

North Reading Recreational Trail

Feasibility Study Report

Prepared for the
Town of North Reading
January 2022



Bridge over Ipswich River



Abandoned Railbed



Ipswich River Park



Elm Street/Route 62 Access



North Parrish Park



North Reading Recreational Trail Feasibility Study

January 26, 2022

Prepared for:

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1 Project Background

At Town Meeting in October 2018, the Town of North Reading approved funding to evaluate the feasibility of a recreational trail generally following the sections of the former Salem & Lowell Railroad within the town limits from the Lynnfield Town line (eastern end) to the Wilmington Town line (western end), a distance of approximately 4 miles. The Trail would connect existing trails within Ipswich River Park to an existing parking area adjacent to Route 28 and 62 to the west, and to the section of abandoned railbed at the North Reading/Lynnfield Town Line to the east. There will also be an additional connection to Route 62/Elm Street on the eastern portion of the Trail. In the summer of 2020, the Town of North Reading applied for and received approval from MassTrails for additional grant funding to expand the feasibility study scope.

The Salem & Lowell Railroad ceased operations within North Reading nearly a century ago. Virtually the entire length within the Town was sold off by the railroad prior to 1950. Although there are several sections of railroad right-of-way currently owned by the Town of North Reading, many sections were sold to private parties. There may be as many as 15 privately-owned parcels along the trail corridor that will require separate access easements to provide a continuous off-road multi-use path from Lynnfield to Wilmington. The number of private parcels impacted will depend on the final routing of the Trail.

In June of 2019, the Town retained BSC Group to prepare this feasibility study which explores trail alternatives from Lynnfield to Wilmington as well as identifies/evaluates challenges. Given Trail costs and easement requirements, a phased approach may be expeditious with the first phase being construction from Lynnfield to Route 28. The feasibility study examines this section in more detail including various options for connecting the eastern trail terminus to Route 62/Elm Street. Additionally, this study identifies order-of-magnitude design (preliminary and final) costs utilizing Town, public/private grants; and order-of-magnitude construction costs utilizing State Transportation Improvement Project (STIP) funding for review and construction by the Massachusetts Department of Transportation (MassDOT). The study provides a detailed list of next steps the Town will need to take eventually to secure STIP funding.

2 Existing Conditions – Phase 1

The existing conditions plan of the study corridor was developed utilizing MassGIS information, supplemented by GIS data provided by the Town of North Reading, right-of-way information provided by the Massachusetts Department of Transportation (MassDOT) and measurements obtained from multiple site visits. An evaluation of the existing study corridor resulted in several key sections within the public right-of-way, State Highway Layout (SHLO) or private property described as follows (Refer to Appendices A.1_Existing Conditions Plan). Some segments contain more than one option for the alignment and are noted in the text and plans. The following sections describe each segment of Phase 1 of the proposed corridor and the existing public right-of-way that the alignment crosses:

2.1. Elm Street (Route 62) to North Reading/Lynnfield Town Line

The easternmost segment of the trail has three options to connect to Route 62, described below.

- Option A will continue eastward from the North Reading/Lynnfield Town Line into Lynnfield for approximately 600 feet along the abandoned railbed alignment before traveling northward for approximately 1,000 feet through the Keenan Conservation Land and connecting to Route 62 in North Reading. This option will require that the alignment be located on existing conservation land and will include the construction of a new access roadway located off the south side of Route 62, opposite 257 Park Street. This option will also include a new trailhead parking area along Route 62.
- Options B and C will extend northward from the point of the alignment that touches the Lynnfield Town Line through Town of North Reading property for approximately 1,500 feet where the two options diverge. Option C will travel westward and then northward, over an existing travel route and Ipswich River bridge crossing locations that previously served former uses on the privately owned 230 Elm Street property, meeting Route 62 opposite 225 Elm Street. The existing route and bridges would be rebuilt. Option B will travel northward through wetlands and over the Ipswich River, meeting Route 62 opposite Harvest Lane. Option B will require the construction of an elevated boardwalk through the wetland areas. Both options will include a new trailhead parking area where the alignment meets Route 62. Impacted parcels include the following:
 - 0 Lynnfield Line; Town of North Reading; Parcel ID 076-0000-0017
 - 0 Off Elm Street; Town of North Reading; Parcel ID 062-0000-0038
 - 228 Elm Street; Town of North Reading; Parcel ID 062-0000-0078
 - 230 Elm Street; Linda M. Smith; Parcel ID 062-0000-0036 (Option C Only)

2.2. North Reading/Lynnfield Town Line to Park Street

The segment between the North Reading/Lynnfield Town Line and Park Street is approximately 2,900 feet in length and generally follows the alignment of the abandoned rail bed.

The alignment extends westward from the Town Line through land owned by the Town of North Reading and the Town of Danvers for approximately 1,300 feet before entering a landlocked piece of land labeled as “0 Off Williams Road”. The alignment continues to the west for approximately 1,200 feet through the rear portions of the 83 and 85 Park Street properties where three different options diverge as the alignment continues to Park Street. Impacted parcels in the eastern portion of this segment include the following:

- 0 Off Williams Road; Patricia A. Lambert; Parcel ID 061-0000-0065
- 0 Off Park Street; Town of Danvers; Parcel ID 061-0000-0066

- 0 Lynnfield Line; Town of North Reading; Parcel ID 076-0000-0017

The western portion of the segment is approximately 600 feet in length and consists of three alignment options that have varying impacts on the privately owned parcels of land at 83 and 85 Park Street (both parcels have the same owner) and are described below:

- Option D follows the 83 Park Street property line, traveling closely to an existing residential structure to its south. This route will result in impacts to existing wetlands and may require an elevated boardwalk system to provide connection to the abandoned railbed located on the Lambert property. Impacted parcels include the following:
 - 85 Park Street; William Birkmaier III; Parcel ID 061-0000-4501
 - 83 Park Street; William Birkmaier III; Parcel ID 061-0000-4502
- Option E follows the existing property line between 83 and 85 Park Street traveling closely to an existing residential structure and outbuilding to their south. This route will likely result in minor impacts to existing wetlands and may require an elevated boardwalk system to provide connection to the abandoned railbed located on the Lambert property. Impacted parcels include the following:
 - 85 Park Street; William Birkmaier III; Parcel ID 061-0000-4501
 - 83 Park Street; William Birkmaier III; Parcel ID 061-0000-4502
- Option F will follow the southern edge of the 87 Park Street parcel before entering the rear portion of the 83 and 85 Park Street parcels that abut several properties along Williams Road and would be located adjacent to two residential structures and outbuildings. This route will likely result in minor impacts to existing wetlands and may require an elevated boardwalk system to provide connection to the abandoned railbed located on the Lambert property. Impacted parcels include the following:
 - 87 Park Street; Jeremy Griffin III; Parcel ID 061-0000-0046
 - 85 Park Street; William Birkmaier III; Parcel ID 061-0000-4501
 - 83 Park Street; William Birkmaier III; Parcel ID 061-0000-4502

All three options described above will require a new bicycle/pedestrian crossing of Park Street. The specific treatment of the crossing will be determined based on the location of the alignment.

2.3. Park Street to Haverhill Street via Railroad Avenue

The segment of the trail between Park Street and Haverhill Street is approximately 2,900 feet in length. The eastern portion runs through a privately owned parcel (3 Mount Vernon Street) for approximately 675 feet before it enters Town of North Reading property along the abandoned rail bed for approximately 1,200 feet. The alignment will continue to the west through a privately owned parcel at 1 Railroad Avenue for approximately 100 feet. Beyond this point the path will travel along Railroad Avenue which is owned by the Town of North Reading before connecting to Haverhill Street. Specific properties that will be impacted include the following:

- 3 Mount Vernon Street; Stephen P. Delisle; Parcel ID 055-0000-0082
- 0 Railroad Avenue; Town of North Reading; Parcel IDs 055-0000-0024, 055-0000-0023, and 055-0000-0074
- 1 Railroad Avenue; One Railroad Avenue LLC; Parcel ID 055-0000-0026

2.4. Haverhill Street to Central Street

The segment of the trail that runs between Haverhill Street and Central Street includes several possible route options including the following:

- Option G & H would follow a southern route along Haverhill Street southward for approximately 1,750 feet, requiring the installation or construction of a new on-street facility. Haverhill Street is classified as an urban minor arterial roadway under Town of North Reading jurisdiction and carries approximately 14,000 vehicles per day, approximately 24 feet in width a sidewalk along the west side of the roadway. The total right-of-way width of Haverhill Street is approximately 40 feet. A connection between Haverhill Street and the Ipswich River Park would be provided through land owned by the Town of North Reading. The remainder of Option G would generally follow existing paths and trails within the Ipswich River Park where it connects to the western portion of this segment. Option G will not impact any additional parcels.
- Option H would connect Haverhill Street to the existing path network within Ipswich River Park through the property at 106 Haverhill Street (Between #98 and #100 Haverhill St.). This option would be approximately 425 feet long and traverse through wetlands, requiring the construction of an elevated boardwalk. Impacted parcels include the following:
 - 106 Haverhill Street; Julia M. Roberts; Parcel ID 041-0000-0070
- Option I would follow a northern route, crossing Haverhill Street at Railroad Avenue and travel through three privately owned parcels for approximately 700 feet. This alignment would require the construction of a retaining wall for approximately 450 feet. West of the retaining wall, the route would follow the general alignment of the existing abandoned railbed for approximately 1,100 feet through Town of North Reading property. Impacted parcels include the following:
 - 114 Haverhill Street; Fred Edward Hein; Parcel ID 055-0000-0021
 - 0 Haverhill Street; Fred Edward & Scott Charles Hein; Parcel ID 041-0000-0057
 - 112 Haverhill Street; 112 Haverhill Street Realty; Parcel ID 041-0000-0056
 - 0 Haverhill Street; Town of North Reading; Parcel ID 041-0000-0052
- Option J would follow a northern route from Option I and connect to Park Street (Route 62) and the High School campus via a new pedestrian bridge and path within Town-owned property. The intersection at Park Street would include the construction of a new pedestrian/bicycle crossing to the High/Middle School campus. Impacted parcels include the following:

The southern route (Option G and H) will be a more circuitous route but will follow the alignment of existing facilities within Ipswich River Park and along Haverhill Street. Both options will include a new bicycle/pedestrian crossing of Haverhill Street at Railroad Avenue.

The northern route (Option I) will have impacts to at least three privately owned properties and will require the construction of a retaining wall along a portion of its alignment.

The high school route (Option J) will be entirely within Town right-of-way and provide a needed connection to the high school.

The western portion of the segment will extend from the internal trails and paths within Ipswich River Park westward to Central Street through the existing Ipswich River Park. Ipswich River Park is owned and operated by the Town of North Reading. The alignment through the park will generally follow existing trails for approximately 1,600 feet. The impacted parcels of the western portion of the segment are described below:

- 13 Central Street; Town of North Reading; Parcel ID 041-0000-0030
- 15 Central Street; Town of North Reading; Parcel ID 041-0000-0029
- 17 Central Street; Town of North Reading; Parcel ID 041-0000-0028
- 19 Central Street; Town of North Reading; Parcel ID 041-0000-0027
- 21 Central Street; Town of North Reading; Parcel ID 041-0000-0026

2.5. Central Street to Chestnut Street

The segment of the trail alignment between Central Street and Chestnut is approximately 2,100 feet in length and will follow the alignment of the abandoned rail bed. The entire segment is currently owned by the Town of North Reading and will not have any impacts to adjacent property owners. The alignment will require a new pedestrian/bicycle bridge to cross the Ipswich River. The impacted parcel follows the abandoned railbed and is described below:

- 187 Chestnut Street; Town of North Reading; Parcel ID 036-0000-0035

This segment of the trail will cross at Central Street. A proposed pedestrian/bicycle crossing is located at the intersection, where it will connect to existing Town property on the east side of Central Street. Central Street is classified as an urban collector roadway under Town of North Reading jurisdiction and carries approximately 3,600 vehicles per day. Central Street is approximately 20 feet in width, with a sidewalk on the east side. The right-of-way width is approximately 30 feet in width. There is an existing parking area along the east side of Central Street at the crossing that will be reconfigured to accommodate the trail crossing.

This segment of the trail will run through the rear of North Parish Park, located along the south side of Park Street. An existing parking area provides access to North Parish Park off Park Street that can also be used for future access to the trail.

2.6. Chestnut Street to Winter Street via Park Street

The segment of the trail between Chestnut Street and Winter Street is approximately 700 feet in length and will generally follow the existing Park Street alignment. This segment of Park Street is classified as an urban minor arterial roadway, is under Town of North Reading jurisdiction, and carries approximately 9,200 vehicles per day. Park Street is approximately 24 feet in width, with a sidewalk on the south side. The right-of-way width is approximately 46 feet. A new on-street facility or shared-use path will be constructed along Park Street and will be contained within the existing public right-of-way.

