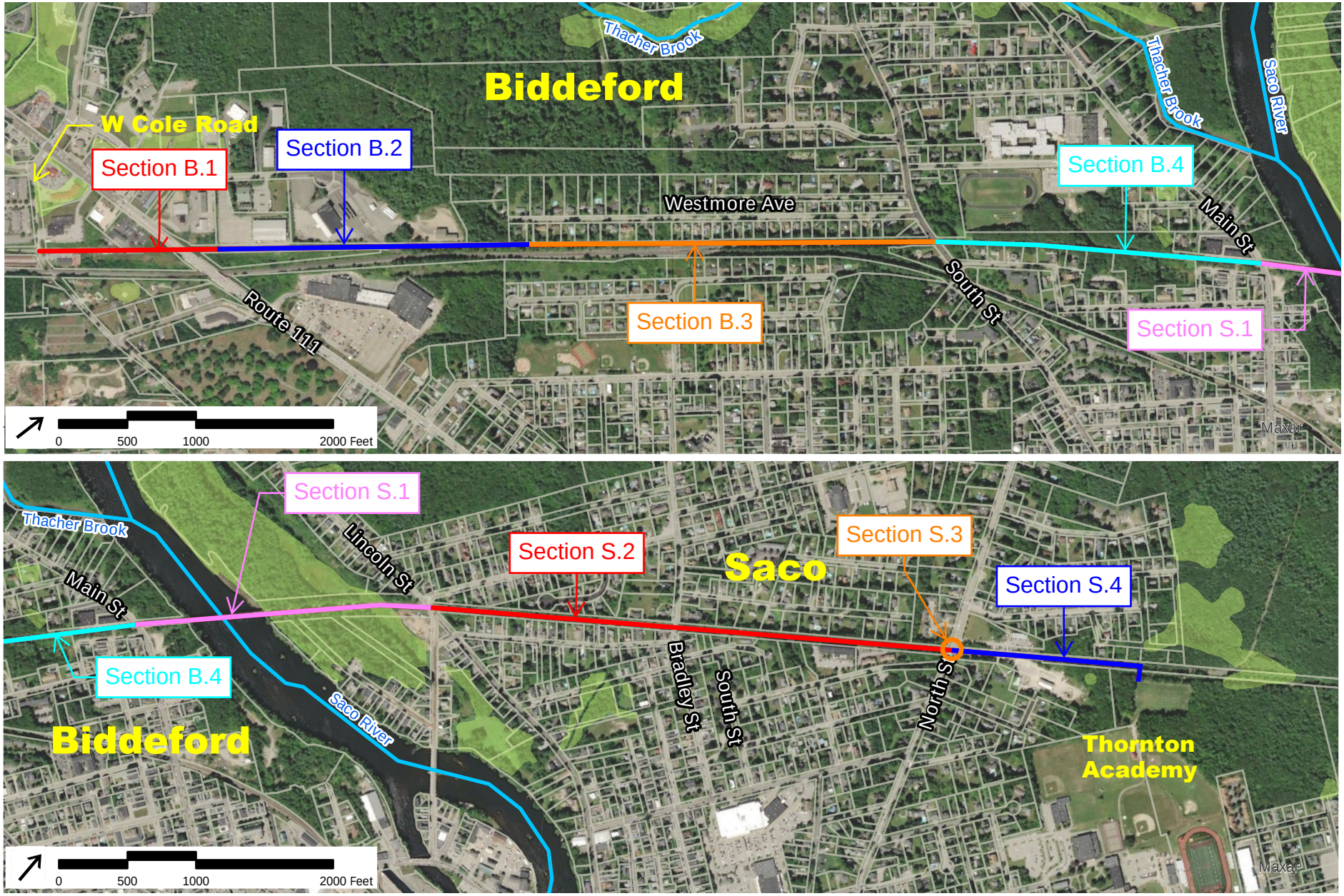
The following is a summary of the conceptual estimate of probable costs for the alternatives described in the Summary of Recommendations. The conceptual cost estimate was developed utilizing an order of magnitude evaluation of each aspect of the trail construction and includes contingencies to cover the summation of all the minor construction costs not evaluated at this time. A more detailed estimate with calculated costs based on a developed plan set would be expected during the preliminary engineering stage.

OPINION OF CONCEPTUAL PROBABLE COSTS		
DESCRIPTION		AMOUNT
Biddeford Segment – W. Cole Road to Main Street (Option 1)		
*Section B.1 – Alt. B.1.1 (On Road Connection ~1.4 Miles)	$	1,863,000.00
Section B.2 – Alt. B.2.1 (Trail Within Utility Corridor ~0.4 Miles)	$	-
Section B.3 – Alt. B.3.1 (Westmore Avenue Upgrades ~0.35 Miles)	$	402,000.00
Section B.4 – Alt. B.4.2 (Freight Rail with Trail ~0.45 Miles)	$	588,000.00
Segment 1 Subtotal	$	2,853,000.00
Saco Segment – Main Street in Biddeford to Thornton Academy		
Section S.1 – Alt. S.1.2 (Rail with Trail Utilizing Existing Bridge ~0.4 Miles)	$	3,461,000.00
Section S.2 – Alt. S.2.1 (Rail with Trail ~0.7 Miles)	$	1,231,000.00
Section S.3 – Alt. S.3.3 (Re-Align Freight Rail for Trail)	$	1,141,000.00
Section S.4 – Alt. S.4.3 (Re-Align Freight Rail for Trail ~0.25 Miles)	$	690,000.00
Segment 2 Subtotal	$	6,523,000.00
TOTAL CONSTRUCTION COST ESTIMATE	$	9,376,000.00
PROFESSIONAL ENGINEERING (13%)	$	1,218,880.00
CONSTRUCTION ENGINEERING (15%)	$	1,406,400.00
RIGHT-OF-WAY, PERMITTING, MITIGATION (Not Included)	$	-
ROUNDING	$	48,720.00
ESTIMATED PROJECT TOTAL	$	12,050,000.00

* QUANTITIES AND ESTIMATE ARE FOR CONSTRUCTION OF ENTIRE SEGMENT. VHB ASSUMES THE DEVELOPER WOULD COVER HALF OF THE CONSTRUCTION COSTS (APPROXIMATELY $600,000) FOR THE PORTION OF THE EASTERN TRAIL BETWEEN THE EXISTING LIMIT OF BARRA ROAD AND THE CONNECTION TO WESTMORE AVENUE.

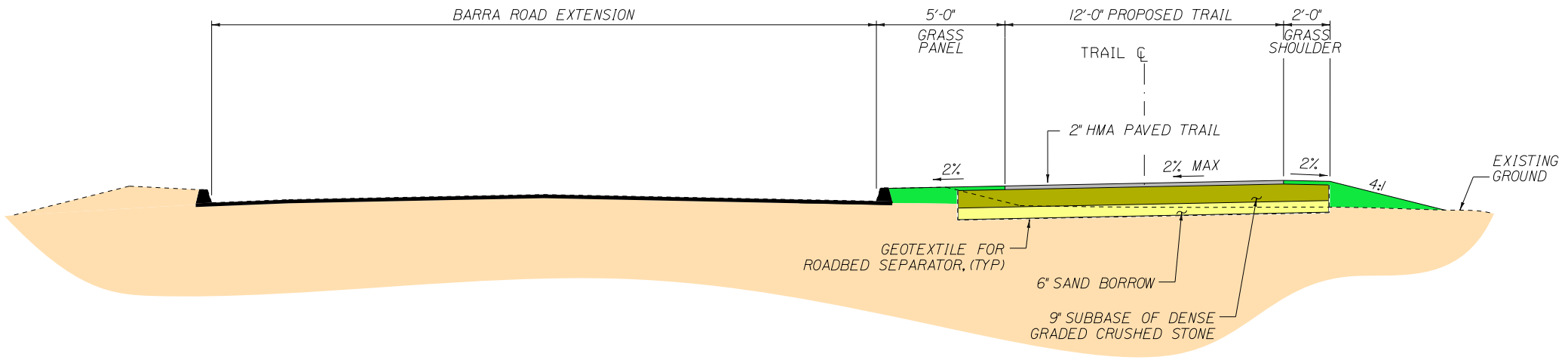
OPINION OF CONCEPTUAL PROBABLE COSTS		
DESCRIPTION		AMOUNT
Biddeford Segment – W. Cole Road to Main Street (Option 2)		
Section B.1 – Alt. B.1.1 (On-Road Connection ~0.2 Miles)	$	421,000.00
Section B.2 – Alt. B.2.1 (Trail Within Utility Corridor ~0.8 Miles)	$	447,000.00
Section B.3 – Alt. B.3.1 (Westmore Avenue Upgrades ~0.55 Miles)	$	421,000.00
Section B.4 – Alt. B.4.2 (Freight Rail with Trail ~0.45 Miles)	$	588,000.00
Segment 1 Subtotal	$	1,877,000.00
Saco Segment – Main Street in Biddeford to Thornton Academy		
Section S.1 – Alt. S.1.2 (Rail with Trail Utilizing Existing Bridge ~0.4 Miles)	$	3,461,000.00
Section S.2 – Alt. S.2.1 (Rail with Trail ~0.7 Miles)	$	1,231,000.00
Section S.3 – Alt. S.3.3 (Re-Align Freight Rail for Trail)	$	1,141,000.00
Section S.4 – Alt. S.4.3 (Re-Align Freight Rail for Trail ~0.25 Miles)	$	690,000.00
Segment 2 Subtotal	$	6,523,000.00
TOTAL CONSTRUCTION COST ESTIMATE	$	8,400,000.00
PROFESSIONAL ENGINEERING (13%)	$	1,092,000.00
CONSTRUCTION ENGINEERING (15%)	$	1,260,000.00
RIGHT-OF-WAY, PERMITTING, MITIGATION (Not Included)	$	-
ROUNDING	$	48,000.00
ESTIMATED PROJECT TOTAL	$	10,800,000.00

Appendix A1 – Eastern Trail Study Areas



IMPROVEMENT ALTERNATIVES OVERVIEW FOR BIDDEFORD SEGMENT (TOP) AND SACO SEGMENT (BOTTOM)

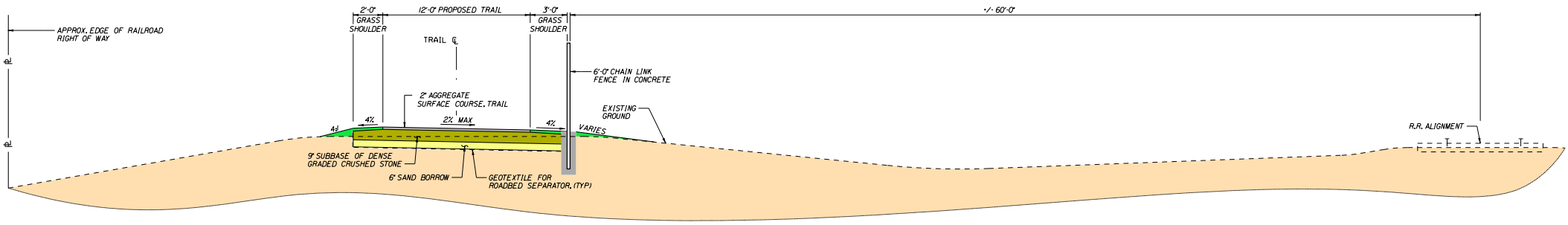
Appendix A2 – Recommended Typical Sections