This segment is not expected to have any impacts to wetlands or private property.

2.7. Park Street to Main Street (Route 28)

The western terminus of Phase 1 of the trail will be located along Main Street (Route 28) in North Reading. This segment of the trail extends from Park Street to Main Street for approximately 2,700 feet. The eastern portion of the segment will travel from Park Street westward along the northern edge of the 287 Park Street parcel for approximately 600 feet. Two alignments to this portion of the segment are being considered that will have different impacts to the adjacent privately owned parcels:

- Option K will travel to the south along Martins Brook and the surrounding wetland. This option will use an elevated boardwalk will require a bridge where it crosses over Martins Brook. This alignment will travel through the privately owned parcels at 293 and 287 Park Street where it connects to the existing abandoned rail bed. Affected properties include the following:
 - 287 Park Street; Masonic Temple of North Reading; Parcel ID 036-0000-0009
 - 293 Park Street; Hung Poon; Parcel ID 036-0000-0006
 - 0 Off Main Street; Town of North Reading; Parcel ID 023-0000-0089
- Option L will continue through the abandoned rail bed path and traverse the 16 Winter Street property, creating an at-grade crossing with the existing driveway that serves the property. This section also traverses over Martins Brook via a culvert. The affected property is listed as:
 - 16 Winter Street; Frank C. Lahnston, Jr., Trustee; Parcel ID 035-0000-0002

The western portion of this segment generally follows the existing abandoned rail bed for approximately 1,400 feet through MBTA and Town of North Reading property before intersecting with Main Street. The affected public parcels include the following:

- 0 Off Park Street; Town of North Reading; Parcel ID 024-0000-0038
- 89 Main Street; Massachusetts Bay Transportation Authority; Parcel ID 024-0000-0037

This segment of the proposed alignment will have both property and wetland impacts.

3 Existing Conditions – Phase 2

Phase 2 of the Project will extend the NRRT westward from Main Street (Route 28) to Salem Street (Route 62) in Wilmington. Phase 2 is approximately 1.5 miles in length and primarily follows the route of the abandoned railbed through North Reading and Wilmington, with a deviation from the railbed in the eastern portion where a United States Postal Service (USPS) facility crosses the alignment. Two options are being considered for the segment of the NRRT that extends westward from Main Street that will travel through either the USPS property or the 90 Main Street commercial property located immediately north of the USPS. The following describes the two options for this approximately 1,000-foot-long segment.

- Option M will require a short segment of an on-road facility that extends north of the abandoned railbed along Main Street and will travel through the northern portion of the 90 Main Street property along the edge of the Martins Brook wetlands. Option M will be aligned adjacent to existing natural features. Affected properties include the following:
 - 90 Main Street; James T. Lynch; Parcel ID 024-0000-0004
- Option N will travel along the existing abandoned railbed alignment along the southern portion of the USPS property as it extends westward. Due to the location of the USPS building, this alignment will be required to turn north toward Martins Brook. Option N will be located between two existing properties with significant commercial development. Affected properties include the following:
 - 86 Main Street; Thomas Keane; Parcel ID 024-0000-0002
 - 84 Main Street; Arthur F. DiNatale Trustee; Parcel ID 024-0000-0001
 - 76 Main Street; United States Postal Service; Parcel ID 023-0000-0074
- Both options will require a new bicycle/pedestrian crossing on Main Street to provide connectivity to Phase 1 of the Project. The western terminus of the two options described above will eventually meet the primary route of the NRRT that travels along Martins Brook before connecting to the abandoned railbed in the western edge of the USPS property. This route will also utilize existing trails and paths in the western portion of the USPS property, including a portion that is adjacent to the northern side of an existing retention pond. Further to the west, the NRRT will transition from the USPS property to property owned by New England Power Company for approximately 750 feet. The NRRT will travel along the abandoned railbed on Town of North Reading property and Town of Wilmington property before intersecting with Salem Street in the Town of Wilmington. Affected properties include the following:
 - 76 Main Street; United States Postal Service; Parcel ID 023-0000-0074
 - 0 Nutter Road; New England Power Company; Parcel ID 016-0000-0002
 - 0 Cold Spring Road; Town of North Reading; Parcel ID 005-0000-0090
 - RW Abandoned 2000; Town of Wilmington; Parcel ID 101-5

Two additional options are being considered for the western portion of the NRRT that extends eastward from Salem Street for approximately 550 feet. These two options are described below:

- Option O will include a jog of the NRRT to the south of the abandoned railbed, around a small parcel of land owned by the Commonwealth of Massachusetts. This option will create a new trail through Town of Wilmington property and will generally follow the northern side of Martins Brook. Affected properties include the following:
 - Salem Street – Rear; Town of Wilmington; Parcel ID 101-3
- Option P will continue along the abandoned railbed and will travel along the northern portion of the Commonwealth of Massachusetts property. This option will utilize an existing vehicular way that is currently used to serve the industrial property (773 Salem Street) on the north side of the railbed. Affected properties include the following:
 - Salem Street – Rear; Town of Wilmington; Parcel ID 101-3
 - Salem Street – Rear; Commonwealth of Massachusetts; Parcel ID 101-4

Both options described above will include a new bicycle/pedestrian crossing treatment at Salem Street that can also serve a future extension of the trail through the Town of Wilmington.

4 Project Milestones, Meetings & Correspondence

The following provides a summary of meetings with project stakeholders and project submissions that BSC either facilitated or attended (unless otherwise noted). Additional information related to meeting minutes is provided in the Appendices.

July 15, 2019. Kickoff with Town staff including Phil Hertz, Heather Hamilton (BSC Group), and Bill Paille (BSC Group). Meeting included introductions, review of the existing conditions and map/description that Phil had assembled including Google map/viewer. BSC reviewed the scope of work, next steps including data collection, site visits and eventual coordination with property abutters that will be required.

Location: Virtual (Zoom platform)

July 18, 2019. Site walk by BSC (Heather Hamilton & Bill Paille) to explore the corridor and develop understanding of existing conditions and challenges.

Location: Salem Street (Rte 62) @ Shea Concrete & Wilmington TL; Main Street (Rte 28) @ trackbed crossing; Park Street @ trackbed crossing; Winter Street (Rte 62); Chestnut Street @ trackbed crossing; Central Street @ trackbed crossing; Ipswich River Park; Haverhill Street (Chestnut St. to Park St.); Railroad Ave; Park Street @ trackbed crossing; and the Keenan Conservation Land

August 16, 2019. Site walk with BSC (Heather Hamilton & Bill Paille) and Town of N. Reading (Phil Hertz) to review specific areas along trail and learn more about the challenges and obstacles with respect to right-of-way.

Location: Railroad Ave; Park Street & Mt. Vernon Street; Wright Street; and thru Town land adjacent to Elm Street to explore possible access.

November 7, 2019. Progress meeting with Town of N. Reading & site walk to review specific areas along trail and discuss challenges and obstacles with respect to right-of-way.

February 13, 2020. Meeting with project abutters at end of Wright Street

February 13, 2020. Meeting with project abutter (Steve DeLisle).

Location: Residence

February 28, 2020. Meeting with project abutter (Wil Birkmaier).

Location: Residence

March 16, 2020. Site meeting with project abutter (RK Centers).

Location: Mall parking lot – owners canceled at last moment so meeting never happened

April 22, 2020. Meeting with US Post Office.

Location: Virtual (Zoom platform)

April 23, 2020. Meeting with MassDOT (D4)

Location: D4 Office

May 1, 2020. Meeting with Town of Wilmington.

Location: Virtual (Zoom platform)

August 31, 2020. Presentation to N. Reading Select Board.

Location: Virtual (Zoom platform) – P. Hertz attended, BSC did not attend

November 19, 2020. Progress meeting with Town of N. Reading (Phil Hertz)

Location: Phil’s residence

February 19, 2021. Meeting with MassDOT (Right-of-Way) & Town of N. Reading

Location: Virtual (Zoom platform)

February 25, 2021. Progress meeting with Town of N. Reading

Location: Virtual (Zoom platform)

March 26, 2021. Meeting with MassDOT (D4), DCR & Town of N. Reading

Location: Virtual (Zoom platform)

April 9, 2021. Site walk (BSC) at Keenen Conservation Land/Area

Location: Route 62 and thru Keenen Conservation

April 15, 2021. Meeting with Town of N. Reading & Town of Lynnfield Town Planner

Location: Virtual (Zoom platform)

June 2, 2021. Progress meeting with Town of N. Reading

Location: Virtual (Zoom platform)

August 11, 2021. Progress meeting with Town of N. Reading

Location: Virtual (Zoom platform)

October 21, 2021. Site meeting between Town of N. Reading and drilling contractor to discuss drilling program and obtain order-of-magnitude associated costs. BSC did not attend this meeting.

Location: On Site

January 19, 2022. Project Needs Form Application (PNF) submitted to MassDOT for review and approved same day.

January 25, 2022. Project scope finalized and submitted to MassDOT as part of Project Initiation Form (PIF) for review.

5 Alternatives Analysis

Several route options were developed and presented to the Town, MassDOT and specific project abutters including. The following is a summary of the various options that were developed (Refer to Appendices for diagrams of each Option). Segments that have a single option are referred to as the “primary” option and will be included in the preferred alignment. Segments that have more than one option are listed according to how they are labeled on the plans provided in the Appendix.

PHASE 1

Segment 1: Elm Street (Route 62) to North Reading/Lynnfield Town Line		
Option	Challenges	Advantages
A	-Requires coordination with Town of Lynnfield -Crosses through Keenan Conservation Land -Requires one, possibly two new pedestrian bridge	-Provides access to Route 62 -Accommodates trailhead/parking -Wetland impacts within Lynnfield
B	-Requires new retaining wall/pedestrian bridge/elevated boardwalk -Requires signal upgrades for pedestrian safety	-All within Town of N. Reading -Wetland impacts within N. Reading -Accommodates trailhead/parking
C	-Requires two new pedestrian bridges -Requires retaining wall to support parking/trailhead -Impacts wetlands, within 100-yr floodplain -All within privately owned property	-Utilizes existing access road that can be converted into a multi-use path

Segment 2: North Reading/Lynnfield Town Line to Park Street		
Option	Challenges	Advantages
Primary	-Impacts private property -Major impacts to wetlands	-Follows the general alignment of the abandoned railbed -Uses publicly owned land in the eastern portion of the segment (may require a land swap with the Town of Danvers)
D	-Impacts private property at 83 Park Street -Major impacts to wetlands within 83 Park St. parcel that may require elevated boardwalk -Will require upgrades along Park Street and possible signal upgrades at intersection with Mt. Vernon Street	-Least direct impact to existing buildings on private parcels
E	-Impacts to private property at 83-85 Park Street -Will require upgrades along Park Street and possible signal upgrades at intersection with Mt. Vernon Street	-Fewer property impacts than Option F
F	-Impacts to private property along Sylvia Road and at 85 Park Street	-Follows the approximate alignment of the abandoned railbed -Most in alignment with existing abandoned railbed

Segment 3: Park Street to Haverhill Street via Railroad Avenue		
Option	Challenges	Advantages
Primary	<ul style="list-style-type: none"> -Will require pedestrian operated beacon (POB) at the intersection of Haverhill St./Railroad Avenue -Impacts to private property along Railroad Ave -Easements required from properties along Railroad Ave -Impacts to private property along the eastern portion (3 Mount Vernon Street) -Will require upgrades along Park Street and possible signal upgrades at intersection with Mt. Vernon Street 	<ul style="list-style-type: none"> -Follows the general alignment of the abandoned railbed -Utilizes Town of North Reading property along the abandoned railbed alignment

Segment 4: Haverhill Street to Central Street		
Option	Challenges	Advantages
Primary	<ul style="list-style-type: none"> -Require pedestrian operated beacon (POB) to cross Haverhill Street -Will require retaining wall -Circuitous route through Ipswich River Park will require wayfinding signage and improvements to existing paths 	<ul style="list-style-type: none"> -Utilizes and improves existing trail network with Ipswich River Park -Extends off-road network -Provides pleasant riding experience
G	<ul style="list-style-type: none"> -Circuitous route through Ipswich River Park -Routes the path along west side of Haverhill Street, likely requiring road widening, edge treatment upgrades, relocation of existing utility poles 	<ul style="list-style-type: none"> -All within town property -Will upgrade pedestrian facilities on Haverhill Street
H	<ul style="list-style-type: none"> -Will require the construction of a boardwalk through wetland area -Impact to private property (106 Haverhill Street) 	<ul style="list-style-type: none"> -Limits the distance of the on-street facility along Haverhill Street
I	<ul style="list-style-type: none"> -Will require the construction of a retaining wall along private property (112 Haverhill Street) -Property impacts to commercial businesses -Impacts to wetlands 	<ul style="list-style-type: none"> -Follows the general alignment of the abandoned railbed
J	<ul style="list-style-type: none"> -Will require the construction of a new bridge and/or elevated boardwalk over the Ipswich River -Will require a new mid-block pedestrian crossing of Park Street (Rte 62) to connect to High School 	<ul style="list-style-type: none"> -All within N. Reading property -Provides a direct connection to the High/Middle School campus -Provides parking at high school and access to trail system

Segment 5: Central Street to Chestnut Street		
Option	Challenges	Advantages
Primary	-Will require new pedestrian bridge over Ipswich River- -Will require signal/geometric upgrades at Chestnut/Central Street intersection	-Alignment follows existing abandoned railbed -All within N. Reading property -Utilizes existing North Parish Park and on-street parking as trailhead

Segment 6: Chestnut Street to Winter Street via Park Street		
Option	Challenges	Advantages
Primary	-Requires on-road facility -May require road widening to accommodate separated bicycle lanes -May require new signal installation and geometric upgrades at Park/Chestnut Street intersection Will require signal upgrades at Park Street/Winter Street intersection	-Minor impacts to private property along Park Street -All within town property -Will provide enhancements to existing pedestrian facilities

Segment 7: Park Street to Main Street (Route 28)		
Option	Challenges	Advantages
Primary	-Impacts to private property (e.g. Masonic Temple of North Reading)	-Follows the alignment of existing railbed -Utilizes MBTA and Town of North Reading property
K	-Impacts to wetlands -Requires the construction of an elevated boardwalk	-Minimal impact to private property
L	-Impacts to private property (16 Winter Street)	-Follows the alignment of the existing railbed

PHASE 2

Segment 8: Main Street (Route 28) to Wilmington Town Line (Route 62)		
Option	Challenges	Advantages
M	<ul style="list-style-type: none"> - Requires coordination/approval from MassDOT - Requires easement thru private property (90 Main St.) - Potential impact to wetlands - May require elevated boardwalk - Potential security and liability issues 	<ul style="list-style-type: none"> - Extends off-road network westerly toward Wilmington and provides pleasurable riding experience for users
N	<ul style="list-style-type: none"> - Requires coordination/approval from MassDOT - Requires easement thru private property (84 & 86 Main St.) - Requires easement thru U.S. Government property (76 Main St.) - Potential security and liability issues 	<ul style="list-style-type: none"> - Extends off-road network westerly toward Wilmington - Utilizes existing abandoned railbed corridor currently not utilized
O	<ul style="list-style-type: none"> - Requires easement thru U.S. Government property (76 Main St.) - Requires easement thru private utility (New England Power Co.) - Requires coordination with Town of Wilmington (Water Dept.) & private company (Concrete Investments, LLC) - Potential security and liability issues 	<ul style="list-style-type: none"> - Extends off-road network westerly toward Wilmington and provides pleasurable riding experience for users - Utilizes existing abandoned railbed and access road currently maintained by Town of N. Reading & Wilmington
P	<ul style="list-style-type: none"> - Requires coordination with Town of Wilmington, Commonwealth of Massachusetts - Requires fully actuated traffic signals or Pedestrian Operated Beacon (i.e. HaWK) to provide a safe crossing of Salem St. (Rte 62) 	<ul style="list-style-type: none"> - Extends off-road network westerly toward Wilmington - Utilizes existing abandoned railbed and access road maintained by Town of N. Reading & Wilmington

6 Preferred Alternative

The route options explored and described in this study were determined to be viable. However, as the route evaluation advanced, it became clear that specific options were more feasible than others due to existing constraints and challenges. The following is a summary of the route options that define the preferred route for the NRRT from Main Street (Route 28) in North Reading to the Lynnfield Town Line. In some cases, a definitive preferred option has not yet been determined and will require further study and evaluation throughout the planning process. The preferred alignment is provided in the Appendices.

6.1. N. Reading/Lynnfield TL to Elm Street (Rte 62) to N. Reading/Lynnfield TL

The preferred route for this segment has not been determined. Additional study and review will be conducted during the planning phase. The initial preference is that this segment use only Town-owned land either within North Reading or Lynnfield.

6.2. North Reading/Lynnfield Town Line to Park Street

The preferred route will be the one that is most acceptable to the property owner(s) and most practical to construct. The determination will be made during the Planning Phase and subsequent easement discussions.

6.3. Park Street to Haverhill Street via Railroad Avenue

This segment has a single route for inclusion in the preferred alignment option. This segment follows the alignment of the abandoned railbed between Haverhill Street and Park Street and utilizes an existing access easement along Railroad Avenue, which will limit disruption to the environment along this roadway. Based on a review of property impacts, this segment will have challenges due to the coordination needed with affected property owners.

6.4. Haverhill Street to Central Street

The preferred route is the northern one which crosses Haverhill Street into the Ipswich River wetland area (Options I and J). This option generally follows the alignment of the abandoned railbed, although it will require the construction of a retaining wall and will have impacts to some privately owned commercial parcels. Options G and H would require significant upgrades to Haverhill Street and the construction of a shared-use path or some other form of on-street bicycle facilities, creating a disruption and a gap to the feel of the NRRT. The preferred alignment will also provide a connection to Route 62, opposite the high school and middle school campus.

6.5. Central Street to Chestnut Street

This segment also has a single route for inclusion in the preferred alignment option. The abandoned railbed runs between Chestnut Street and Central Street on land owned by the Town of North Reading. Due to the limited impacts to private property and wetlands, no other option was more viable than using the existing abandoned railbed for the entirety of this segment.

6.6. Chestnut Street to Winter Street via Park Street

This segment has a single route for inclusion in the preferred alignment option. This segment will run along the existing roadway through the construction of a shared-use path and improvements to existing at-grade intersections. There were no other viable options for this short segment of the NRRT.

6.7. Park Street to Main Street (Route 28)

The combination of the primary option and Option K was selected as the preferred alignment option for this segment. This option will provide users with a new elevated boardwalk through wetland and a new

crossing over Martins Brook, providing unique natural features to the trail. This option also has the least impact to private residences by following property lines that are farthest away from existing buildings and will not bisect the property at 16 Winter Street.

6.8. Estimated Construction & Preliminary Design Costs

The following order-of-magnitude construction costs were developed for the likely preferred route (Refer to Appendices for cost breakdown):

Segment	Limit		Length (Ft)				Est. Cost
	From	To	Trail	Bridge	Wall	Boardwalk	
1 (Option B)	N. Reading/Lynnfield Town Line	Elm Street (Rte 62)	2,250	200	250	-	\$ 2,300,000
2 (Option D)	N. Reading/Lynnfield Town Line	Park Street	2,800	-	150	300	\$ 1,500,000
3	Park Street	Haverhill Street via Railroad Avenue	2,800	-	150	-	\$ 1,000,000
4	Haverhill Street	Central Street	2,500	-	500	-	\$ 1,500,000
Option J	Option I	Route 62	200	200	300	-	\$ 1,600,000
5	Central Street	Chestnut Street	2,200	50	-	-	\$ 1,500,000
6	Chestnut Street	Winter Street via Park Street	800	-	-	-	\$ 700,000
7	Park Street	Main Street (Rte 28)	1,700	-	100	800	\$ 2,300,000
Total Estimated Construction Cost (Phase 1)							\$12,400,000

For comparison, the following order-of-magnitude construction costs were developed for Route Option A (Thru Keenan Conservation in Lynnfield); Route Option B (Thru Town-Owned Land in N. Reading); and Route Option C (Thru Smith Property in N. Reading) to connect to Route 62 as well as Route Option J (To Rte 62 & HS Campus). Refer to Appendices for cost breakdown:

Option	Limit		Length (Ft)				Est. Cost
	From	To	Trail	Bridge	Wall	Boardwalk	
A	Elm St./Rte 62 in Lynnfield	Lynnfield/N. Reading Town Line	1,300	250	300	-	\$ 2,100,000
B	Lynnfield/N. Reading Town Line	Elm St./Rte 62 in N. Reading	2,250	200	250	-	\$ 2,300,000
C	Lynnfield/N. Reading Town Line	Elm St./Rte 62 in N. Reading	2,700	100	600	-	\$ 2,500,000
J	Option I	Route 62 & HS Campus	200	200	300	-	\$ 1,600,000

7 Next Steps Preliminary (25%) Design

The Town intends to fund the construction of this project through the State Transportation Improvement Program (STIP). This program allows municipalities to implement large construction projects with the understanding that the Massachusetts Department of Transportation (MassDOT) is responsible for the project reviews and construction portion and the municipality covers the design and permitting portion of the project.

As part of this Feasibility Study BSC will submit the Project Initiation Form (PIF) and Project Notification Form (PNF) to MassDOT. MassDOT will then assign a Project Number. The Town will be responsible for submitting the project (with assistance from BSC) to the MassDOT Project Review Committee (PRC) for review and approval so the Metropolitan Planning Organization (MPO) can place the project onto the STIP.

Once the project is approved by the MPO, the Town will begin developing the Preliminary (25%) Design that will include the following the following elements:

- Topographic survey
- Wetland Delineation & Early Environmental Coordination
- Existing Conditions Plans (Submitted to MassDOT for Approval)
- Highway Construction Drawings
 - Title & Index Sheet
 - General Notes Sheet
 - Legend & Abbreviations Sheet
 - Typical Sections & Pavement Notes Sheet
 - Construction Plans
 - Profiles
 - Traffic Signal Plans
 - Traffic Management Plans
 - Cross Sections
- Functional Design Report
- Preliminary Right-of-Way Plans
- Soil Borings & Geotechnical Report (Submitted to MassDOT for Approval)
- Bridge-Type Studies (Submitted to MassDOT for Approval)
- Bridge Sketch Plans (Submitted to MassDOT for Approval)
- Preliminary Construction Estimate (Roadway & Bridge)
- Design Justification Workbook
- Design Checklist
- 25% Submission to MassDOT (Roadway & Bridge)
- Design Public Hearing upon Approval from MassDOT

Under the terms of STIP, the Town of North Reading will be responsible for all design costs which will include both the Preliminary Design, described above, and the Final (75%) Design which will occur only after the Preliminary Design is approved by MassDOT and all rights of way secured.

The cost for Preliminary Design is estimated to be roughly between \$500,000 and \$1 million which could potentially be offset by grants (TBD). The following table summarizes order-of-magnitude preliminary design costs options based on various trail end points.