BARRA ROAD EXTENSION WITH TRAIL
TYPICAL SECTION

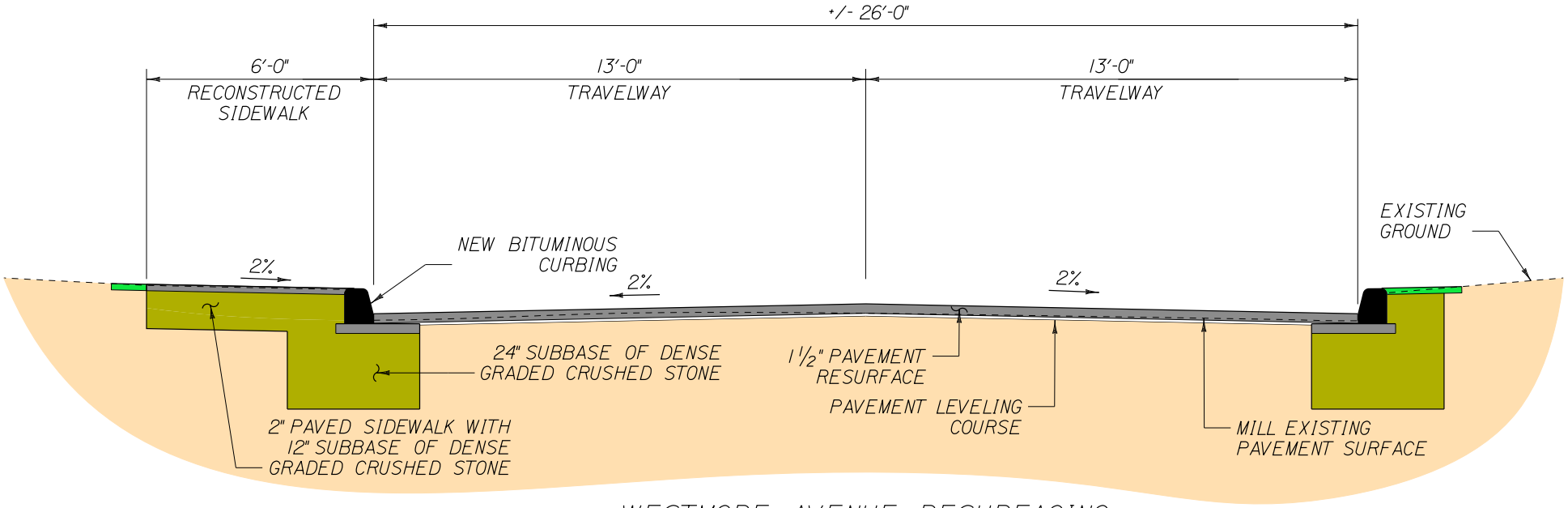
NOT TO SCALE

ALTERNATIVE B.1.1 TYPICAL SECTION



TRAIL ON UTILITY EMBANKMENT
TYPICAL SECTION
NOT TO SCALE

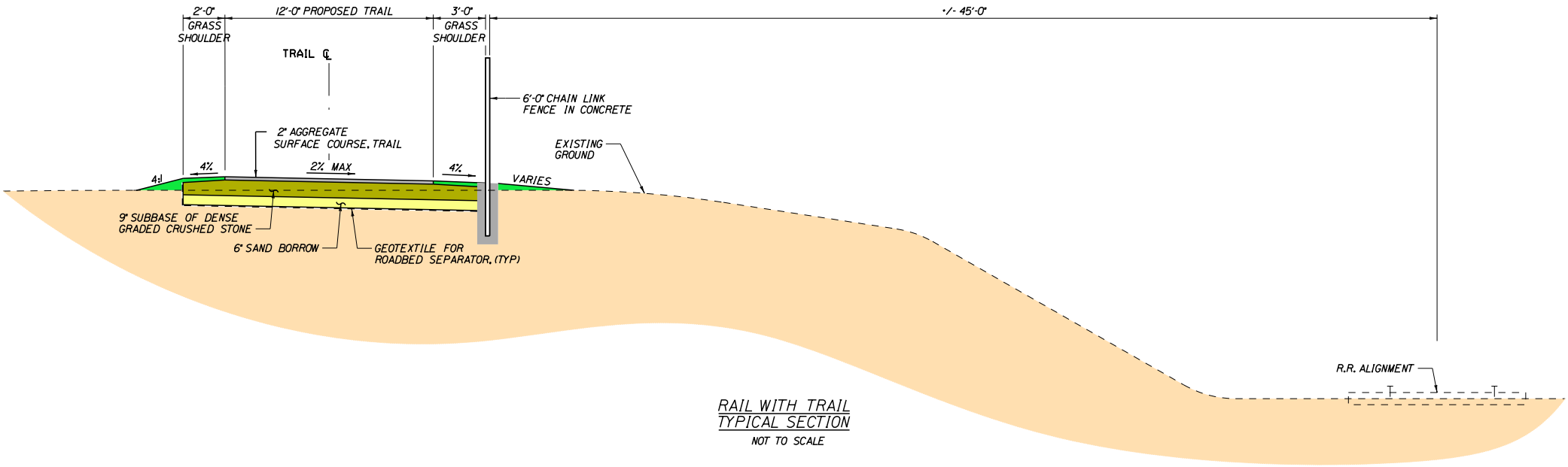
ALTERNATIVE B.2.1 TYPICAL SECTION



WESTMORE AVENUE RESURFACING
TYPICAL SECTION

NOT TO SCALE

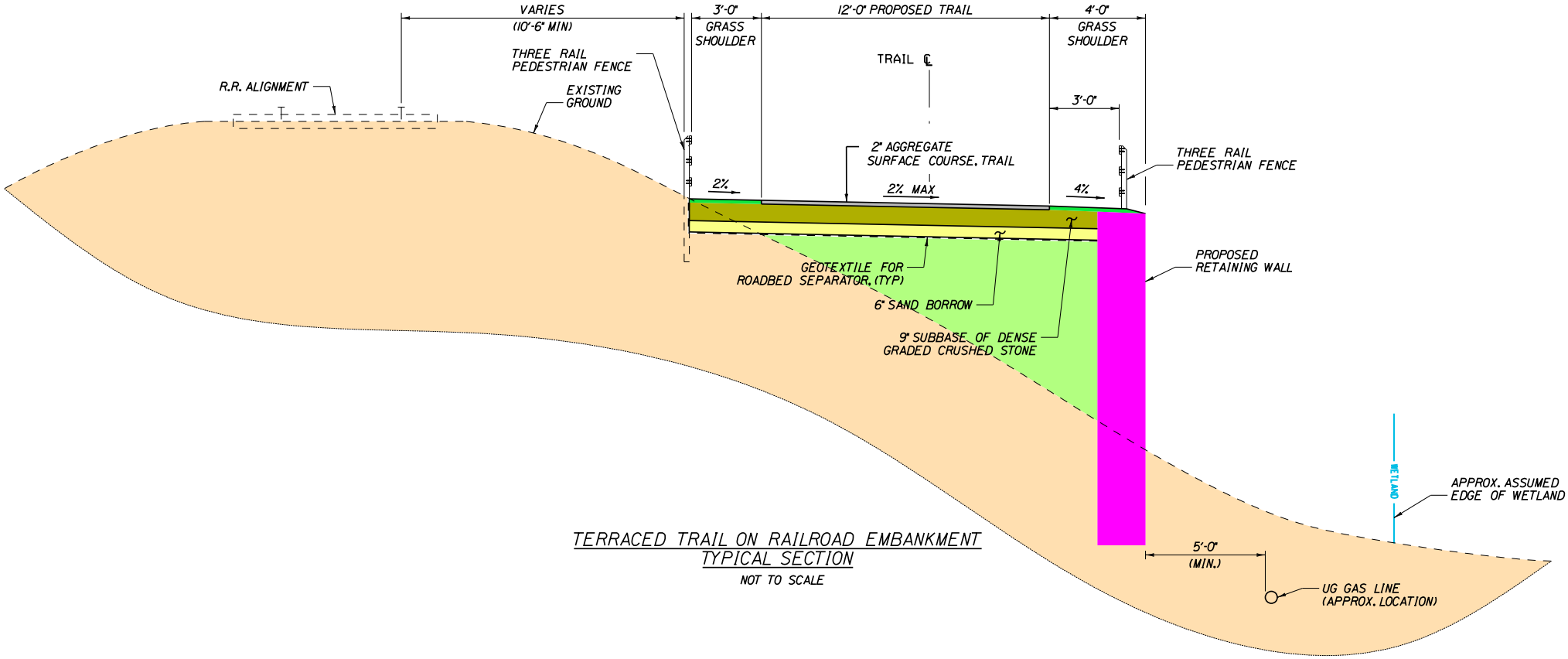
ALTERNATIVE B.3.1 TYPICAL SECTION



RAIL WITH TRAIL
TYPICAL SECTION

NOT TO SCALE

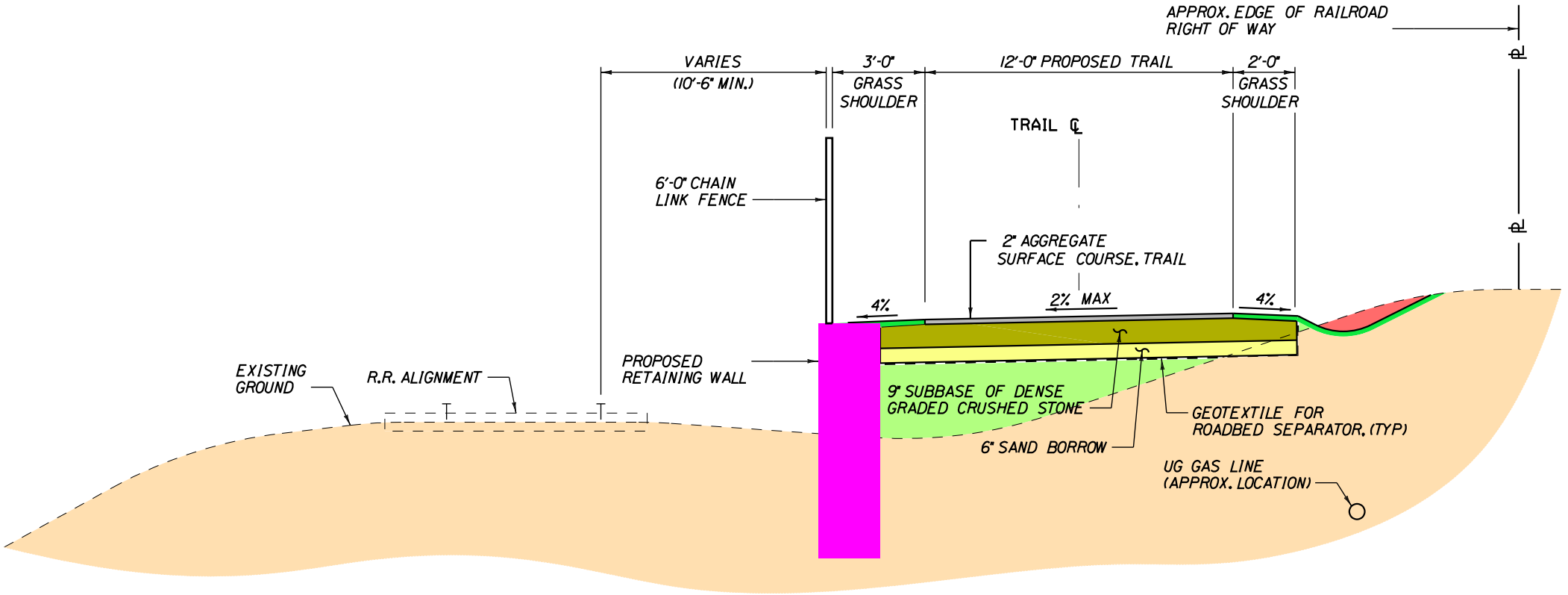
ALTERNATIVE B.4.2 TYPICAL SECTION



TERRACED TRAIL ON RAILROAD EMBANKMENT
TYPICAL SECTION

NOT TO SCALE

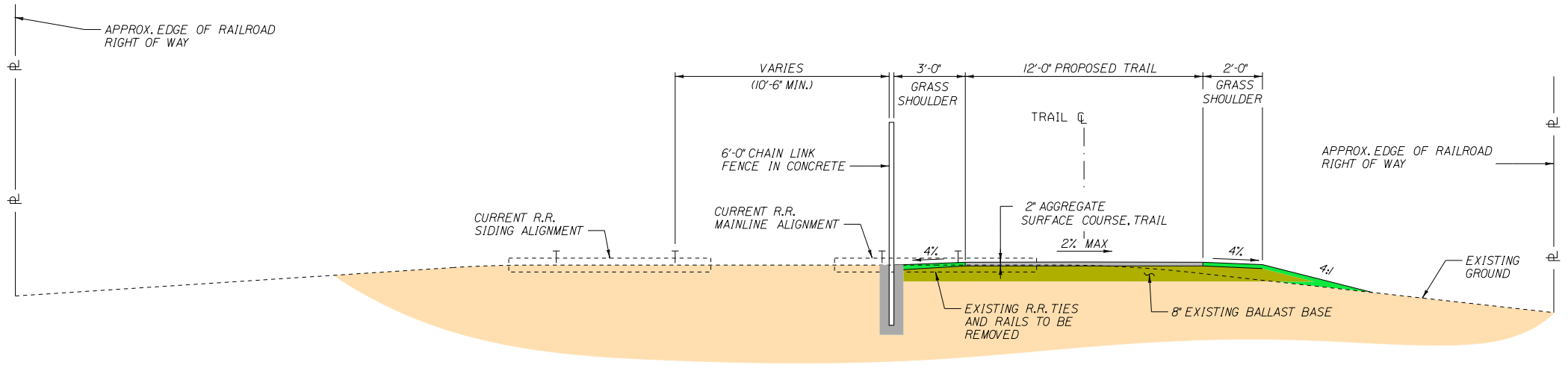
ALTERNATIVE S.1.2 TYPICAL SECTION



RAIL WITH TRAIL
TYPICAL SECTION

NOT TO SCALE

ALTERNATIVE S.2.1 TYPICAL SECTION



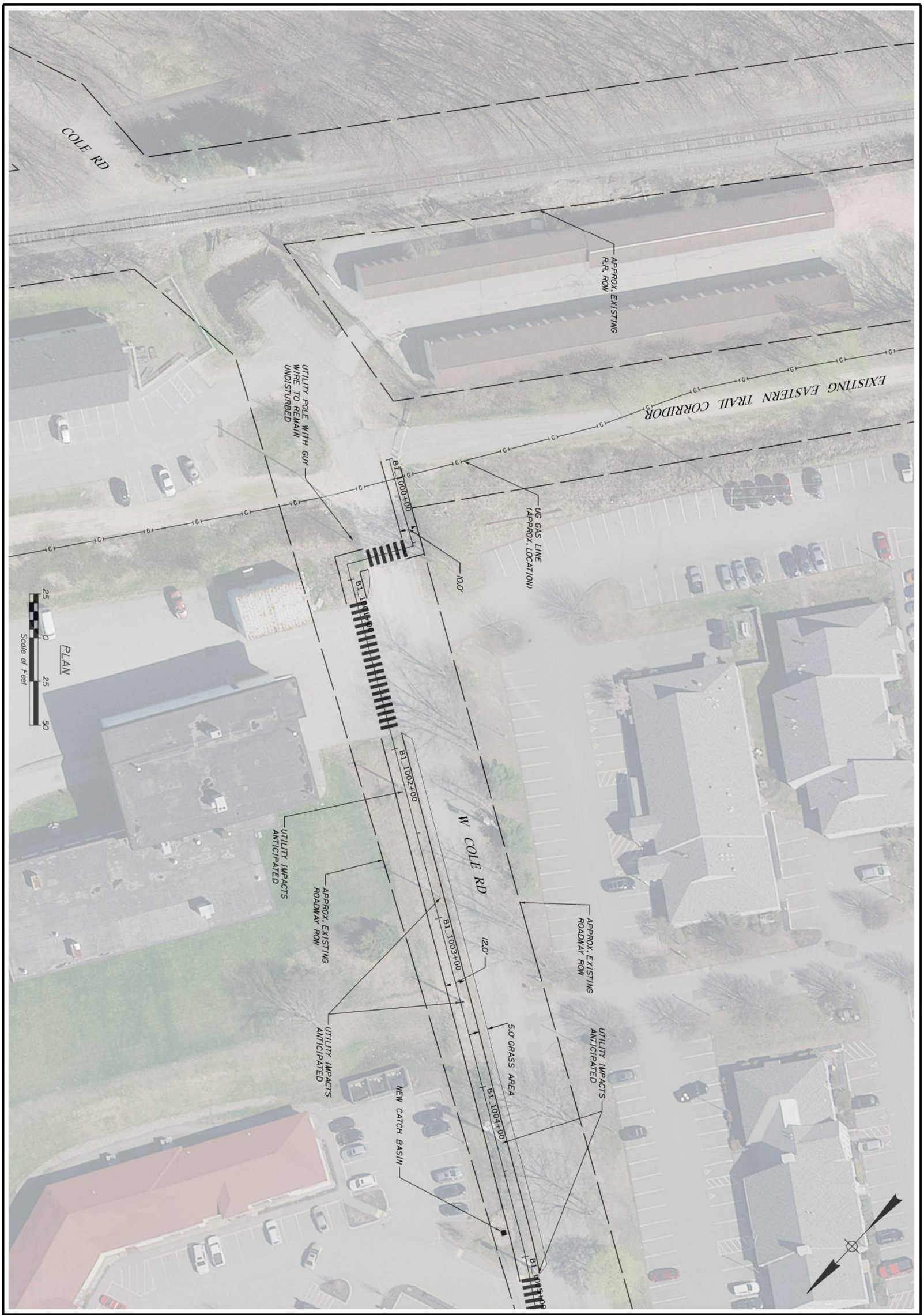
RAIL WITH TRAIL
TYPICAL SECTION

NOT TO SCALE

ALTERNATIVE S.2.1 TYPICAL SECTION

Appendix A3 – Conceptual Plans of Recommendations

Filename: ...\MSTA\025_HDPlan_01-02.dgn Division: HIGHWAY Username: BRoberts Date:8/11/2022



SHEET NUMBER 1 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (1 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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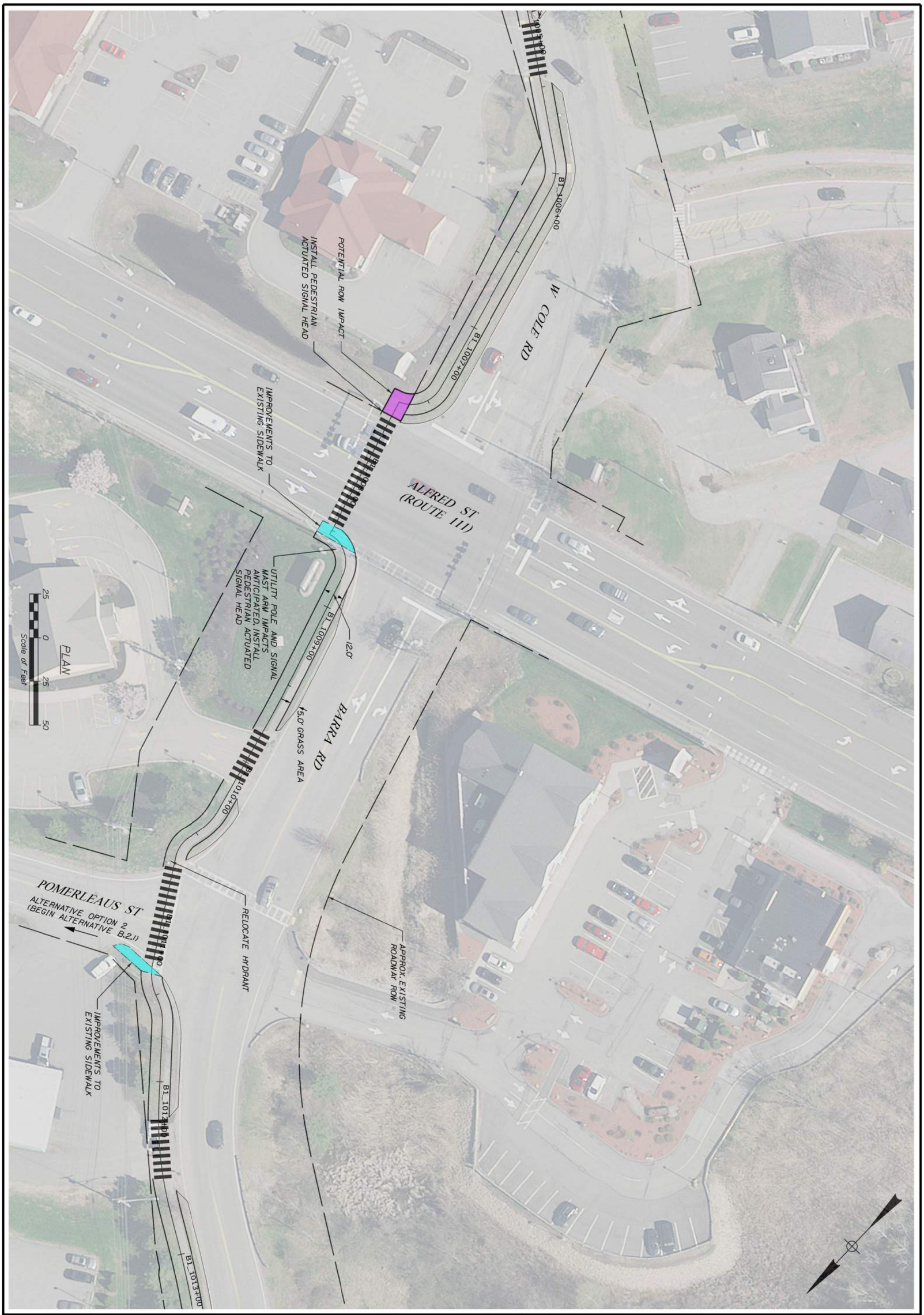
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