Order-of-Magnitude Preliminary (25%) Design-Related Costs*:

Section Number	Task/Section Description	Lynnfield TL to Route 28 w/Option J	Savings by Ending at Chestnut w/Option J	Lynnfield TL to Chestnut w/Option J	Savings by Ending at IRP w/Option J	Lynnfield TL to IRP w/Option J	Savings by Ending at IRB w/Option J	Lynnfield TL to IRP w/o Option J
100	Topographic Survey	\$ 150,000	\$ 67,500	\$ 82,500	\$ 70,500	\$ 79,500	\$ 73,500	\$ 76,500
150	Environmental	\$ 25,000	\$ 11,750	\$ 13,250	\$ 11,750	\$ 13,250	\$ 11,750	\$ 13,250
200	Functional Design Report	\$ 22,000	\$ 12,000	\$ 10,000	\$ 12,000	\$ 10,000	\$ 12,000	\$ 10,000
220	Design Justification	\$ 14,000	\$ 6,580	\$ 7,420	\$ 6,580	\$ 7,420	\$ 6,580	\$ 7,420
300	25% Hwy Design Submission	\$ 155,000	\$ 45,000	\$ 110,000	\$ 72,850	\$ 82,150	\$ 80,850	\$ 74,150
350	Design Public Hearing	\$ 11,500	\$ 0	\$ 11,500	\$ 0	\$ 11,500	\$ 0	\$ 11,500
500	Right-of-Way	\$ 13,500	\$ 4,000	\$ 9,500	\$ 6,345	\$ 17,000	\$ 6,345	\$ 7,155
600	Geotechnical Design							
	Bridge over Ipswich to Route 62	\$ 11,000	\$ 0	\$ 11,000	\$ 0	\$ 11,000	\$ 0	\$ 11,000
	Bridge over Ipswich to HS	\$ 4,000	\$ 0	\$ 4,000	\$ 0	\$ 4,000	\$ 4,000	\$ 0
	Bridge over Ipswich West of Central St.	\$ 4,000	\$ 0	\$ 4,000	\$ 4,000	\$ 0	\$ 4,000	\$ 0
	Various Elevated Boardwalks	\$ 4,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000	\$ 2,000
700	Project Development							
	Bridge over Ipswich to Route 62	\$ 88,000	\$ 0	\$ 88,000	\$ 0	\$ 88,000	\$ 0	\$ 88,000
	Bridge over Ipswich to HS	\$ 88,000	\$ 0	\$ 88,000	\$ 0	\$ 88,000	\$ 88,000	\$ 0
	Bridge over Ipswich West of Central St.	\$ 88,000	\$ 0	\$ 88,000	\$ 88,000	\$ 0	\$ 88,000	\$ 0
	Various Elevated Boardwalks	\$ 9,000	\$ 7,000	\$ 2,000	\$ 7,000	\$ 2,000	\$ 7,000	\$ 2,000
710	Sketch Plans							
	Bridge over Ipswich to Route 62	\$ 48,000	\$ 0	\$ 48,000	\$ 0	\$ 48,000	\$ 0	\$ 48,000
	Bridge over Ipswich to HS	\$ 48,000	\$ 0	\$ 48,000	\$ 0	\$ 48,000	\$ 48,000	\$ 0
	Bridge over Ipswich West of Central St.	\$ 48,000	\$ 0	\$ 48,000	\$ 48,000	\$ 0	\$ 48,000	\$ 0
	Various Elevated Boardwalks	\$ 8,000	\$ 6,000	\$ 2,000	\$ 6,000	\$ 2,000	\$ 6,000	\$ 2,000
	Direct Expenses/Allowances							
	Bridge over Ipswich to Route 62	\$ 65,000	\$ 0	\$ 65,000	\$ 0	\$ 65,000	\$ 0	\$ 65,000
	Bridge over Ipswich to HS	\$ 26,000	\$ 0	\$ 26,000	\$ 0	\$ 26,000	\$ 26,000	\$ 0
	Bridge over Ipswich West of Central St.	\$ 26,000	\$ 0	\$ 26,000	\$ 26,000	\$ 0	\$ 26,000	\$ 0
	Various Elevated Boardwalks	\$ 53,000	\$ 17,500	\$ 35,500	\$ 17,500	\$ 35,500	\$ 17,500	\$ 35,500
	Traffic Counts	\$ 8,500	\$ 0	\$ 8,500	\$ 0	\$ 8,500	\$ 0	\$ 8,500
	Printing & Travel	\$ 2,500	\$ 0	\$ 2,500	\$ 0	\$ 2,500	\$ 0	\$ 2,500
	Total Estimated 25% Design Cost	\$ 1,020,000	\$ 179,330	\$ 840,670	\$ 378,525	\$ 641,475	\$ 555,525	\$ 464,475
	Incremental Design Cost Savings		\$ 179,330		\$ 199,195		\$ 177,000	
	Estimated Construction Cost (MassDOT)	\$12,400,000	\$ 3,000,000	\$ 9,400,000	\$ 1,500,000	\$ 7,900,000	\$ 1,600,000	\$ 6,300,000

*Costs based on compliance with and submission to MassDOT

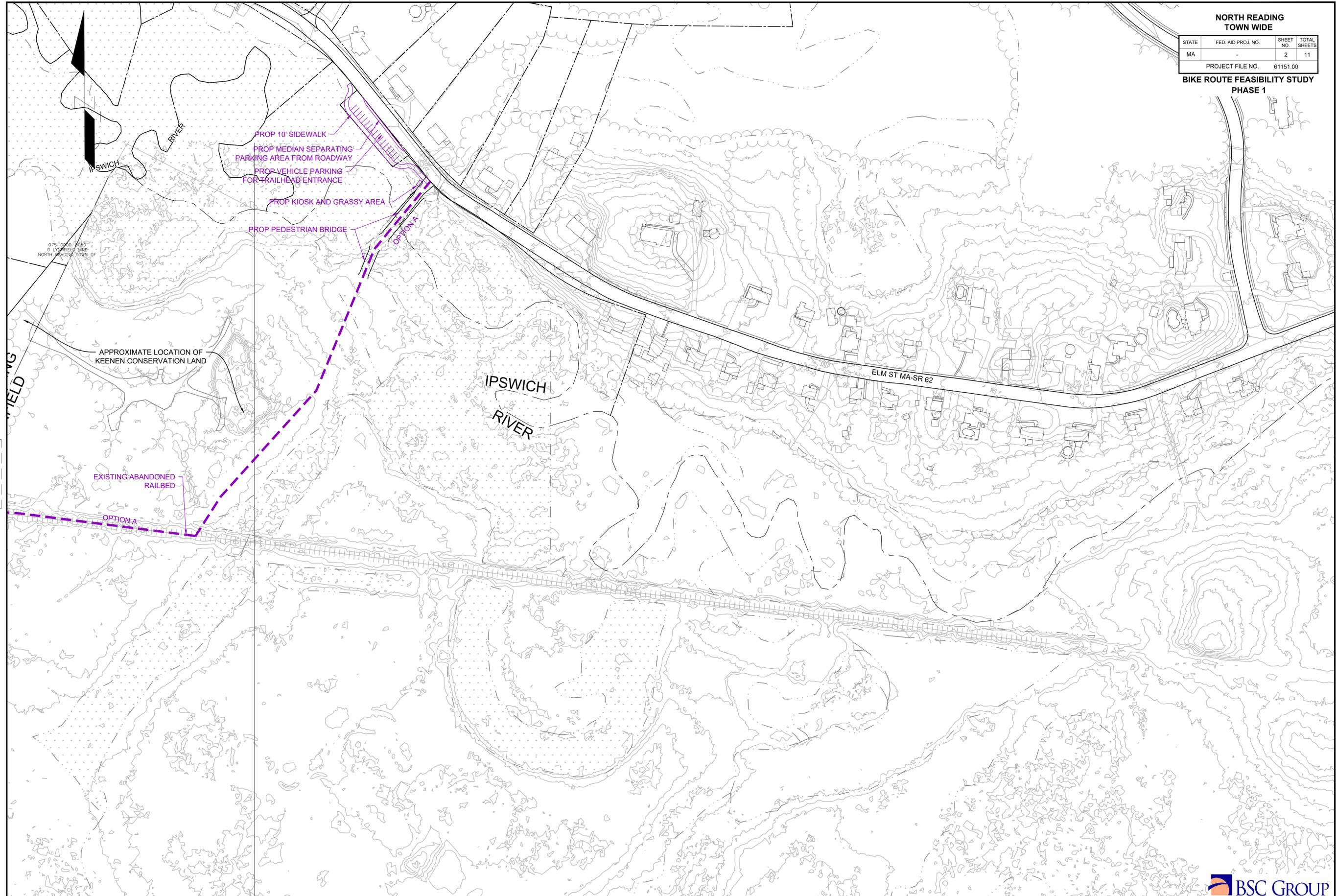
Appendices

Appendix A - Route Maps

**NORTH READING
TOWN WIDE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	2	11
PROJECT FILE NO.		61151.00	

**BIKE ROUTE FEASIBILITY STUDY
PHASE 1**



CONT ON SHEET 3



SCALE: 1" = 100'

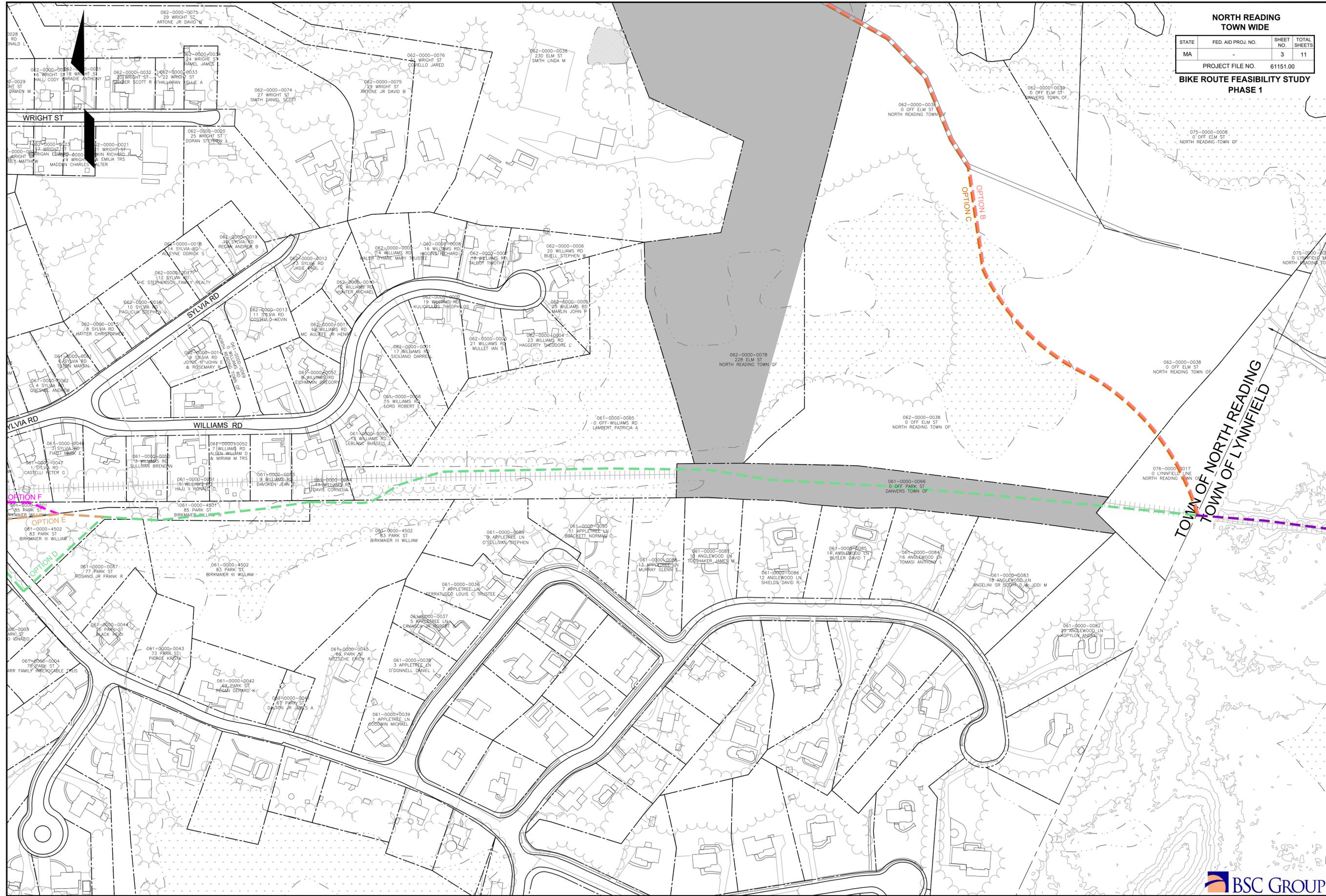


Plotted on

NORTH READING
TOWN WIDE

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	3	11
PROJECT FILE NO.		61151.00	

BIKE ROUTE FEASIBILITY STUDY
PHASE 1



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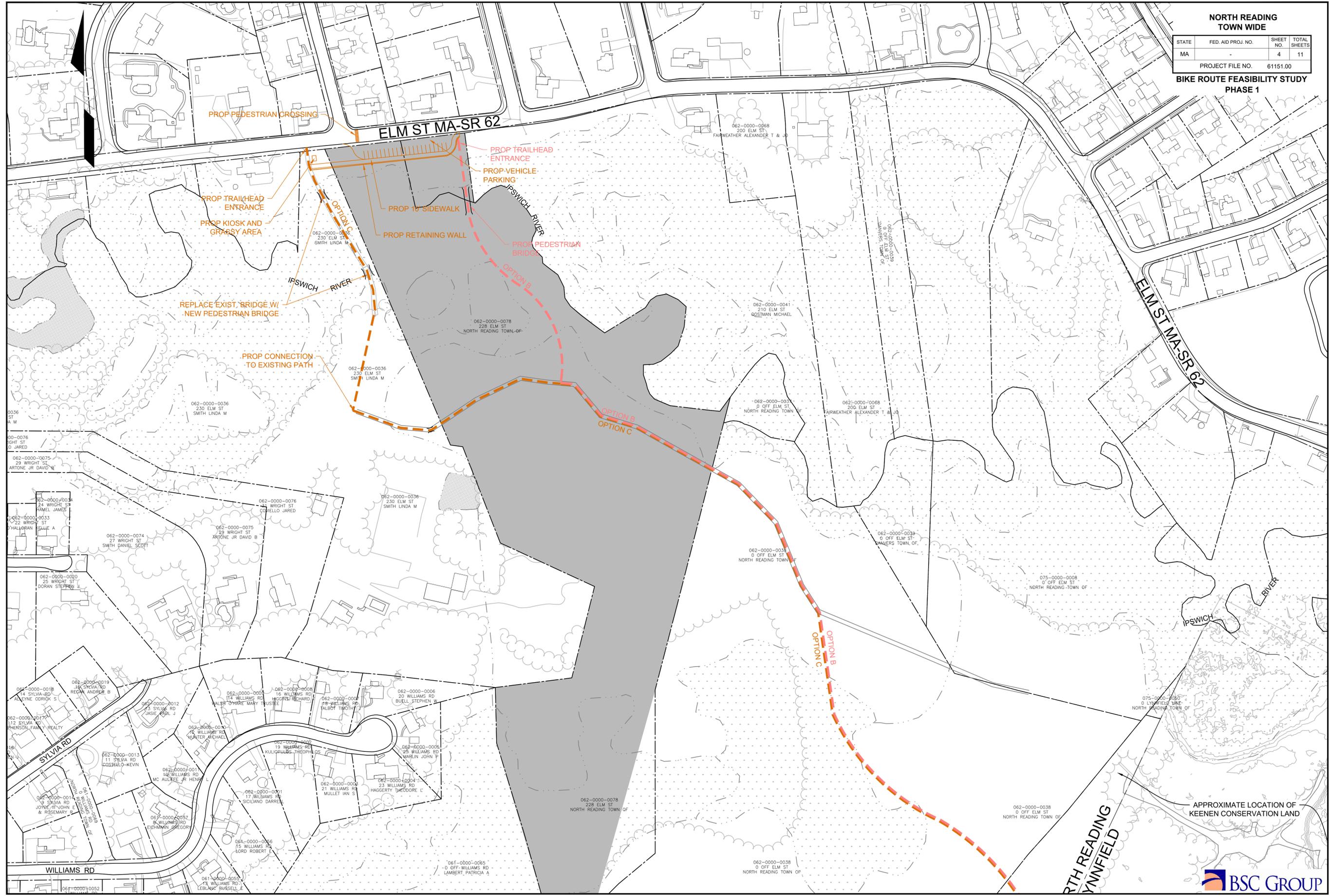
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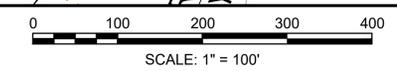
**NORTH READING
TOWN WIDE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	4	11

**BIKE ROUTE FEASIBILITY STUDY
PHASE 1**



CONT ON SHEET 3



APPROXIMATE LOCATION OF
KEENEN CONSERVATION LAND



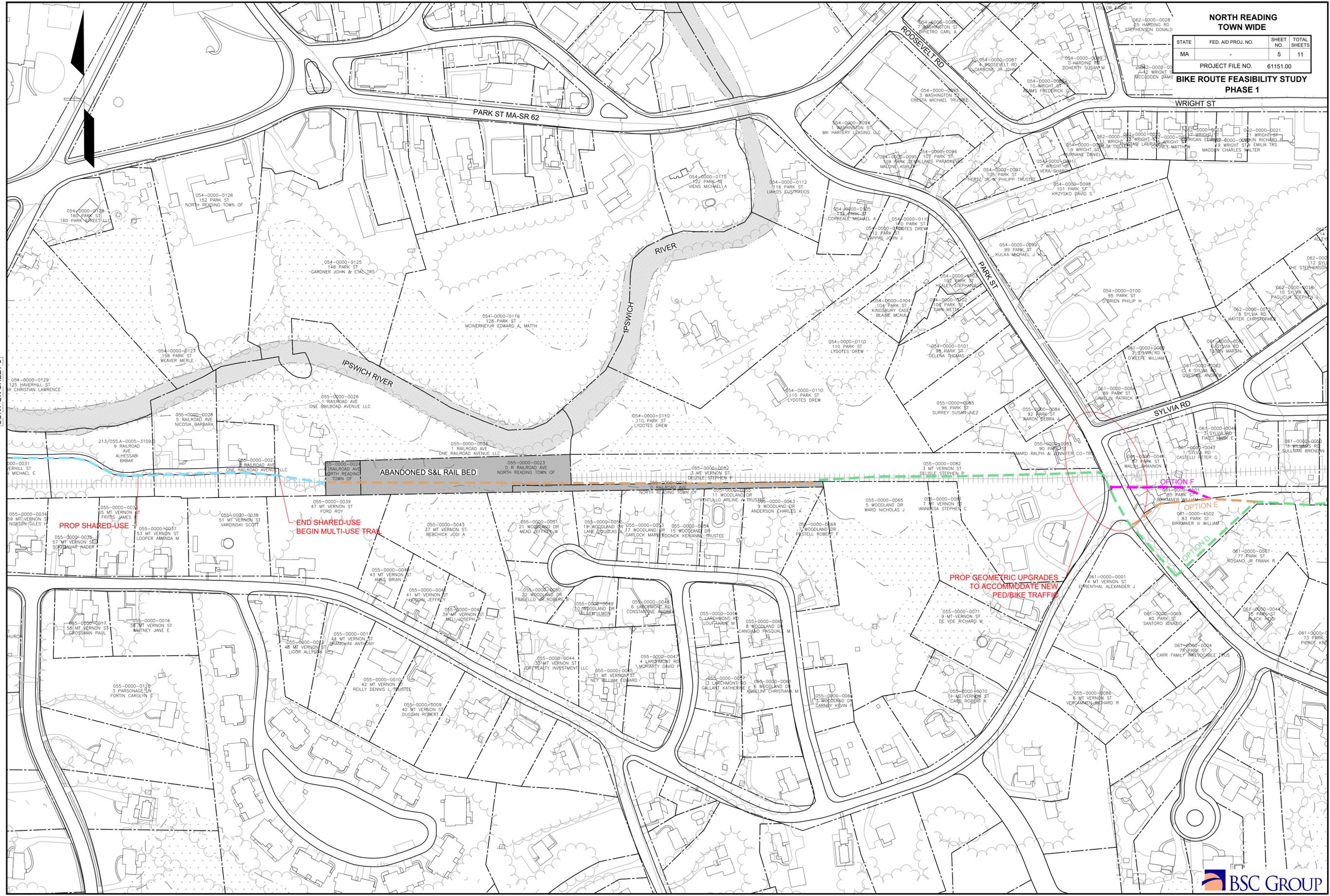
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TOWN WIDE**

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MA	-	5	11

PROJECT FILE NO. 61151.00

**BIKE ROUTE FEASIBILITY STUDY
PHASE 1**



PROP SHARED-USE

**END SHARED-USE
BEGIN MULTI-USE TRAIL**

**PROP GEOMETRIC UPGRADES
TO ACCOMMODATE NEW
PED/BIKE TRAFFIC**

OPTION F

OPTION E

OPTION D



SCALE: 1" = 100'

CONT ON SHEET 6

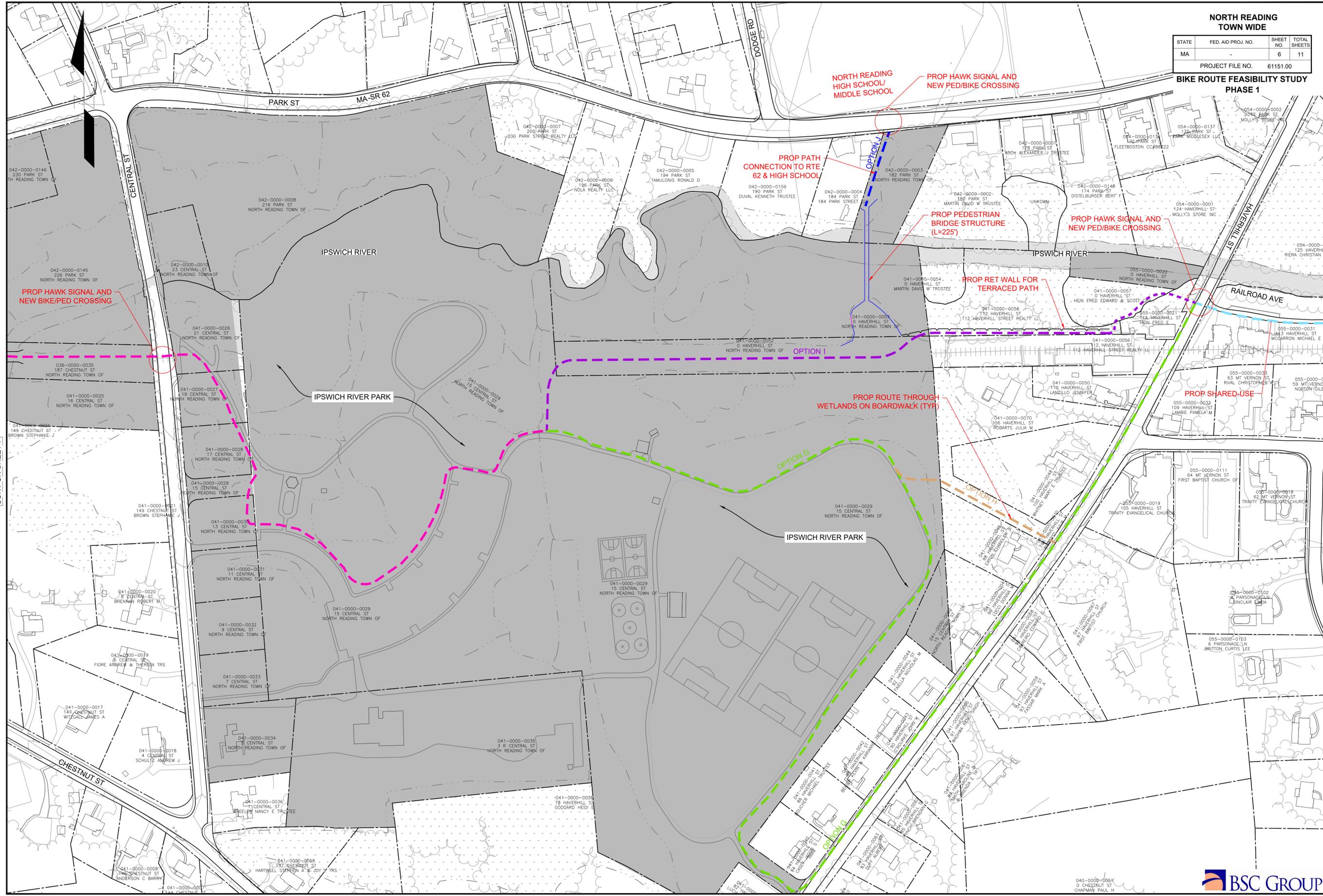
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Printed on

**NORTH READING
TOWN WIDE**

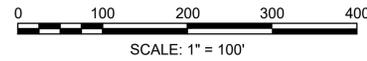
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MA	-	6	11
PROJECT FILE NO. 61151.00			