SHEET NUMBER 2 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (2 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

SHEET NUMBER 3 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (3 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS

Filename: ...\MSTA\028_HDPlan_04-02.dgn Division: HIGHWAY Username: BRoberts Date:8/11/2022

SHEET NUMBER 4 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (4 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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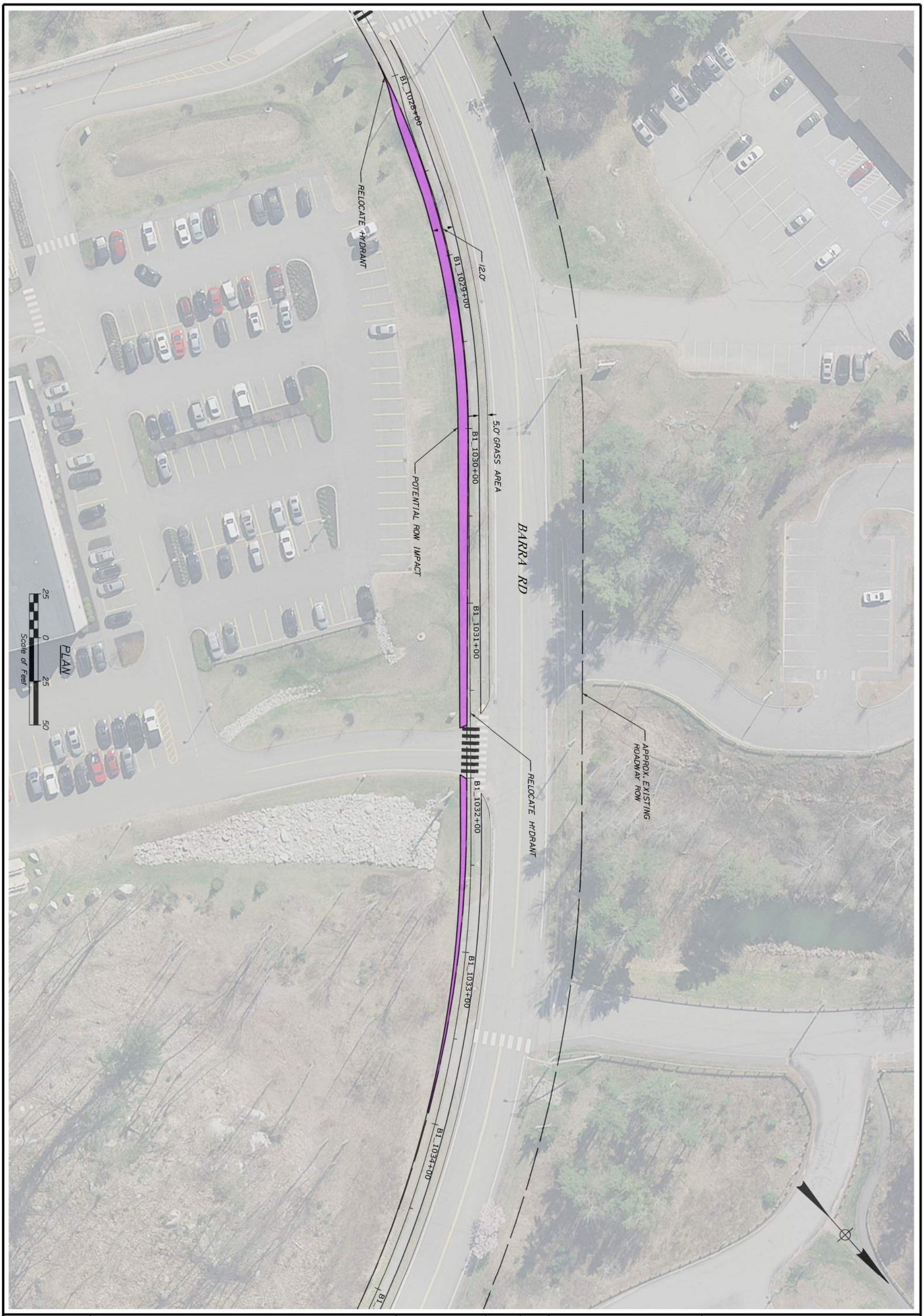
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



PROJ. MANAGER	A. GRANDE	BY	DATE
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CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER 5 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (5 OF 27)

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

SHEET NUMBER 6 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (6 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

SHEET NUMBER 7 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (7 OF 27)

	PROJ. MANAGER	A. GRANDE	BY	DATE
	DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
	CHECKED-REVIEWED	BMR	AG	8/11/2022
	DESIGN2-DETAILED2			
	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS

SHEET NUMBER 8 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (8 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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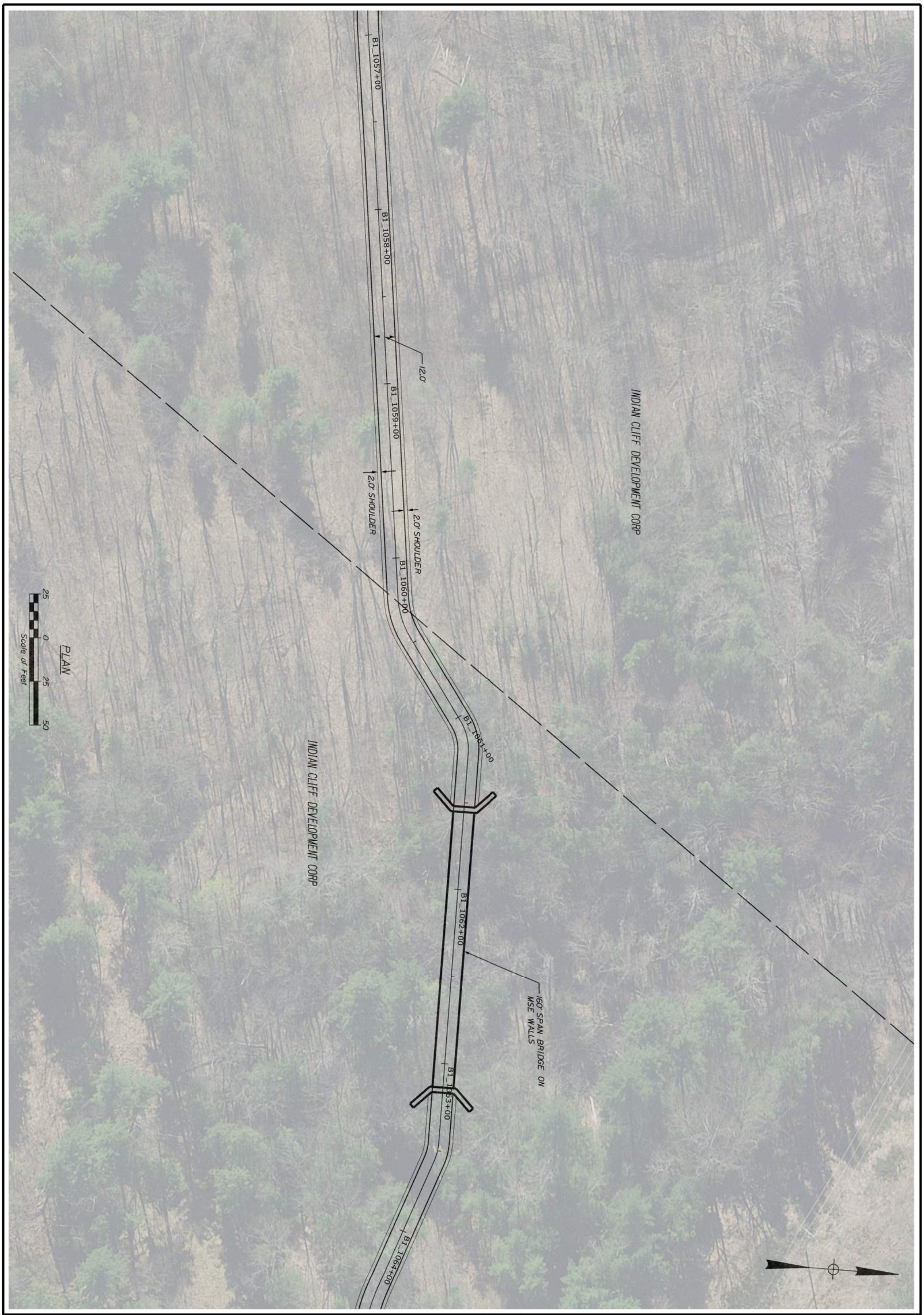
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS



EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (9 OF 27)

SHEET NUMBER 9 OF 27

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	CHECKED-REVIEWED	BMR	MG	8/11/2022
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	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

SHEET NUMBER 10 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (10 OF 27)

	PROJ. MANAGER A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
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REVISIONS 2			
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REVISIONS 4			
FIELD CHANGES			

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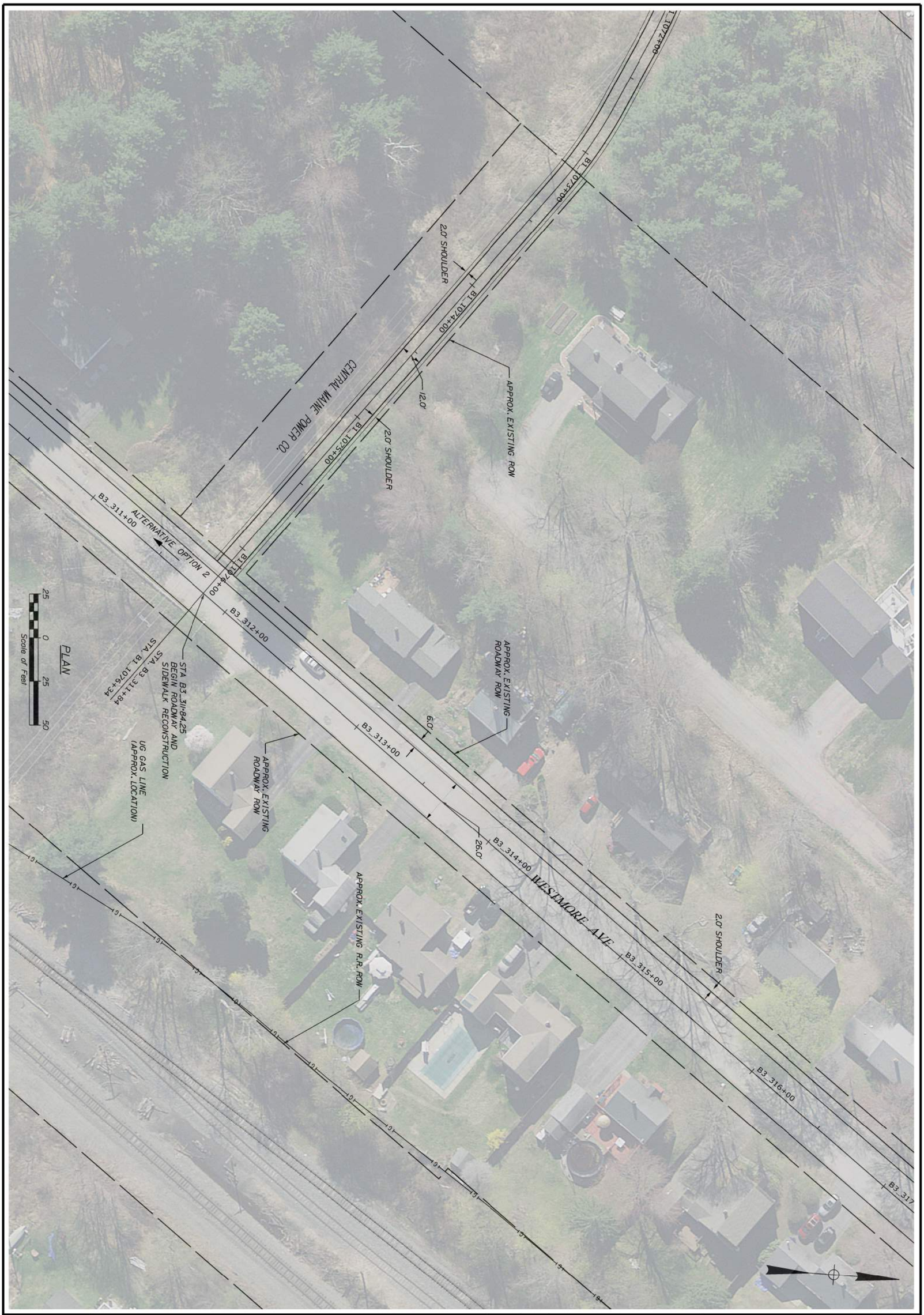
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



PROJ. MANAGER	A. GRANDE	BY	DATE
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CHECKED-REVIEWED	BMR	AG	8/11/2022
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REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER 11 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

OPTION 1 PLAN (11 OF 27)

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (12 OF 27)

SHEET NUMBER 12 OF 27

PROJ. MANAGER	A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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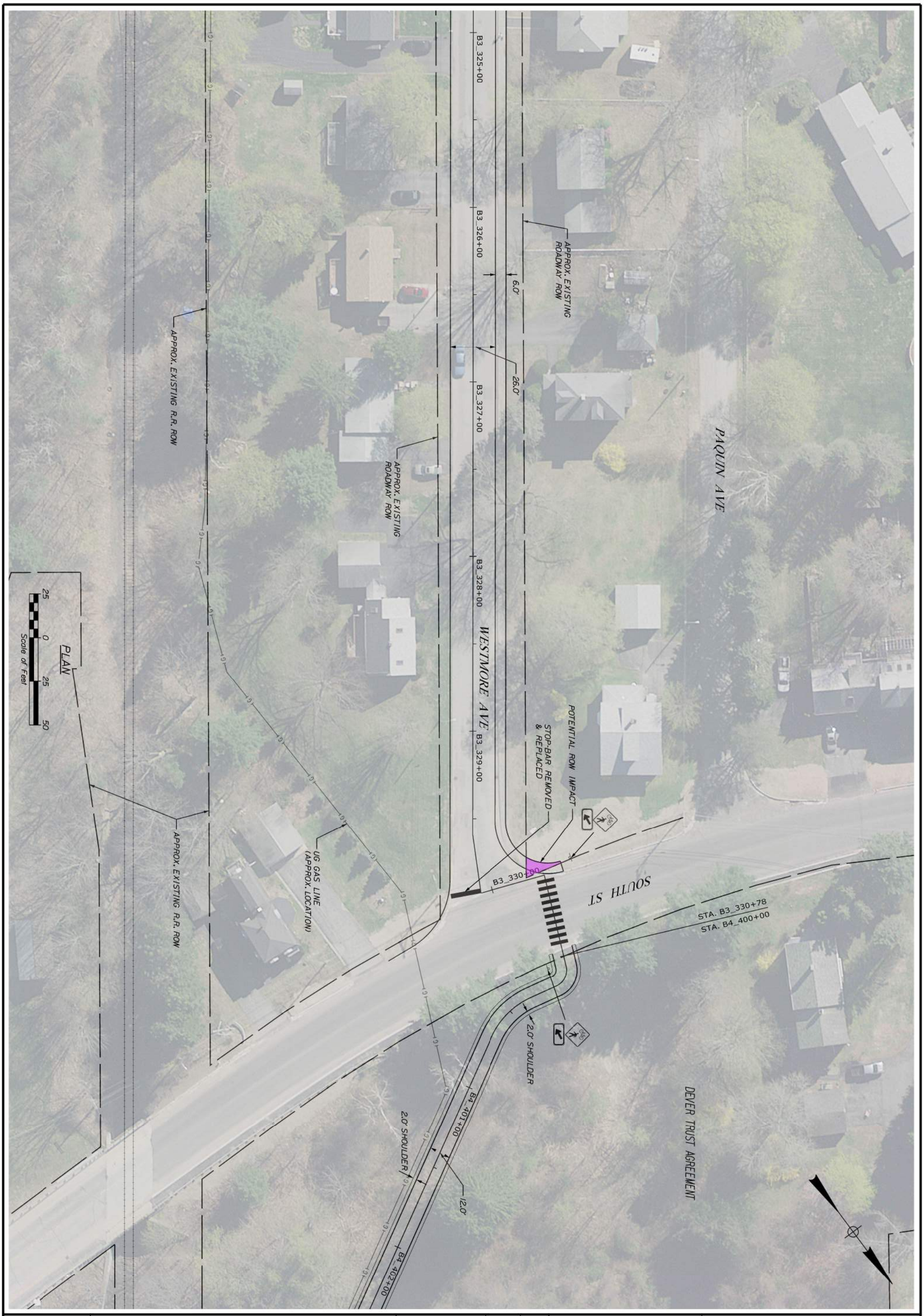
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



SHEET NUMBER 13 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (13 OF 27)

PROJ. MANAGER	A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
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FIELD CHANGES			

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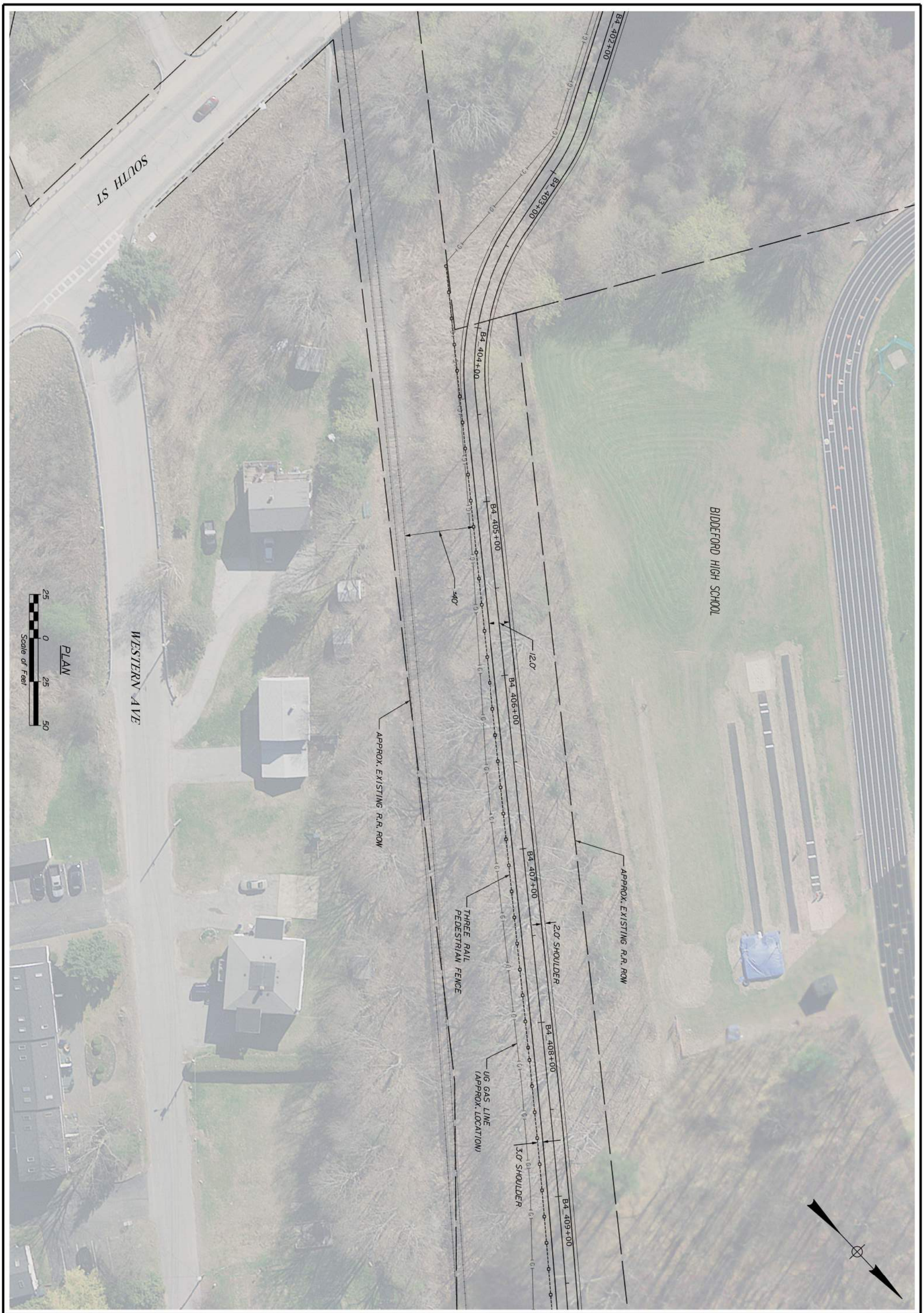
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