**BIKE ROUTE FEASIBILITY STUDY
PHASE 1**



CONT ON SHEET 7

CONT ON SHEET 5

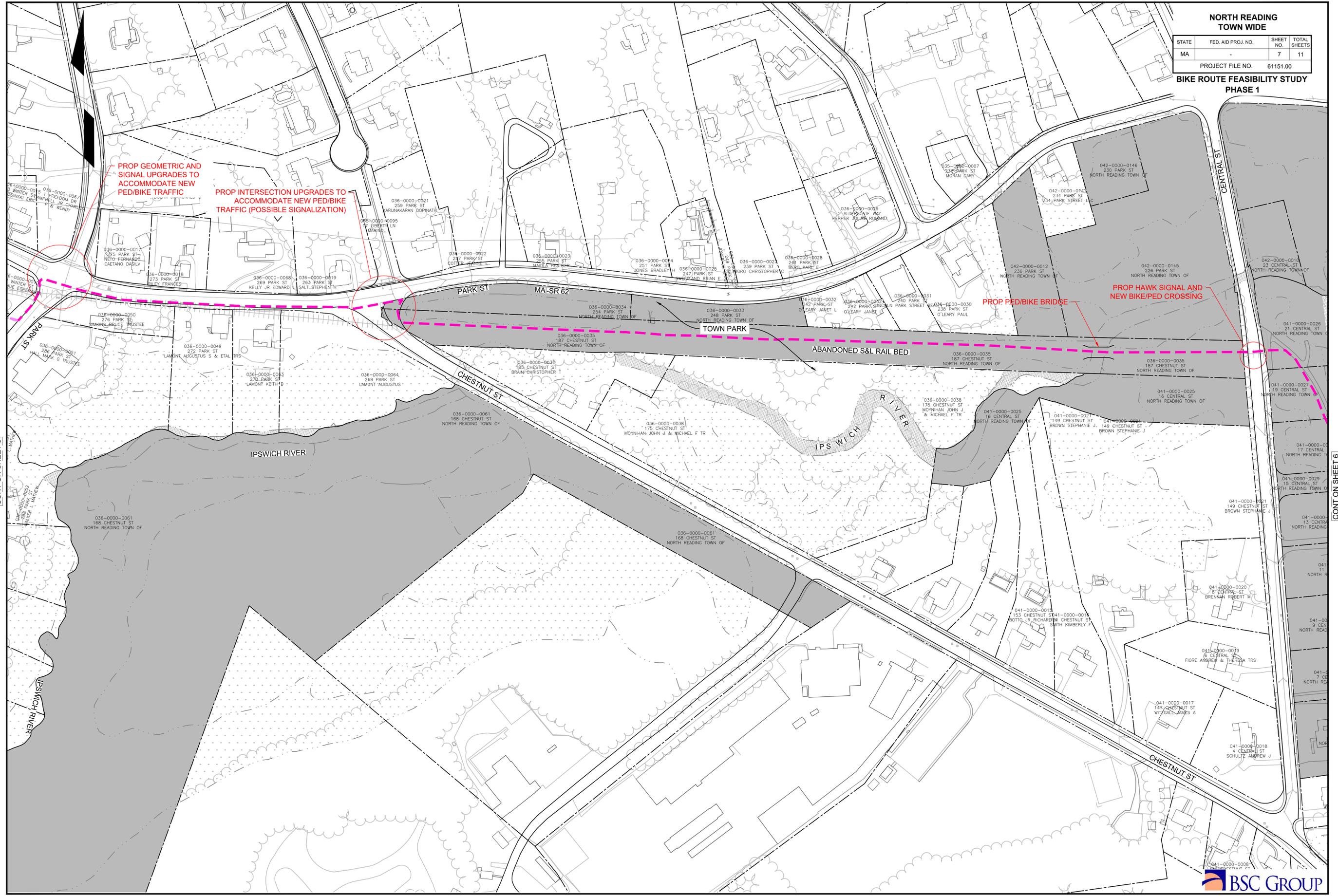


Printed on

**NORTH READING
TOWN WIDE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	7	11

PROJECT FILE NO. 61151.00
**BIKE ROUTE FEASIBILITY STUDY
PHASE 1**



PROP GEOMETRIC AND SIGNAL UPGRADES TO ACCOMMODATE NEW PED/BIKE TRAFFIC

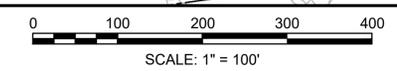
PROP INTERSECTION UPGRADES TO ACCOMMODATE NEW PED/BIKE TRAFFIC (POSSIBLE SIGNALIZATION)

PROP PED/BIKE BRIDGE

PROP HAWK SIGNAL AND NEW BIKE/PED CROSSING

CONT ON SHEET 8

CONT ON SHEET 6



Plotted on

**NORTH READING
TOWN WIDE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	8	11

PROJECT FILE NO. 61151.00

**BIKE ROUTE FEASIBILITY STUDY
PHASE 1**

**PROP GEOMETRIC AND
SIGNAL UPGRADES TO
ACCOMMODATE NEW
PED/BIKE TRAFFIC**

PROP ELEVATED BOARDWALK

**PROP PED/BIKE
BRIDGE**

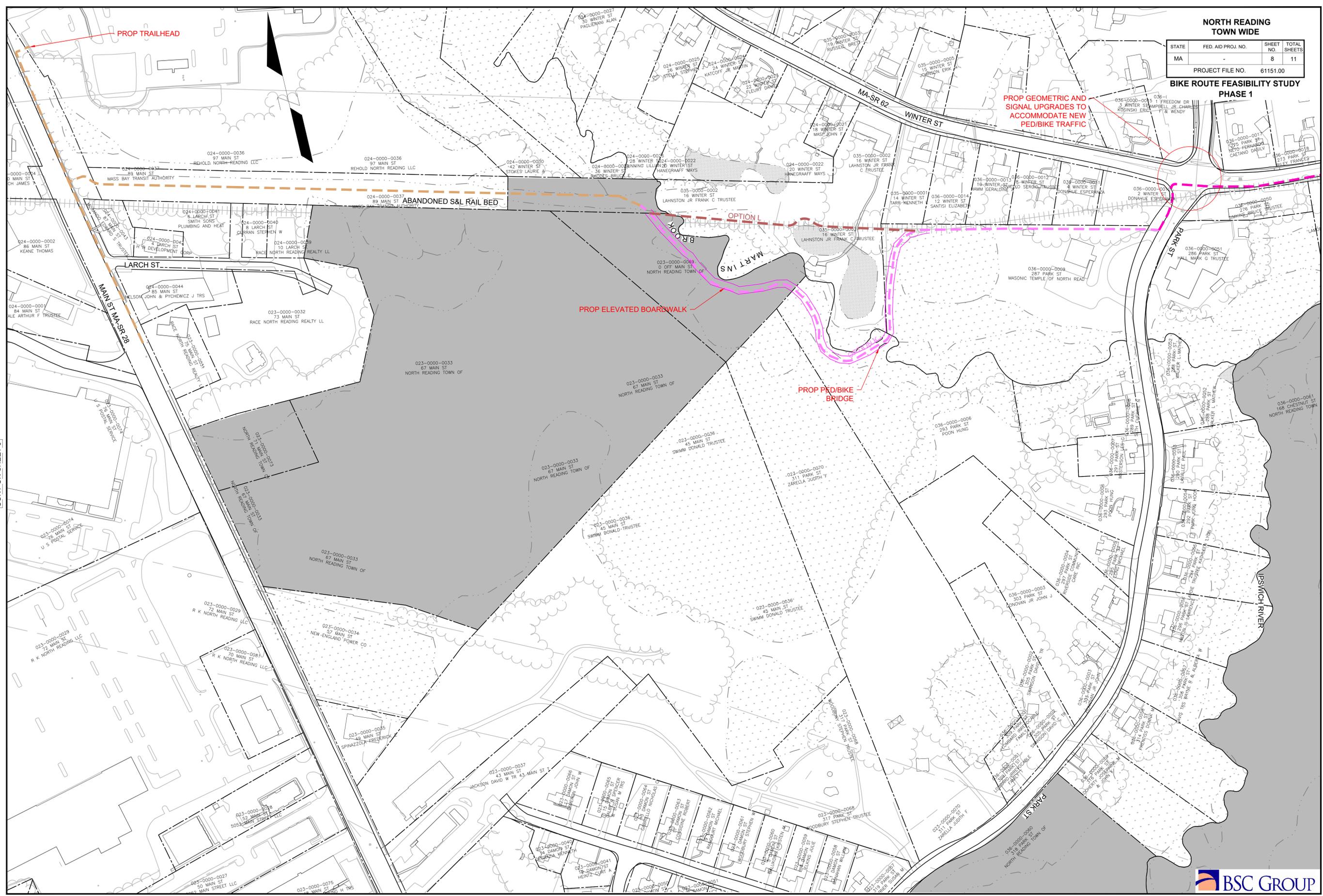
OPTION 1

ABANDONED S&L RAIL BED

PROP TRAILHEAD

CONT ON SHEET 9

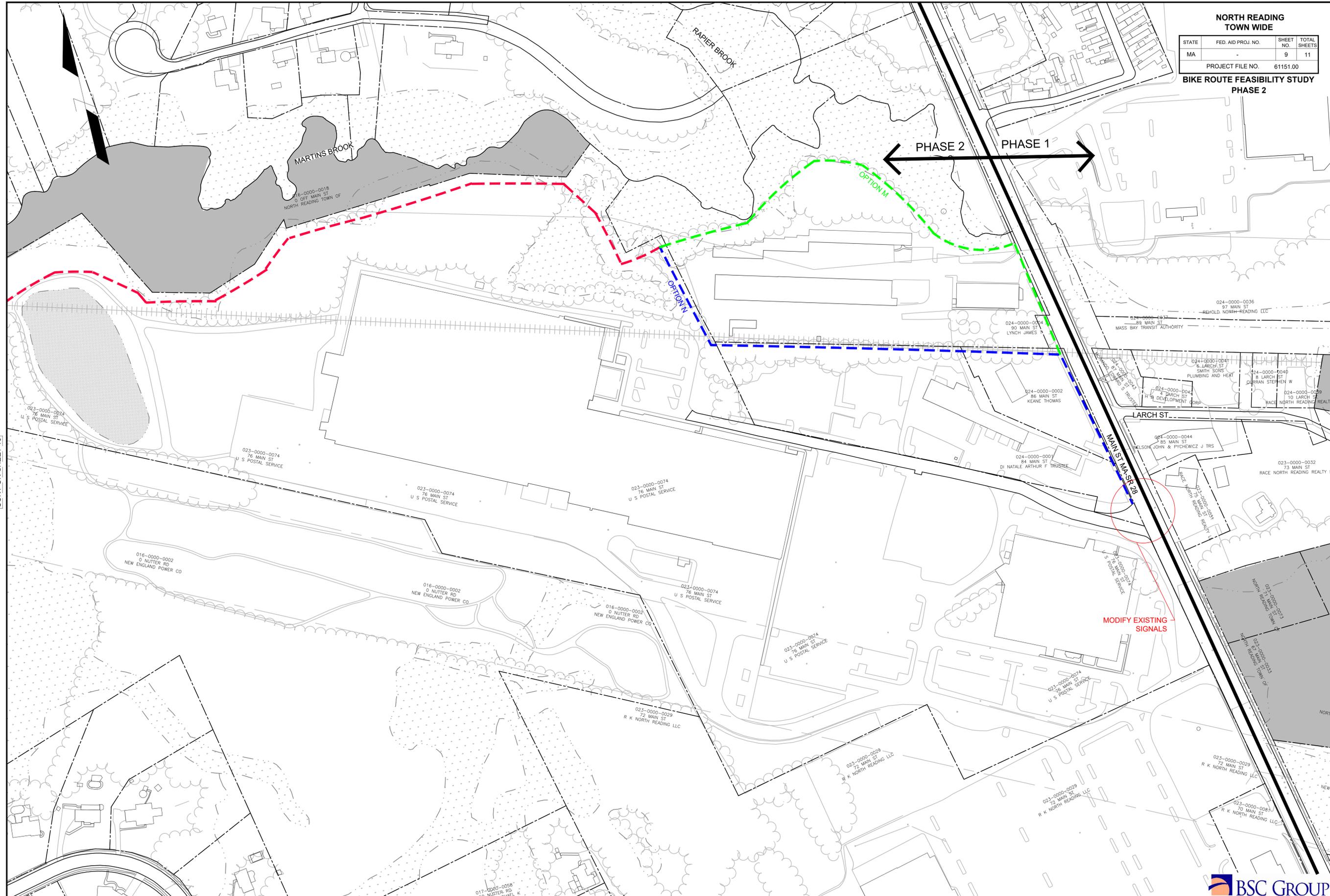
CONT ON SHEET 7



**NORTH READING
TOWN WIDE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	9	11

PROJECT FILE NO. 61151.00
**BIKE ROUTE FEASIBILITY STUDY
PHASE 2**



CONT ON SHEET 10

CONT ON SHEET 8



SCALE: 1" = 100'



Plotted on

**NORTH READING
TOWN WIDE**

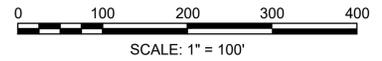
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MA	-	10	11

PROJECT FILE NO. 61151.00
**BIKE ROUTE FEASIBILITY STUDY
PHASE 2**



CONT ON SHEET 11

CONT ON SHEET 9



Plotted on

**NORTH READING
TOWN WIDE**

STATE	FED. AID PROJ. NO.	SHEET NO.	TOTAL SHEETS
MA	-	11	11

PROJECT FILE NO. 61151.00
**BIKE ROUTE FEASIBILITY STUDY
PHASE 2**

TOWN OF WILMINGTON
TOWN OF NORTH READING

PROP HAWK
SIGNAL
AND PED/BIKE
CROSSING

SALEM ST MA-SR 62

MARTINS BROOK POND

MARTINS BROOK

OPTION P

OPTION O

773 SALEM ST
CONCRETE INVESTMENTS LLC

N/F R SALEM ST
WILMINGTON TOWN OF

N/F R SALEM ST
MASSACHUSETTS COMMONWEALTH OF

N/F R SALEM ST
WILMINGTON TOWN OF

MARTINS BROOK

N/F R SALEM ST
WILMINGTON TOWN OF

N/F CHARLOTTE RD
WILMINGTON TOWN OF

N/F CHARLOTTE RD
WILMINGTON TOWN OF

N/F COLD SPRING RD
WILMINGTON TOWN OF

005-0000-0045
COLD SPRING RD
FISHER LIZABETH P TRUSTEE

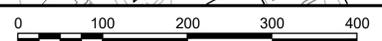
005-0000-0046
COLD SPRING RD
MEDACOPULOS REULINE

005-0000-0047
COLD SPRING RD
BOSWORTH BRIAN

005-0000-0048
COLD SPRING RD
MARDANO JOSEPH P

005-0000-0049
COLD SPRING RD
MILANOWSKI AVE

005-0000-0050
COLD SPRING RD
RESMORE FRANK P & MABEL RES



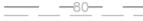
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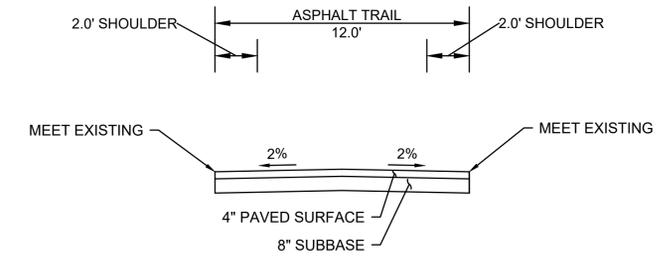
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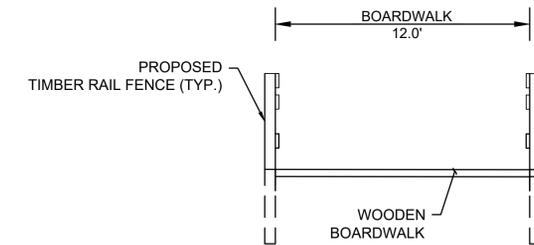
Appendix B – Typical Sections

LEGEND:

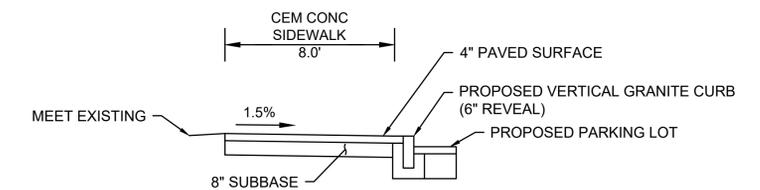
-  RETAINING WALL
-  PROPOSED BRIDGE
-  TOWN BOUNDARY
-  PROPERTY LINE
-  LIDAR TOPOGRAPHY CONTOURS MAJOR/MINOR
-  WETLANDS AREA
-  RIVER, POND, OR OTHER WET AREA
-  ALL SHADED PROPERTY IS OWNED BY THE TOWN OF NORTH READING



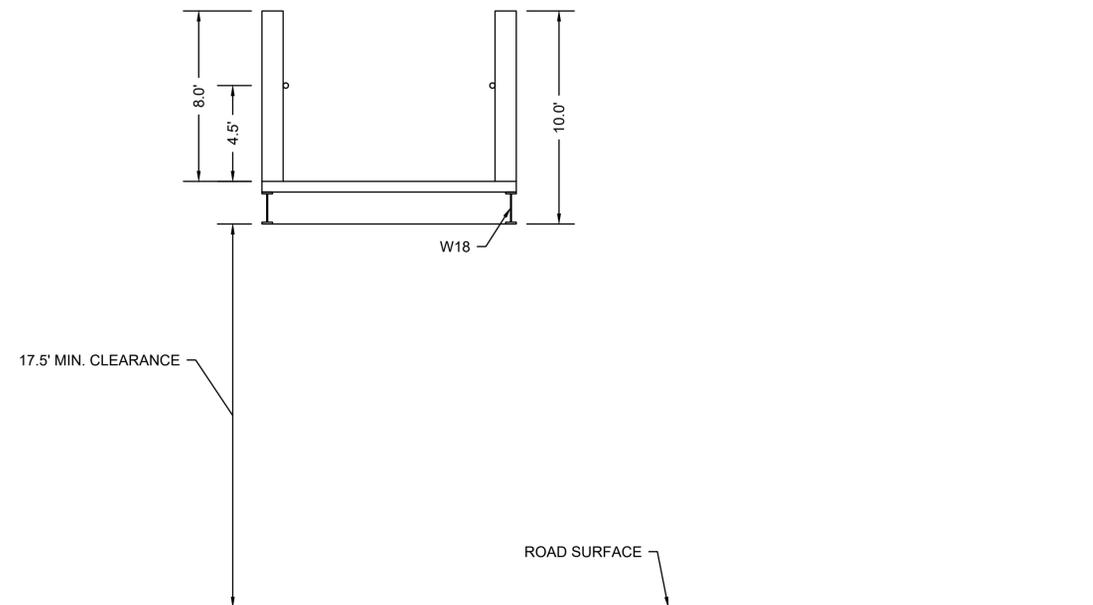
PEDESTRIAN TRAIL
SCALE: 1" = 4'



PEDESTRIAN BOARDWALK
SCALE: 1" = 4'



PEDESTRIAN SIDEWALK
SCALE: 1" = 4'



PEDESTRIAN BRIDGE
SCALE: 1" = 4'

Appendix C – Construction Cost Breakdown

Item No.	Item Name	Unit	Weighted Average Price	Adjusted Unit Price
101.	Clearing and Grubbing	A	\$ 38,444.00	\$ 40,000
120.1	Unclassified Excavation	CY	\$ 45.75	\$ 50
129.2	Old Pavement Excavation	SY	\$ 23.09	\$ 25
150.	Ordinary Borrow	CY	\$ 32.14	\$ 35
151.	Gravel Borrow	CY	\$ 43.06	\$ 45
170.	Fine Grading and Compacting - Subgrade Area	SY	\$ 5.80	\$ 6
460.	Hot Mix Asphalt	TON	\$ 120.00	\$ 150
470.	Hot Mix Asphalt Berm	TON	\$ 231.00	\$ 235
504.	Granite Curb Type VA4 - Straight	FT	\$ 51.06	\$ 52
620.12	Guardrail, TL-2 (Single Faced)	FT	\$ 29.14	\$ 35
644.096	96 Inch Chain Link Fence (Spring Tension Wire)	FT	\$ 50.00	\$ 50
655.	Cedar Rail Fence	FT	\$ 56.23	\$ 60
685.	Stone Masonry Wall in Cement Mortar	CY	\$ 787.43	\$ 800
686	Precast Modular Block Wall	SF	\$ 15.00	\$ 15
701.	Cement Concrete Sidewalk	SY	\$ 63.24	\$ 65
701.2	Cement Concrete Pedestrian Curb Ramp	SY	\$ 99.13	\$ 100
702.	Hot Mix Asphalt Sidewalk or Driveway	TON	\$ 208.71	\$ 210
751	Loam Borrow	CY	\$ 57.00	\$ 60
751.7	Compost Topdressing	SY	\$ 8.52	\$ 10
765	Seeding	SY	\$ 1.95	\$ 2
801.22	2 Inch Electrical Conduit (Includes Hot/Neutral/Grnd Wire)	FT	\$ 35.00	\$ 35
812.40	Signal Mast Arm Foundation	EA	\$ 12,366.67	\$ 12,500
817.10	Signal Post And Base Standard - 8 Foot	EA	\$ 1,949.00	\$ 2,000
817.62	Signal Mast Arm 30 Feet - Steel	EA	\$ 13,127.78	\$ 13,250
818.13	Signal Head 1 Way, Three Section 12 Inch Lens	EA	\$ 800.00	\$ 850
818.14	Signal Head 1 Way, Four Section 12 Inch Lens	EA	\$ 850.00	\$ 850
818.42	Pedestrian Signal Head	EA	\$ 450.00	\$ 500
818.59	1 Way Post Side Mounting Assembly	EA	\$ 250.00	\$ 250
819.	Traffic Signal Controller	LS	\$ 16,625.00	\$ 18,000
819.85	Pedestrian Push Button	EA	\$ 1,200.00	\$ 1,500
823.16	Area Lighting Luminaire 250 Watt (Includes foundation)	EA	\$ 5,500.00	\$ 7,000
824.45	Rectangular Rapid Flashing (RRF) Beacon - Pair	EA	\$ 30,000.00	\$ 35,000
824.48	HAWK Signal	EA	\$ 125,000.00	\$ 150,000
832.	Warn-Reg & Rte Mkr - Alum Panel (Type A)	SF	\$ 13.58	\$ 15
854.1	Pavement Marking Removal	SF	\$ 1.86	\$ 2
864.04	Pave Arrows and Legends Refl. White (Thermoplastic)	SF	\$ 8.70	\$ 10
866.106	6 Inch Refl. White (Thermoplastic)	FT	\$ 1.03	\$ 1
867.106	6 Inch Refl. Yellow (Thermoplastic)	FT	\$ 1.03	\$ 1
866.112	12 Inch Refl. White (Thermoplastic)	FT	\$ 4.14	\$ 4
-	Mobile Speed Feedback ("Your Speed") Sign	EA	\$ 10,000.00	\$ 10,000
999.	Police Detail	HR	\$ 45.00	\$ 45

OPTION B - N. READING/LYNNFIELD TOWN LINE TO ELM STREET (RTE 62)

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	1	103	4174	72	282	676	400	500	500	1000
Est. Const. Cost	\$33,634	\$5,149	\$125,222	\$3,224	\$1,693	\$101,430	\$20,800	\$17,500	\$32,500	\$55,000
	49000		98000				400	500	500	1000
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)
<u>Project Info</u>		<u>Path Dimensions</u>								
Path Length (FT)		2250								Enter Length
Path Width (FT)		12								Enter Width
Path Area (SY)		3000								
		<u>Ent. No. Officers</u>								<u>Enter No. Days</u>
Police Details		2								60
<u>Construction Costs</u>										
Item Subtotal		\$1,556,114.56								
Construction		\$311,223								
Contingency (20%)										
Construction Costs		\$1,867,337								
Police Details (5%)		\$93,367								Say
Const. Admin (15%)		\$280,100.62								
Mobilization (3%)		\$56,020.12								
										SAY
TOTAL		\$2,296,825								\$2,300,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY)	Cement Concrete Sidewalk (SY)	Cement Concrete WCR (SY)	Rectangular Rapid Flashing Beacon (EA)	HAWK Signal (EA)	Warn-Reg-Alum Panel (SF)	Pavement Sharrrows (SF)	6" White Line (FT)	6" Yellow Line (FT)	12" White Line (FT)	Prefabricated Steel Pedestrian Bridge (FT)
556	267	2	0	1	160	0	500	0	160	200
\$388,889	\$17,333	\$200	\$0	\$150,000	\$2,400	\$0	\$500	\$0	\$640	\$600,000
2500	2400	2	0	1	10	0	500	500	60	200
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

OPTION D - N. READING/LYNNFIELD TOWN LINE TO PARK STREET

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	2	129	5111	90	354	841	500	0	0	500
Est. Const. Cost	\$41,185	\$6,466	\$153,333	\$4,048	\$2,125	\$126,224	\$26,000	\$0	\$0	\$27,500
	60000		120000				500	0	0	500
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)
<u>Project Info</u>		<u>Path Dimensions</u>								
Path Length (FT)		2800								Enter Length
Path Width (FT)		12								Enter Width
Path Area (SY)		3733								
		<u>Ent. No. Officers</u>								<u>Enter No. Days</u>
Police Details		2								30
<u>Construction Costs</u>										
Item Subtotal		\$1,013,709.00								
Construction		\$202,742								
Contingency (20%)										
Construction Costs		\$1,216,451								
Police Details (5%)		\$60,823								Say
Const. Admin (15%)		\$182,467.62								
Mobilization (3%)		\$36,493.52								
TOTAL		\$1,496,234								SAY \$1,500,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY)	Cement Concrete Sidewalk (SY)	Cement Concrete WCR (SY)	Rectangular Rapid Flashing Beacon (EA)	HAWK Signal (EA)	Warn-Reg-Alum Panel (SF)	Pavement Sharrows (SF)	6" White Line (FT)	6" Yellow Line (FT)	12" White Line (FT)	Elevated Boardwalk (FT)
167	333	4	1	1	160	12.5	250	0	80	300
\$116,667	\$21,667	\$400	\$35,000	\$150,000	\$2,400	\$125	\$250	\$0	\$320	\$300,000
750	3000	4	1	1	10	250	250	250	30	300
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Boardwalk Length