SHEET NUMBER 14 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (14 OF 27)

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	CHECKED-REVIEWED	BMR	AG	8/11/2022
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	DESIGN3-DETAILED3			
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	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

SHEET NUMBER 15 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (15 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (16 OF 27)

SHEET NUMBER 16 OF 27

PROJ. MANAGER	A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
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FIELD CHANGES			

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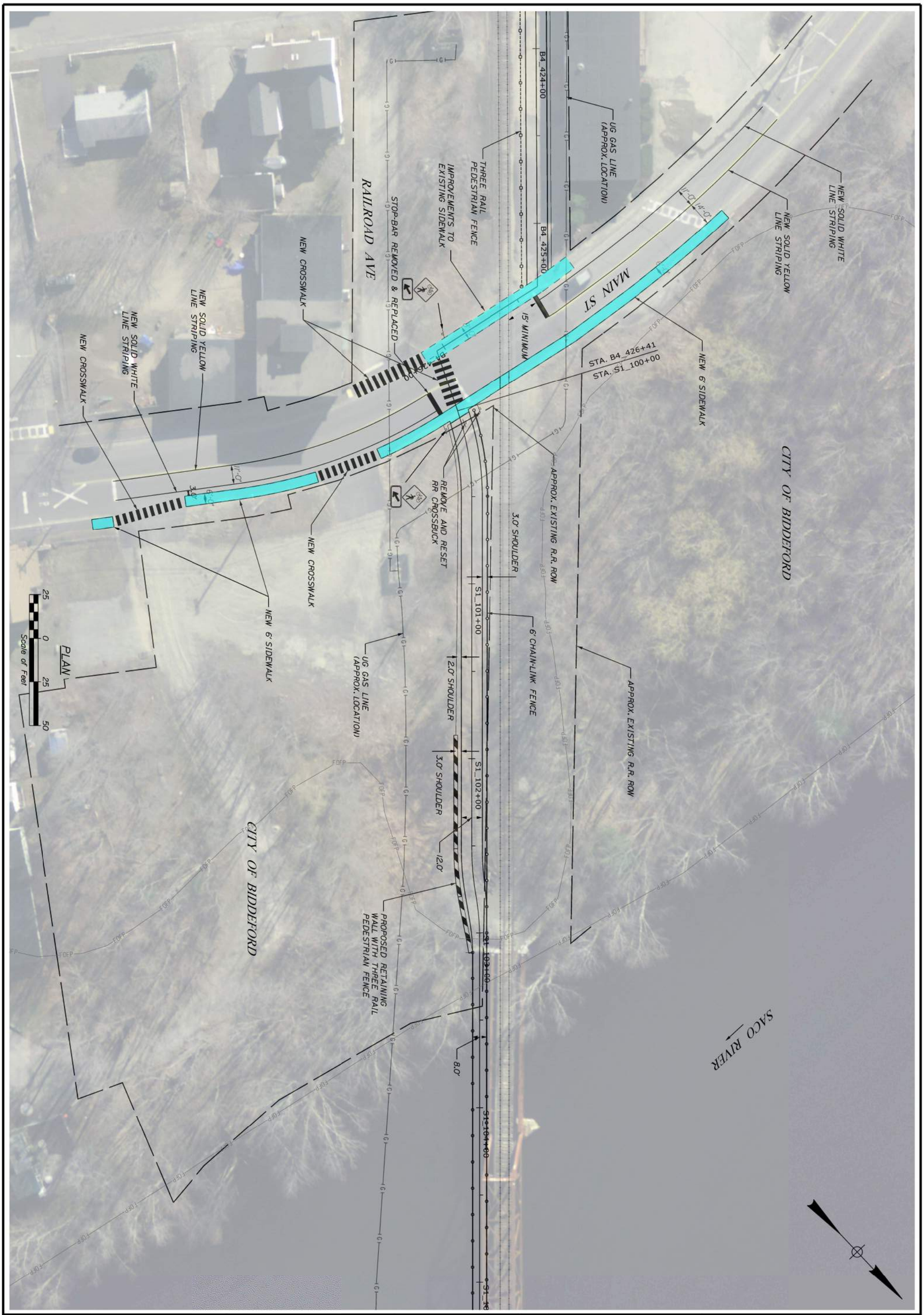
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS



SHEET NUMBER 17 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (17 OF 27)

PROJ. MANAGER	A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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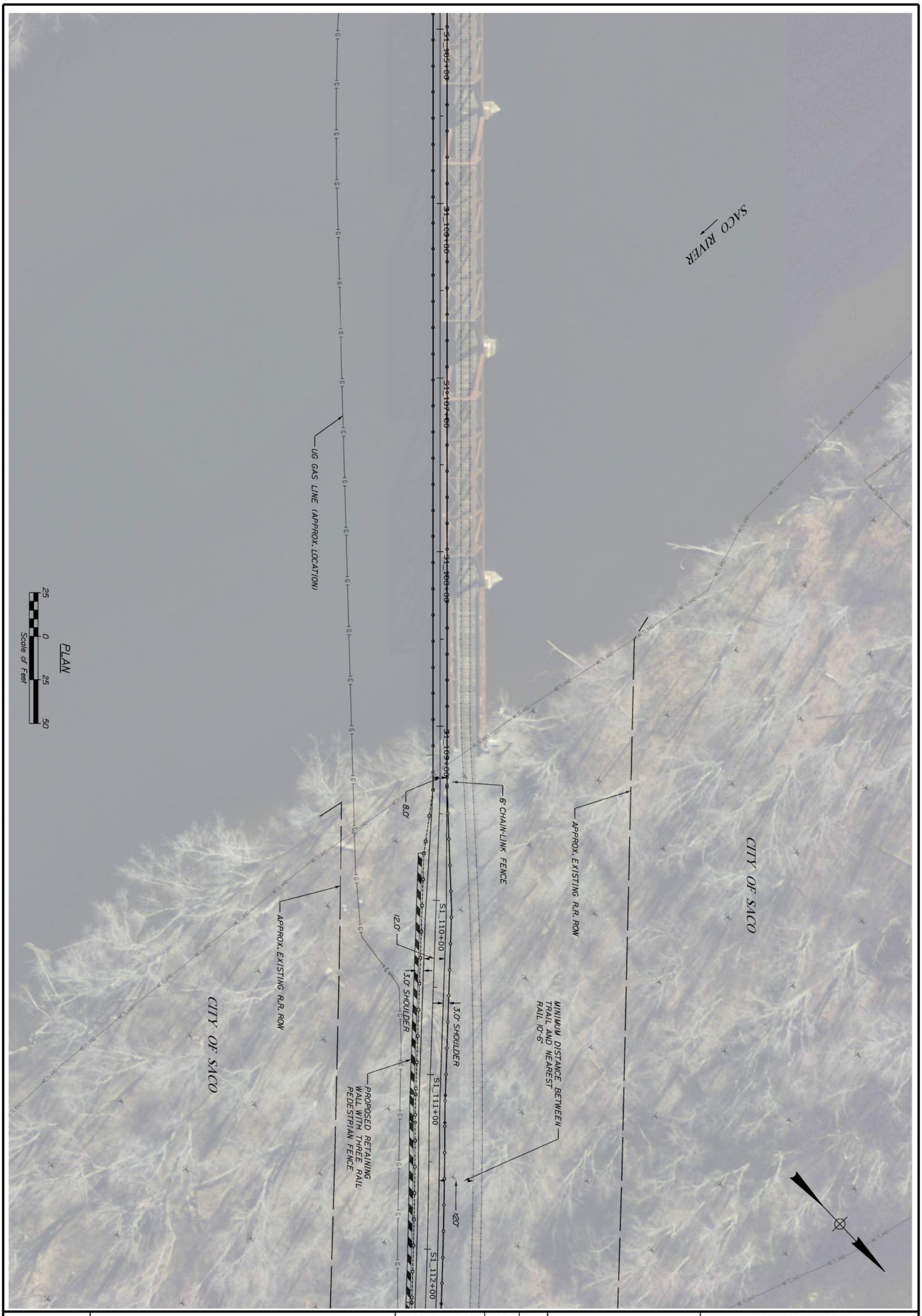
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



SHEET NUMBER 18 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (18 OF 27)

		BY	DATE
PROJ. MANAGER	A. GRANDE		
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	MC	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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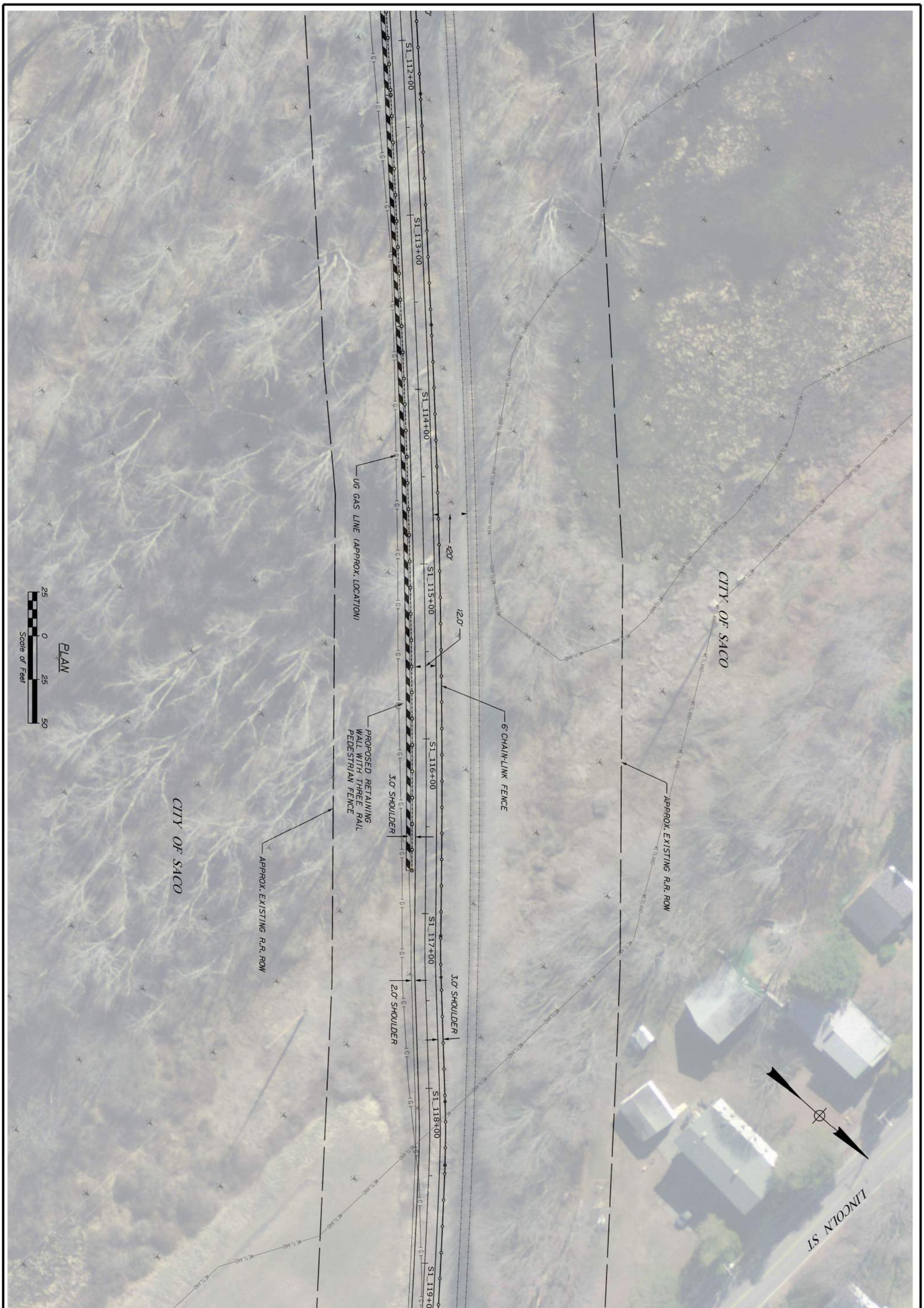
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS



SHEET NUMBER 19 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (19 OF 27)

	PROJ. MANAGER	A. GRANDE	BY	DATE
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	CHECKED-REVIEWED	BMR	AG	8/11/2022
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	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
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	FIELD CHANGES			

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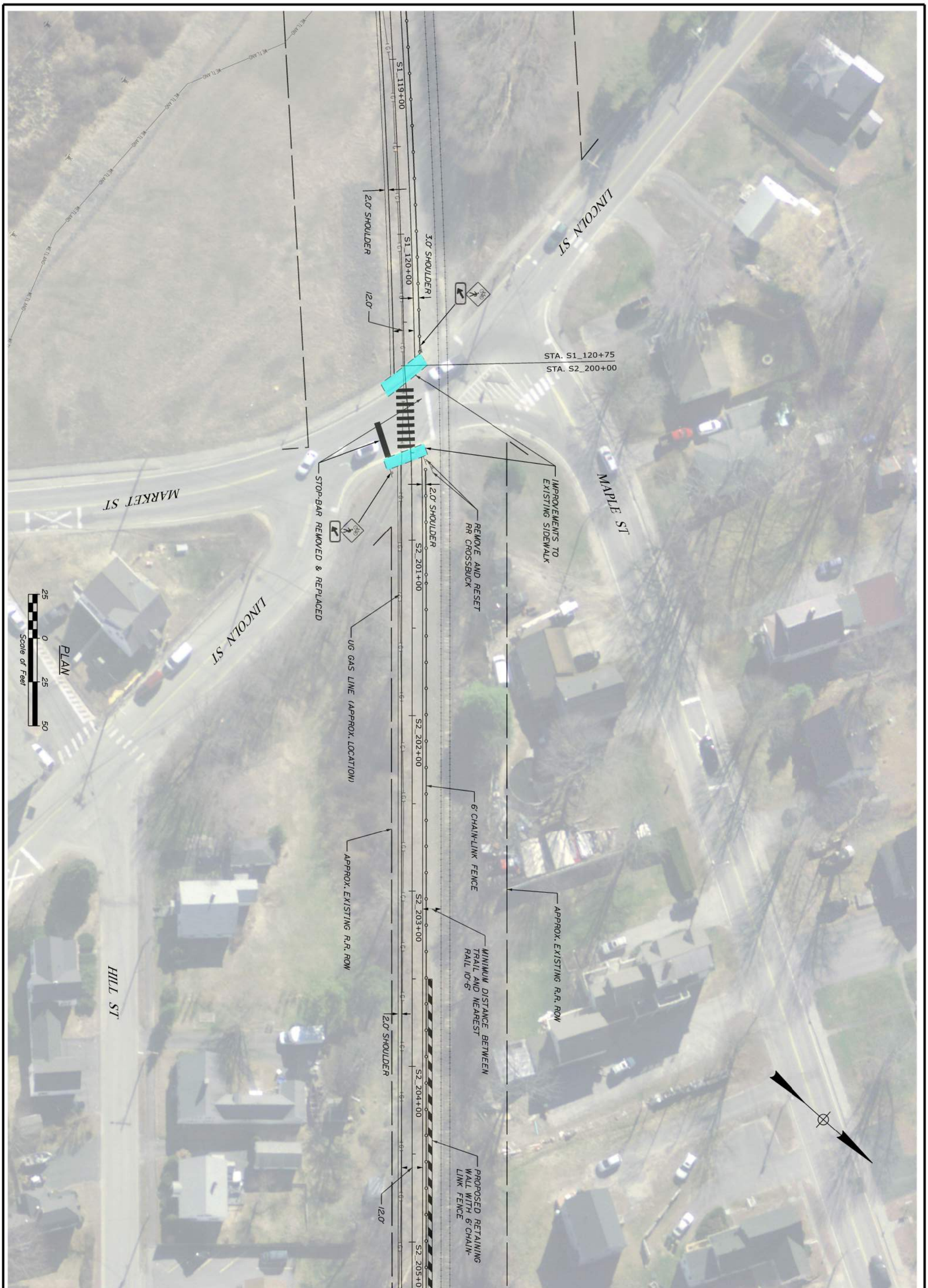
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (20 OF 27)

SHEET NUMBER 20 OF 27

PROJ. MANAGER	A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS

PLAN

25 0 25 50

Scale of Feet

Filename: ...\HIGHWAY\MSTA\018_HDPlan_18.dgn Division: HIGHWAY Username: BRoberts Date:8/11/2022

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN
22642.00

TRAIL PLANS

vhb

	BY	DATE
PROJ. MANAGER	A. GRANGE	
DESIGN-DETAILED	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

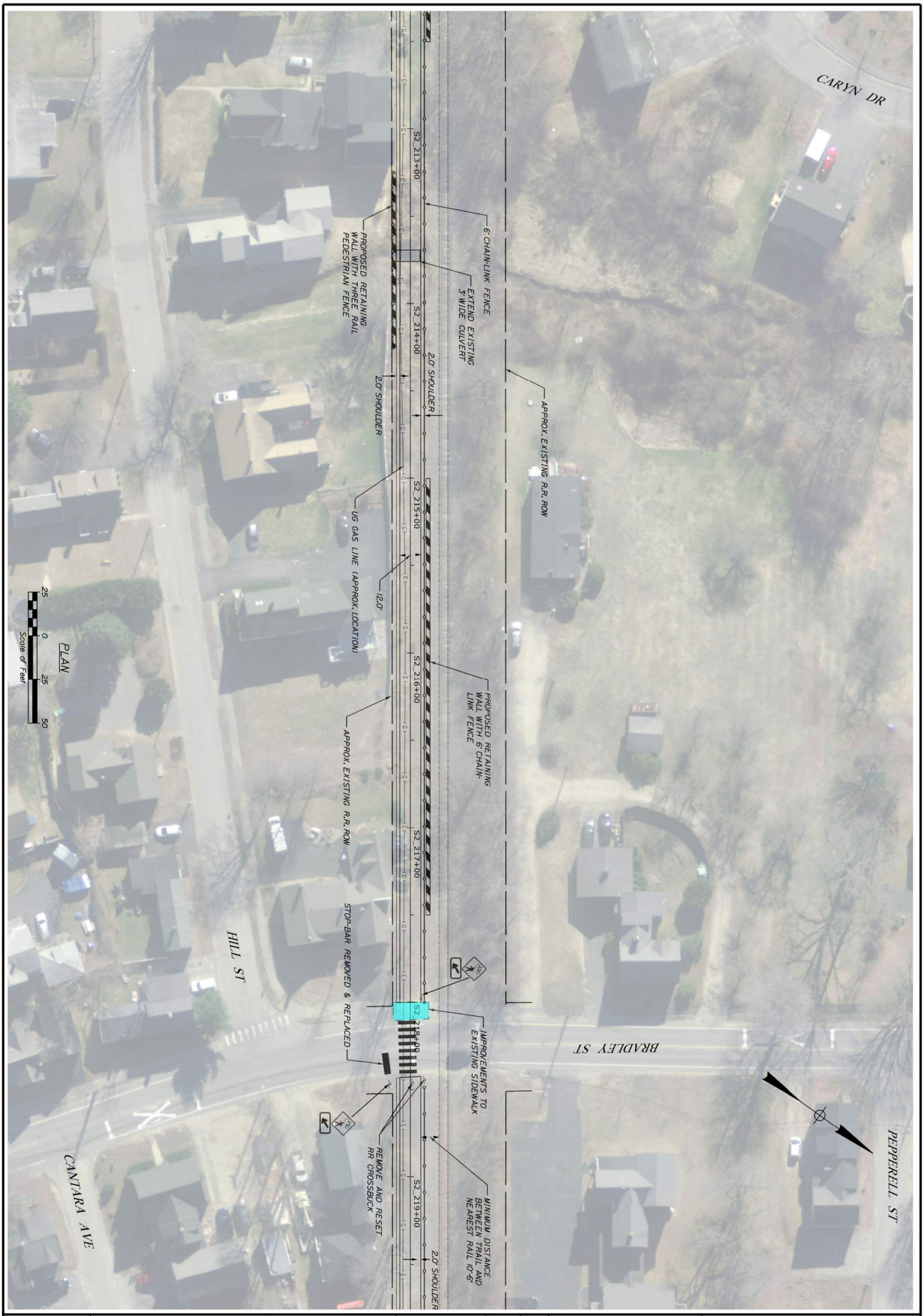
EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (21 OF 27)

SHEET NUMBER

21

OF 27



PROJ. MANAGER	A. GRANDE	BY	DATE
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CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER 22 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (22 OF 27)

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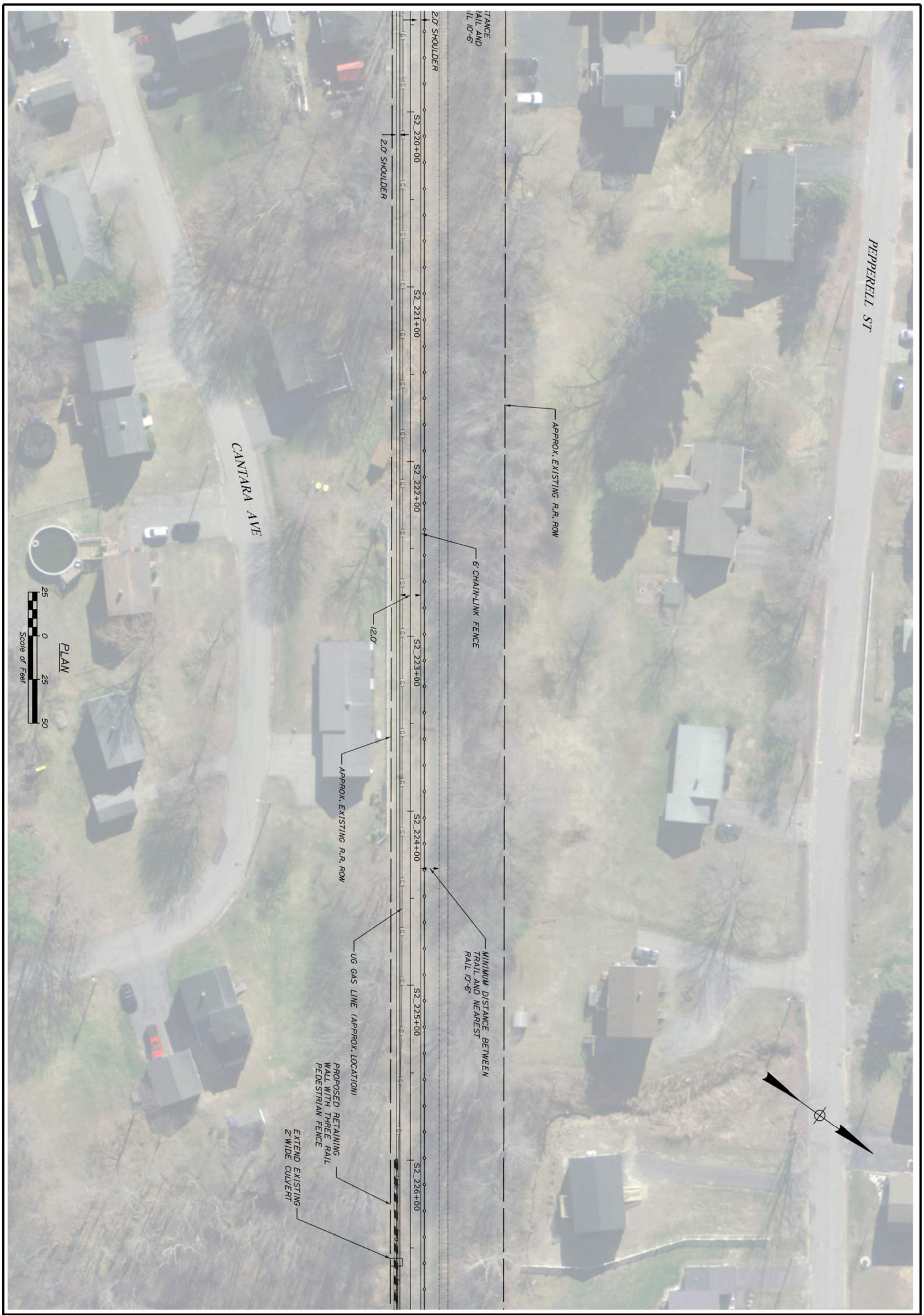
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (23 OF 27)

SHEET NUMBER 23 OF 27

PROJ. MANAGER	A. GRANDE	BY	DATE
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CHECKED-REVIEWED	BMR	AG	8/11/2022
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