PARK STREET TO HAVERHILL STREET VIA RAILROAD AVENUE

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	1	22	4770	15	60	841	50	0	0	1500
Est. Const. Cost	\$38,439	\$1,103	\$143,111	\$691	\$363	\$126,224	\$2,600	\$0	\$0	\$82,500
	56000		112000				50	0	0	1500
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)

<u>Project Info</u>	<u>Path Dimensions</u>	
Path Length (FT)	2800	Enter Length
Path Width (FT)	12	Enter Width
Path Area (SY)	3733	
	Ent. No. Officers	Enter No. Days
Police Details	2	60

<u>Construction Costs</u>		
Item Subtotal	\$629,906.02	
Construction	\$125,981	
Contingency (20%)	\$755,887	
Construction Costs	\$37,794	Say
Police Details (5%)	\$113,383.08	
Const. Admin (15%)	\$22,676.62	
Mobilization (3%)		
TOTAL	\$929,741	SAY \$1,000,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 278 \$194,444	Cement Concrete Sidewalk (SY) 56 \$3,611	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 1 \$35,000	HAWK Signal (EA) 0 \$0	Warn-Reg-Alum Panel (SF) 80 \$1,200	Pavement Sharrows (SF) 0 \$0	6" White Line (FT) 100 \$100	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 80 \$320	Prefabricated Steel Pedestrian Bridge (FT) 0 \$0
1250	500	2	1	0	5	0	100	100	30	0
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

HAVERHILL STREET TO CENTRAL STREET

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	1	1	1874	1	2	751	0	0	0	3000
Est. Const. Cost	\$15,101	\$38	\$56,222	\$24	\$13	\$112,700	\$0	\$0	\$0	\$165,000
	22000		44000				0	0	0	3000
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)

<u>Project Info</u>	<u>Path Dimensions</u>	
Path Length (FT)	2500	Enter Length
Path Width (FT)	12	Enter Width
Path Area (SY)	3333	

<u>Police Details</u>	<u>Ent. No. Officers</u>	<u>Enter No. Days</u>
Police Details	2	60

<u>Construction Costs</u>		
Item Subtotal	\$971,520.39	
Construction	\$194,304	
Contingency (20%)	\$1,165,824	
Police Details (5%)	\$58,291	Say
Const. Admin (15%)	\$174,873.67	
Mobilization (3%)	\$34,974.73	
TOTAL	\$1,433,964	SAY \$1,500,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 889 \$622,222	Cement Concrete Sidewalk (SY) 0 \$0	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 0 \$0	HAWK Signal (EA) 0 \$0	Warn-Reg-Alum Panel (SF) 0 \$0	Pavement Sharrow (SF) 0 \$0	6" White Line (FT) 0 \$0	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 0 \$0	Prefabricated Steel Pedestrian Bridge (FT) 0 \$0
4000	0	2	0	0	0	0	0	0	0	0
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

OPTION J - OPTION I TO ROUTE 62 & HIGH SCHOOL CAMPUS

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	0	1	852	1	2	60	0	0	0	400
Est. Const. Cost	\$6,864	\$38	\$25,556	\$24	\$13	\$9,016	\$0	\$0	\$0	\$22,000
	10000		20000				0	0	0	400
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)			

<u>Project Info</u>	<u>Path Dimensions</u>	
Path Length (FT)	200	Enter Length
Path Width (FT)	12	Enter Width
Path Area (SY)	267	

<u>Police Details</u>	<u>Ent. No. Officers</u>	<u>Enter No. Days</u>
Police Details	2	60

<u>Construction Costs</u>		
Item Subtotal	\$1,073,663.92	
Construction Contingency (20%)	\$214,733	
Construction Costs	\$1,288,397	
Police Details (5%)	\$64,420	Say
Const. Admin (15%)	\$193,259.51	
Mobilization (3%)	\$38,651.90	
TOTAL	\$1,584,728	SAY \$1,600,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 533 \$373,333	Cement Concrete Sidewalk (SY) 0 \$0	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 1 \$35,000	HAWK Signal (EA) 0 \$0	Warn-Reg-Alum Panel (SF) 80 \$1,200	Pavement Sharrow (SF) 0 \$0	6" White Line (FT) 100 \$100	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 80 \$320	Prefabricated Steel Pedestrian Bridge (FT) 200 \$600,000
2400	0	2	1	0	5	0	100	100	30	200
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

CENTRAL STREET TO CHESTNUT STREET

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	1	129	3748	89	352	661	0	0	0	4400
Est. Const. Cost	\$30,202	\$6,427	\$112,444	\$4,024	\$2,113	\$99,176	\$0	\$0	\$0	\$242,000
	44000		88000				0	0	0	4400
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)			

<u>Project Info</u>	<u>Path Dimensions</u>	
Path Length (FT)	2200	Enter Length
Path Width (FT)	12	Enter Width
Path Area (SY)	2933	
	Ent. No. Officers	Enter No. Days
Police Details	2	60

<u>Construction Costs</u>		
Item Subtotal	\$971,829.62	
Construction	\$194,366	
Contingency (20%)	\$1,166,196	
Police Details (5%)	\$58,310	Say
Const. Admin (15%)	\$174,929.33	
Mobilization (3%)	\$34,985.87	
TOTAL	\$1,434,421	SAY \$1,500,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 0 \$0	Cement Concrete Sidewalk (SY) 333 \$21,667	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 0 \$0	HAWK Signal (EA) 2 \$300,000	Warn-Reg-Alum Panel (SF) 160 \$2,400	Pavement Sharrow (SF) 25 \$250	6" White Line (FT) 500 \$500	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 107 \$427	Prefabricated Steel Pedestrian Bridge (FT) 50 \$150,000
0	3000	2	0	2	10	500	500	500	40	50
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

CHESTNUT STREET TO WINTER STREET VIA PARK STREET

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	0	171	0	119	469	240	800	0	0	800
Est. Const. Cost	\$0	\$8,557	\$0	\$5,357	\$2,813	\$36,064	\$41,600	\$0	\$0	\$44,000
	0		0				800	0	0	800
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)

<u>Project Info</u>	<u>Path Dimensions</u>	
Path Length (FT)	800	Enter Length
Path Width (FT)	12	Enter Width
Path Area (SY)	1067	

<u>Police Details</u>	<u>Ent. No. Officers</u>	<u>Enter No. Days</u>
Police Details	2	60

<u>Construction Costs</u>		
Item Subtotal	\$471,106.34	
Construction	\$94,221	
Contingency (20%)		
Construction Costs	\$565,328	
Police Details (5%)	\$28,266	Say
Const. Admin (15%)	\$84,799.14	
Mobilization (3%)	\$16,959.83	
TOTAL	\$695,353	SAY \$700,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 0 \$0	Cement Concrete Sidewalk (SY) 444 \$28,889	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 0 \$0	HAWK Signal (EA) 2 \$300,000	Warn-Reg-Alum Panel (SF) 160 \$2,400	Pavement Sharrow (SF) 0 \$0	6" White Line (FT) 800 \$800	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 107 \$427	Prefabricated Steel Pedestrian Bridge (FT) 0 \$0
0	4000	2	0	2	10	0	800	800	40	0
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

PARK STREET TO MAIN STREET (RTE 28)

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	1	256	2896	178	702	511	1000	500	1000	3500
Est. Const. Cost	\$34,320	\$12,816	\$86,889	\$8,024	\$4,213	\$76,636	\$52,000	\$17,500	\$65,000	\$192,500
	50000		68000				1000	500	1000	3500
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)
<u>Project Info</u>		<u>Path Dimensions</u>								
Path Length (FT)		1700								Enter Length
Path Width (FT)		12								Enter Width
Path Area (SY)		2267								
		<u>Ent. No. Officers</u>								<u>Enter No. Days</u>
Police Details		2								60
<u>Construction Costs</u>										
Item Subtotal		\$1,522,475.86								
Construction		\$304,495								
Contingency (20%)										
Construction Costs		\$1,826,971								
Police Details (5%)		\$91,349								Say
Construction Admin (15%)		\$274,045.65								
Mobilization (3%)		\$54,809.13								
TOTAL		\$2,247,174								SAY \$2,300,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 178 \$124,444	Cement Concrete Sidewalk (SY) 667 \$43,333	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 0 \$0	HAWK Signal (EA) 0 \$0	Warn-Reg-Alum Panel (SF) 240 \$3,600	Pavement Sharrow (SF) 0 \$0	6" White Line (FT) 1000 \$1,000	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 0 \$0	Elevated Boardwalk (FT) 800 \$800,000
800	6000	2	0	0	15	0	1000	0	0	800
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Boardwalk Length

OPTION A - ELM ST./RTE 62 IN LYNNFIELD TO LYNNFIELD/N. READING TOWN LINE

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	1	86	2641	60	235	391	300	300	0	1000
Est. Const. Cost	\$21,279	\$4,298	\$79,222	\$2,691	\$1,413	\$58,604	\$15,600	\$10,500	\$0	\$55,000
	31000		62000				300	300	0	1000
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)
<u>Project Info</u>		<u>Path Dimensions</u>								
Path Length (FT)		1300								Enter Length
Path Width (FT)		12								Enter Width
Path Area (SY)		1733								
		<u>Ent. No. Officers</u>								<u>Enter No. Days</u>
Police Details		2								60
<u>Construction Costs</u>										
Item Subtotal		\$1,387,063.56								
Construction		\$277,413								
Contingency (20%)										
Construction Costs		\$1,664,476								
Police Details (5%)		\$83,224								Say
Const. Admin (15%)		\$249,671.44								
Mobilization (3%)		\$49,934.29								
										SAY
TOTAL		\$2,047,306								\$2,100,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 533 \$373,333	Cement Concrete Sidewalk (SY) 222 \$14,444	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 0 \$0	HAWK Signal (EA) 0 \$0	Warn-Reg-Alum Panel (SF) 32 \$480	Pavement Sharrow (SF) 0 \$0	6" White Line (FT) 0 \$0	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 0 \$0	Prefabricated Steel Pedestrian Bridge (FT) 250 \$750,000
2400	2000	2	0	0	2	0	0	0	0	250
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length

OPTION C - LYNNFIELD/N. READING TOWN LINE TO ELM ST./RTE 62 IN N. READING

Pay Item	Clearing & Grubbing (A)	Unclassified Excavation (CY)	Ordinary Borrow (CY)	Gravel Borrow (CY)	Fine Grading & Compacting (SY)	Hot Mix Asphalt (TON)	Curb (LF)	Guardrail TL-2 (FT)	96" Chain Link Fence (FT)	Pressure Treated Timber Rail Fence (FT)
Est. Quantity	2	103	4941	72	282	811	300	300	1000	1000
Est. Const. Cost	\$39,812	\$5,149	\$148,222	\$3,224	\$1,693	\$121,716	\$15,600	\$10,500	\$65,000	\$55,000
	58000		116000				300	300	1000	1000
	Enter Total Area (SF)		Enter Total L x W x D (CF)				Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)	Enter Total L (FT)
<u>Project Info</u>		<u>Path Dimensions</u>								
Path Length (FT)		2700								Enter Length
Path Width (FT)		12								Enter Width
Path Area (SY)		3600								
		<u>Ent. No. Officers</u>								<u>Enter No. Days</u>
Police Details		2								60
<u>Construction Costs</u>										
Item Subtotal		\$1,681,396.02								
Construction		\$336,279								
Contingency (20%)										
Construction Costs		\$2,017,675								
Police Details (5%)		\$100,884								Say
Const. Admin (15%)		\$302,651.28								
Mobilization (3%)		\$60,530.26								
										SAY
TOTAL		\$2,481,741								\$2,500,000.00

							Enter Total Length	Enter Total Length		Enter Total Locations
Stone Masonry Wall in Mortar (CY) 1067 \$746,667	Cement Concrete Sidewalk (SY) 267 \$17,333	Cement Concrete WCR (SY) 2 \$200 0	Rectangular Rapid Flashing Beacon (EA) 0 \$0	HAWK Signal (EA) 1 \$150,000	Warn-Reg-Alum Panel (SF) 64 \$960	Pavement Sharrow (SF) 0 \$0	6" White Line (FT) 0 \$0	6" Yellow Line (FT) 0 \$0	12" White Line (FT) 80 \$320	Prefabricated Steel Pedestrian Bridge (FT) 100 \$300,000
4800	2400	2	0	1	4	0	0	0	30	100
Enter Total L x Ave H (SF)	Enter Total L x W (SF)	Enter Total No. Ramps	Enter Total Locations	Enter Total Locations	Enter No. Signs	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total Length On- Road Path	Enter Total CW Length	Enter Total Bridge Length