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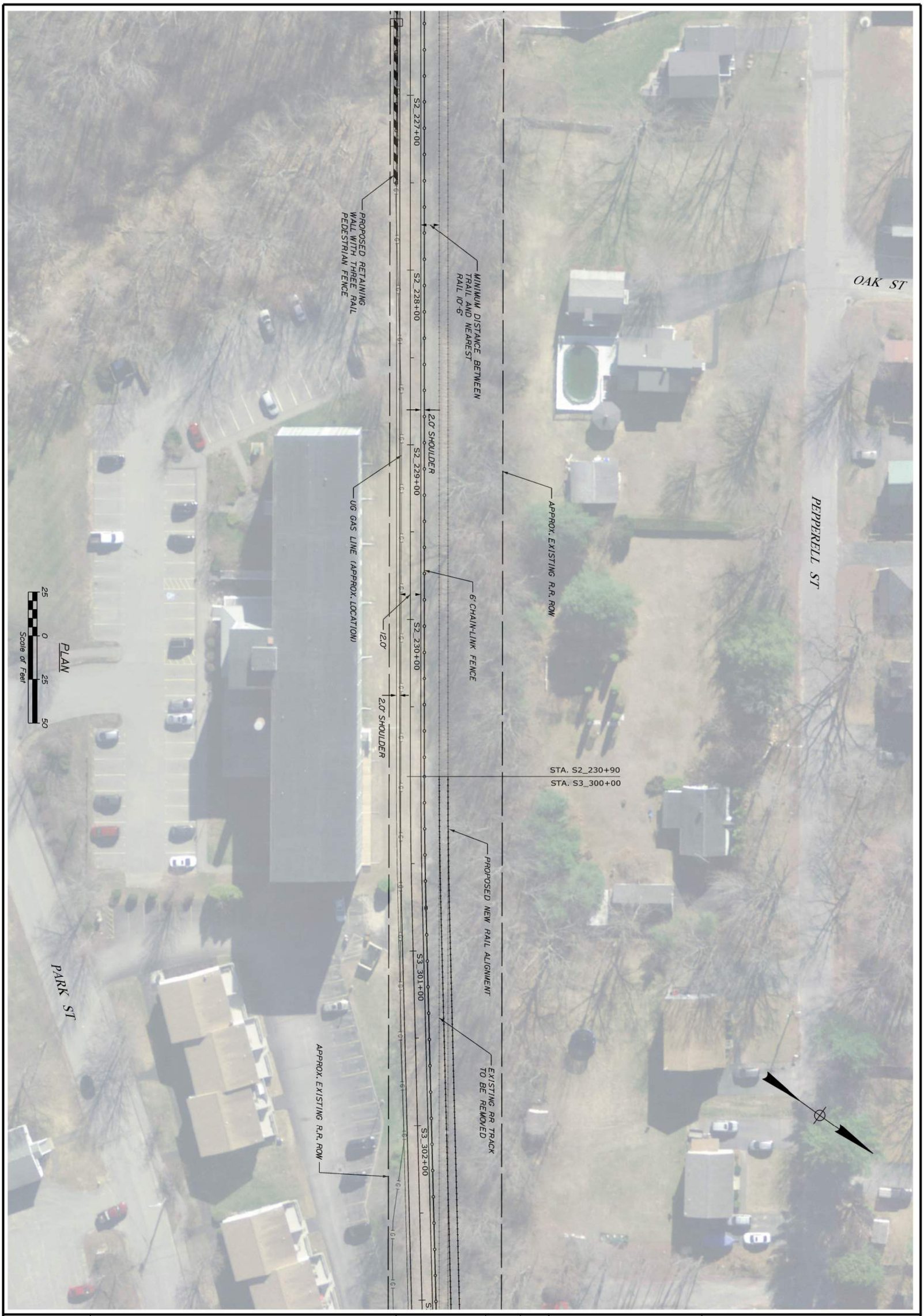
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN
22642.00

TRAIL PLANS



PROJ. MANAGER	A. GRANDE	BY	DATE
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CHECKED-REVIEWED	BMR	AG	8/11/2022
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DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER 24 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (24 OF 27)

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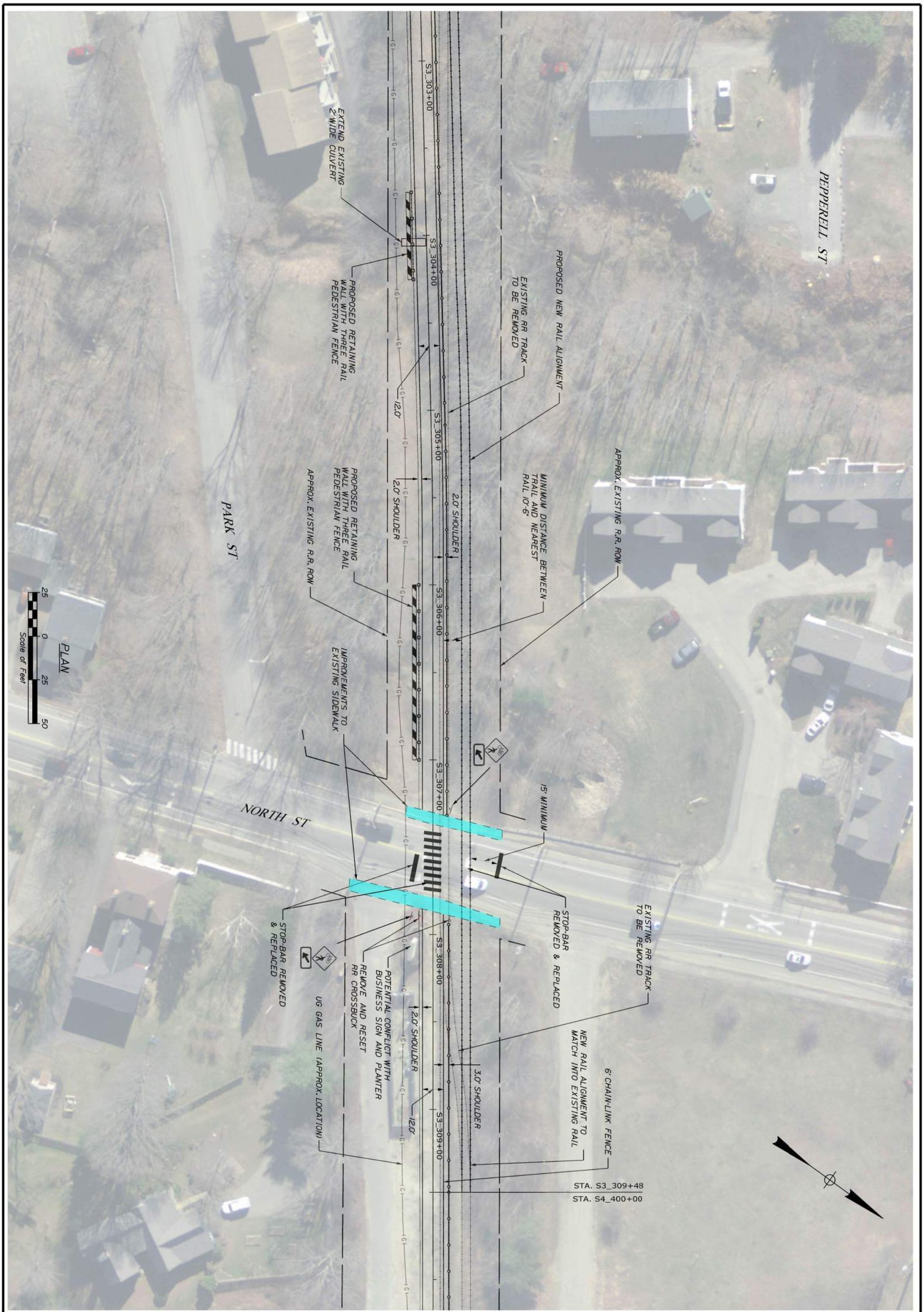
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS



SHEET NUMBER 25 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (25 OF 27)

	PROJ. MANAGER	A. GRANDE	BY	DATE
	DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
	CHECKED-REVIEWED	BMR	AG	8/11/2022
	DESIGN2-DETAILED2			
	DESIGN3-DETAILED3			
	REVISIONS 1			
	REVISIONS 2			
	REVISIONS 3			
	REVISIONS 4			
	FIELD CHANGES			

vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

ROEBUCK AVE

APPROX. EXISTING R.R. ROW

6' CHAIN-LINK FENCE

MINIMUM DISTANCE BETWEEN TRAIL AND NEAREST RAIL 10'-6"

3.0' SHOULDER

S4_401+00 S4_402+00 S4_403+00 S4_404+00 S4_405+00 S4_406+00 S4_407+00

12.0'

2.0' SHOULDER

POTENTIAL ROW IMPACT

APPROX. EXISTING R.R. ROW

UG GAS LINE (APPROX. LOCATION)

EXISTING RR TRACK TO BE REMOVED

CAGNE REALTY HOLDINGS LLC

PLAN

25 0 25 50

Scale of Feet

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00

TRAIL PLANS

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	BY	DATE
A. CHANGE	AHS/BT	8/11/2022
PROJ. MANAGER	AHS/BT	
DESIGN-DETAILED	MG	
CHECKED-REVIEWED	BMR	
DESIGN2-DETAILED2		
DESIGN3-DETAILED3		
REVISIONS 1		
REVISIONS 2		
REVISIONS 3		
REVISIONS 4		
FIELD CHANGES		

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (26 OF 27)

SHEET NUMBER

26

OF 27

PROJ. MANAGER	A. GRANDE	BY	DATE
DESIGN-DETAILED	AHS/BT	AHS/BT	8/11/2022
CHECKED-REVIEWED	BMR	AG	8/11/2022
DESIGN2-DETAILED2			
DESIGN3-DETAILED3			
REVISIONS 1			
REVISIONS 2			
REVISIONS 3			
REVISIONS 4			
FIELD CHANGES			

SHEET NUMBER 27 OF 27

EASTERN TRAIL
BIDDEFORD-SACO CORRIDOR

PLAN (27 OF 27)

vhb

STATE OF MAINE
DEPARTMENT OF TRANSPORTATION

EASTERN TRAIL

WIN 22642.00 TRAIL PLANS

Appendix A4 – Conceptual Estimate of Probable Costs

CONCEPTUAL ESTIMATE OF PROBABLE COSTS (OPTION 1)

ITEM	UNIT	UNIT COST	SECTION B.1 ON-ROAD CONNECTION*		SECTION B.2 SECTION B.1 OPTION 1 BYPASSES THIS STUDY SECTION		SECTION B.3 WESTMORE AVENUE CONNECTION		SECTION B.4 FREIGHT RAIL WITH TRAIL		SECTION S.1 FREIGHT RAIL WITH TRAIL ON EXISTING BRIDGE		SECTION S.2 FREIGHT RAIL WITH TRAIL		SECTION S.3 RE-ALIGN FREIGHT RAIL		SECTION S.4 RE-ALIGN FREIGHT RAIL		TOTAL QUANTITY	COST
			QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST		
AGGREGATE SURFACE COURSE	CY	$ 45.00	175	$ 7,875.00	0	$ -	0	$ -	200	$ 9,000.00	110	$ 4,950.00	230	$ 10,350.00	75	$ 3,375.00	90	$ 4,050.00	880	$ 39,600.00
SAND BORROW	CY	$ 35.00	675	$ 23,625.00	0	$ -	0	$ -	750	$ 26,250.00	435	$ 15,225.00	925	$ 32,375.00	350	$ 12,250.00	450	$ 15,750.00	3585	$ 125,475.00
SUBBASE OF DENSE GRADED CRUSHED STONE	CY	$ 40.00	2950	$ 118,000.00	0	$ -	830	$ 33,200.00	1150	$ 46,000.00	825	$ 33,000.00	1750	$ 70,000.00	450	$ 18,000.00	550	$ 22,000.00	8505	$ 340,200.00
GEOTEXTILE FOR ROADBED SEPARATOR	SY	$ 1.50	5000	$ 7,500.00	0	$ -	0	$ -	5620	$ 8,430.00	3250	$ 4,875.00	6875	$ 10,312.50	2150	$ 3,225.00	2700	$ 4,050.00	25595	$ 38,392.50
COMMON EXCAVATION	CY	$ 12.50	5300	$ 66,250.00	0	$ -	700	$ 8,750.00	1900	$ 23,750.00	825	$ 10,312.50	2300	$ 28,750.00	720	$ 9,000.00	900	$ 11,250.00	12645	$ 158,062.50
SOLID ROCK EXCAVATION	CY	$ 150.00	0	$ -	0	$ -	0	$ -	280	$ 42,000.00	0	$ -	0	$ -	0	$ -	0	$ -	280	$ 42,000.00
PAVEMENT MILLING	SY	$ 2.00	0	$ -	0	$ -	5150	$ 10,300.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	5150	$ 10,300.00
PAVEMENT	TON	$ 115.00	780	$ 89,700.00	0	$ -	1200	$ 138,000.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1980	$ 227,700.00
BITUMINOUS CURBING	LF	$ 15.00	0	$ -	0	$ -	3700	$ 55,500.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	3700	$ 55,500.00
CLEARING AND GRUBBING	AC	$ 15,000.00	1.5	$ 22,500.00	0	$ -	0	$ -	1.8	$ 27,000.00	1	$ 15,000.00	1	$ 15,000.00	0.5	$ 7,500.00	0.4	$ 6,000.00	6.2	$ 93,000.00
THREE RAIL PEDESTRIAN FENCE	LF	$ 50.00	570	$ 28,500.00	0	$ -	0	$ -	0	$ -	2000	$ 100,000.00	1300	$ 65,000.00	0	$ -	0	$ -	3870	$ 193,500.00
CHAIN-LINK FENCE, 6 FEET	LF	$ 40.00	0	$ -	0	$ -	0	$ -	2525	$ 101,000.00	450	$ 18,000.00	3000	$ 120,000.00	900	$ 36,000.00	1200	$ 48,000.00	8075	$ 323,000.00
RAILROAD REMOVAL AND DISPOSAL	TON	$ 250.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	950	$ 237,500.00	1200	$ 300,000.00	2150	$ 537,500.00
NEW RAILROAD TRACK	LF	$ 375.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	950	$ 356,250.00	0	$ -	950	$ 356,250.00
SLOPE STABILIZATION AND EROSION CONTROL	LF	$ 5.00	7450	$ 37,250.00	0	$ -	0	$ -	2525	$ 12,625.00	1450	$ 7,250.00	3090	$ 15,450.00	950	$ 4,750.00	1200	$ 6,000.00	16665	$ 83,325.00
RETAINING WALL	SF	$ 80.00	1080	$ 86,400.00	0	$ -	0	$ -	0	$ -	8700	$ 696,000.00	5600	$ 448,000.00	0	$ -	0	$ -	15380	$ 1,230,400.00
MISCELLANEOUS DRAINAGE	LS		1	$ 10,000.00	0	$ -	0	$ -	1	$ 5,000.00	0	$ -	0	$ -	0	$ -	0	$ -	2	$ 15,000.00
MISCELLANEOUS SIGNAL/INTERSECTION IMPROVEMENTS	LS		1	$ 255,000.00	0	$ -	1	$ 15,000.00	1	$ 95,000.00	0	$ -	1	$ 30,000.00	1	$ 15,000.00	0	$ -	5	$ 410,000.00
RAILROAD EQUIPMENT MODIFICATIONS	LS		0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1	$ 50,000.00	1	$ 50,000.00	2	$ 100,000.00
BRIDGE WORK	LS		1	$ 520,000.00	0	$ -	0	$ -	0	$ -	1	$ 1,500,000.00	0	$ -	0	$ -	0	$ -	2	$ 2,020,000.00
TRAFFIC/RAILROAD CONTROL	LS		1	$ 30,000.00	0	$ -	1	$ 20,000.00	1	$ 15,000.00	1	$ 15,000.00	1	$ 15,000.00	1	$ 45,000.00	1	$ 15,000.00	7	$ 155,000.00
MOBILIZATION (ASSUME 10% OF ABOVE COSTS)	LS		1	$ 130,260.00	0	$ -	1	$ 28,075.00	1	$ 41,105.50	1	$ 241,961.25	1	$ 86,023.75	1	$ 79,785.00	1	$ 48,210.00	7	$ 655,420.50
SUBTOTAL =				$ 1,432,860.00		$ -		$ 308,825.00		$ 452,160.50		$ 2,661,573.75		$ 946,261.25		$ 877,635.00		$ 530,310.00		$ 7,209,625.50
Contingency (30%) =				$ 429,858.00		$ -		$ 92,647.50		$ 135,648.15		$ 798,472.13		$ 283,878.38		$ 263,290.50		$ 159,093.00		$ 2,162,887.65
ROUNDING =				$ 282.00		$ -		$ 527.50		$ 191.35		$ 954.13		$ 860.38		$ 74.50		$ 597.00		$ 3,486.85
CONSTRUCTION COST =				$ 1,863,000.00		$ -		$ 402,000.00		$ 588,000.00		$ 3,461,000.00		$ 1,231,000.00		$ 1,141,000.00		$ 690,000.00		$ 9,376,000.00
13% FOR PROFESSIONAL ENGINEERING =				$ 242,190.00		$ -		$ 52,260.00		$ 76,440.00		$ 449,930.00		$ 160,030.00		$ 148,330.00		$ 89,700.00		$ 1,218,880.00
15% FOR CONSTRUCTION ENGINEERING =				$ 279,450.00		$ -		$ 60,300.00		$ 88,200.00		$ 519,150.00		$ 184,650.00		$ 171,150.00		$ 103,500.00		$ 1,406,400.00
ROUNDING =				$ 5,360.00		$ -		$ 5,440.00		$ 7,360.00		$ 9,920.00		$ 4,320.00		$ 9,520.00		$ 6,800.00		$ 48,720.00
TOTAL =				$ 2,390,000.00		$ -		$ 520,000.00		$ 760,000.00		$ 4,440,000.00		$ 1,580,000.00		$ 1,470,000.00		$ 890,000.00		$ 12,050,000.00

* QUANTITIES AND ESTIMATE ARE FOR CONSTRUCTION OF ENTIRE SEGMENT. VHB ASSUMES THE DEVELOPER WOULD COVER HALF OF THE CONSTRUCTION COSTS (APPROXIMATELY $600,000) FOR THE PORTION OF THE EASTERN TRAIL BETWEEN THE EXISTING LIMIT OF BARRA ROAD AND THE CONNECTION TO WESTMORE AVENUE.

CONCEPTUAL ESTIMATE OF PROBABLE COSTS (OPTION 2)

ITEM	UNIT	UNIT COST	SECTION B.1 ON-ROAD CONNECTION		SECTION B.2 UTILITY CORRIDOR		SECTION B.3 WESTMORE AVENUE CONNECTION		SECTION B.4 FREIGHT RAIL WITH TRAIL		SECTION S.1 FREIGHT RAIL WITH TRAIL ON EXISTING BRIDGE		SECTION S.2 FREIGHT RAIL WITH TRAIL		SECTION S.3 RE-ALIGN FREIGHT RAIL		SECTION S.4 RE-ALIGN FREIGHT RAIL		TOTAL QUANTITY	COST
			QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST	QUANTITY	COST		
AGGREGATE SURFACE COURSE	CY	$ 45.00	0	$ -	175	$ 7,875.00	0	$ -	200	$ 9,000.00	110	$ 4,950.00	230	$ 10,350.00	75	$ 3,375.00	90	$ 4,050.00	880	$ 39,600.00
SAND BORROW	CY	$ 35.00	0	$ -	700	$ 24,500.00	0	$ -	750	$ 26,250.00	435	$ 15,225.00	925	$ 32,375.00	350	$ 12,250.00	450	$ 15,750.00	3610	$ 126,350.00
SUBBASE OF DENSE GRADED CRUSHED STONE	CY	$ 40.00	450	$ 18,000.00	1650	$ 66,000.00	1350	$ 54,000.00	1150	$ 46,000.00	825	$ 33,000.00	1750	$ 70,000.00	450	$ 18,000.00	550	$ 22,000.00	8175	$ 327,000.00
GEOTEXTILE FOR ROADBED SEPARATOR	SY	$ 1.50	0	$ -	5100	$ 7,650.00	0	$ -	5620	$ 8,430.00	3250	$ 4,875.00	6875	$ 10,312.50	2150	$ 3,225.00	2700	$ 4,050.00	25695	$ 38,542.50
COMMON EXCAVATION	CY	$ 12.50	800	$ 10,000.00	2800	$ 35,000.00	1150	$ 14,375.00	1900	$ 23,750.00	825	$ 10,312.50	2300	$ 28,750.00	720	$ 9,000.00	900	$ 11,250.00	11395	$ 142,437.50
SOLID ROCK EXCAVATION	CY	$ 150.00	0	$ -	0	$ -	0	$ -	280	$ 42,000.00	0	$ -	0	$ -	0	$ -	0	$ -	280	$ 42,000.00
PAVEMENT MILLING	SY	$ 2.00	0	$ -	0	$ -	8330	$ 16,660.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	8330	$ 16,660.00
PAVEMENT	TON	$ 115.00	175	$ 20,125.00	250	$ 28,750.00	730	$ 83,950.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1155	$ 132,825.00
BITUMINOUS CURBING	LF	$ 15.00	0	$ -	0	$ -	6000	$ 90,000.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	6000	$ 90,000.00
CLEARING AND GRUBBING	AC	$ 15,000.00	0	$ -	0.1	$ 1,500.00	0	$ -	1.8	$ 27,000.00	1	$ 15,000.00	1	$ 15,000.00	0.5	$ 7,500.00	0.4	$ 6,000.00	4.8	$ 72,000.00
THREE RAIL PEDESTRIAN FENCE	LF	$ 50.00	0	$ -	0	$ -	0	$ -	0	$ -	2000	$ 100,000.00	1300	$ 65,000.00	0	$ -	0	$ -	3300	$ 165,000.00
CHAIN-LINK FENCE, 6 FEET	LF	$ 40.00	0	$ -	2280	$ 91,200.00	0	$ -	2525	$ 101,000.00	450	$ 18,000.00	3000	$ 120,000.00	900	$ 36,000.00	1200	$ 48,000.00	10355	$ 414,200.00
RAILROAD REMOVAL AND DISPOSAL	TON	$ 250.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	950	$ 237,500.00	1200	$ 300,000.00	2150	$ 537,500.00
NEW RAILROAD TRACK	LF	$ 375.00	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	950	$ 356,250.00	0	$ -	950	$ 356,250.00
SLOPE STABILIZATION AND EROSION CONTROL	LF	$ 5.00	1150	$ 5,750.00	3930	$ 19,650.00	0	$ -	2525	$ 12,625.00	1450	$ 7,250.00	3090	$ 15,450.00	950	$ 4,750.00	1200	$ 6,000.00	14295	$ 71,475.00
RETAINING WALL	SF	$ 80.00	0	$ -	0	$ -	0	$ -	0	$ -	8700	$ 696,000.00	5600	$ 448,000.00	0	$ -	0	$ -	14300	$ 1,144,000.00
MISCELLANEOUS DRAINAGE	LS		1	$ 10,000.00	1	$ 10,000.00	0	$ -	1	$ 5,000.00	0	$ -	0	$ -	0	$ -	0	$ -	3	$ 25,000.00
MISCELLANEOUS SIGNAL/INTERSECTION IMPROVEMENTS	LS		1	$ 210,000.00	0	$ -	1	$ 15,000.00	1	$ 95,000.00	0	$ -	1	$ 30,000.00	1	$ 15,000.00	0	$ -	5	$ 365,000.00
RAILROAD EQUIPMENT MODIFICATIONS	LS		0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	0	$ -	1	$ 50,000.00	1	$ 50,000.00	2	$ 100,000.00
BRIDGE WORK	LS		0	$ -	0	$ -	0	$ -	0	$ -	1	$ 1,500,000.00	0	$ -	0	$ -	0	$ -	1	$ 1,500,000.00
TRAFFIC/RAILROAD CONTROL	LS		1	$ 20,000.00	1	$ 20,000.00	1	$ 20,000.00	1	$ 15,000.00	1	$ 15,000.00	1	$ 15,000.00	1	$ 45,000.00	1	$ 15,000.00	8	$ 165,000.00
MOBILIZATION (ASSUME 10% OF ABOVE COSTS)	LS		1	$ 29,387.50	1	$ 31,212.50	1	$ 29,398.50	1	$ 41,105.50	1	$ 241,961.25	1	$ 86,023.75	1	$ 79,785.00	1	$ 48,210.00	8	$ 587,084.00
SUBTOTAL =				$ 323,262.50		$ 343,337.50		$ 323,383.50		$ 452,160.50		$ 2,661,573.75		$ 946,261.25		$ 877,635.00		$ 530,310.00		$ 6,457,924.00
Contingency (30%) =				$ 96,978.75		$ 103,001.25		$ 97,015.05		$ 135,648.15		$ 798,472.13		$ 283,878.38		$ 263,290.50		$ 159,093.00		$ 1,937,377.20
ROUNDING =				$ 758.75		$ 661.25		$ 601.45		$ 191.35		$ 954.13		$ 860.38		$ 74.50		$ 597.00		$ 4,698.80
CONSTRUCTION COST =				$ 421,000.00		$ 447,000.00		$ 421,000.00		$ 588,000.00		$ 3,461,000.00		$ 1,231,000.00		$ 1,141,000.00		$ 690,000.00		$ 8,400,000.00
13% FOR PROFESSIONAL ENGINEERING =				$ 54,730.00		$ 58,110.00		$ 54,730.00		$ 76,440.00		$ 449,930.00		$ 160,030.00		$ 148,330.00		$ 89,700.00		$ 1,092,000.00
15% FOR CONSTRUCTION ENGINEERING =				$ 63,150.00		$ 67,050.00		$ 63,150.00		$ 88,200.00		$ 519,150.00		$ 184,650.00		$ 171,150.00		$ 103,500.00		$ 1,260,000.00
ROUNDING =				$ 1,120.00		$ 7,840.00		$ 1,120.00		$ 7,360.00		$ 9,920.00		$ 4,320.00		$ 9,520.00		$ 6,800.00		$ 48,000.00
TOTAL =				$ 540,000.00		$ 580,000.00		$ 540,000.00		$ 760,000.00		$ 4,440,000.00		$ 1,580,000.00		$ 1,470,000.00		$ 890,000.00		$ 10,800,000.00


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