

# MaineDOT - HIGHWAY PRELIMINARY DESIGN REPORT

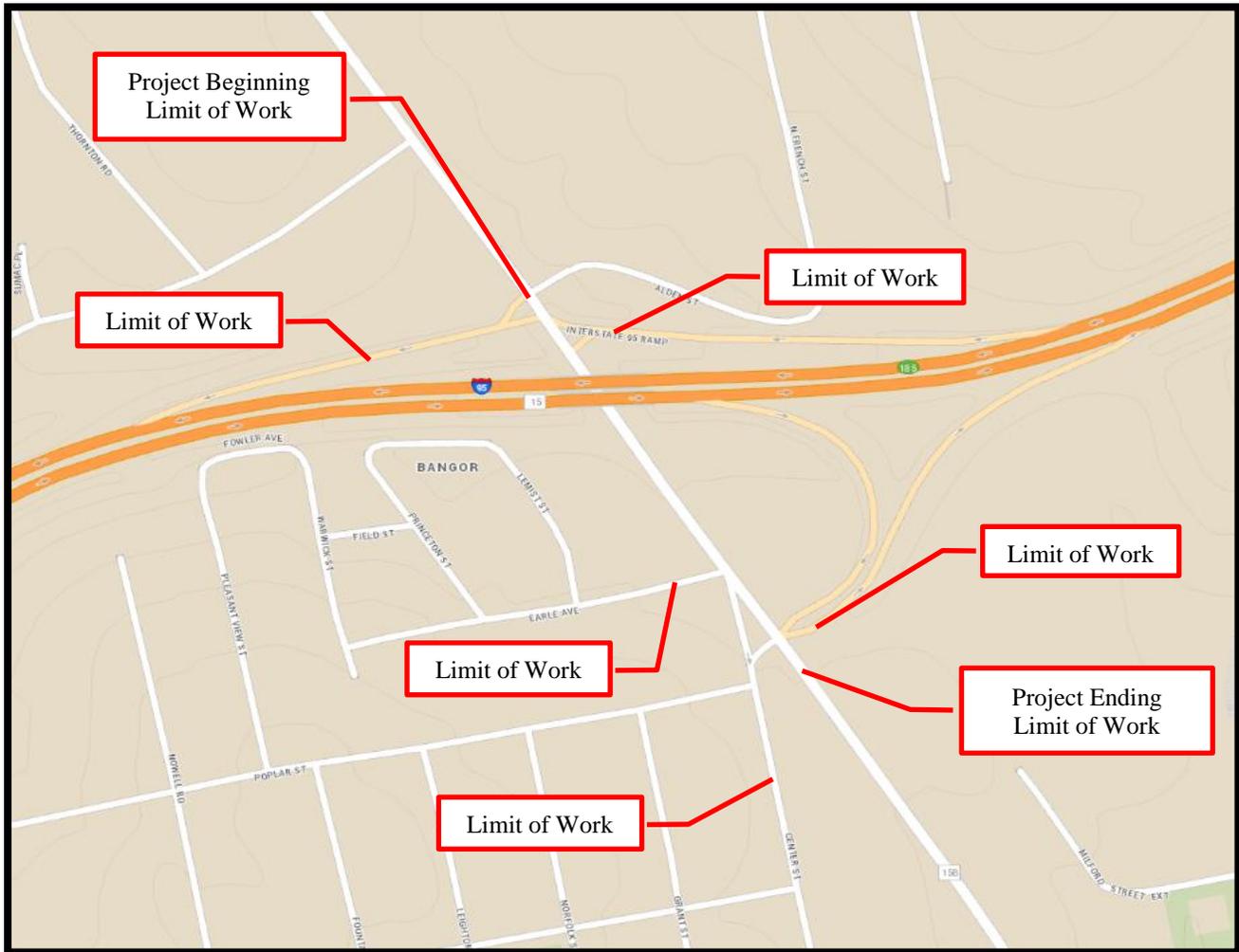
**Project Name:** *Broadway Roadway and Intersection Improvements*  
**WIN:** 21663.00

**Draft Distribution Date:** 05/30/2019  
**Final Distribution Date:** TBD

<b>Town(s):</b> Bangor	<b>Route(s):</b> Broadway (Route 15)		
<b>WIN:</b> 21663.00	<b>Federal Project No:</b> HSIP-2166(300)		
<b>Project Type:</b> Roadway and Intersection Improvements			
<b>Project Location:</b> This project is located on Broadway in Bangor between the intersections of Center Street and the I-95 Southbound Ramps.			
<b>Length:</b> 0.20 Miles	<b>BRLM:</b> 63.39	<b>ERLM:</b> 63.25	<b>RLM Date:</b> 03/13/2019
<b>Program:</b> Multimodal - LAP		<b>Program Manager:</b> Jeff Tweedie	
<b>Project Manager:</b> Daniel Loring		<b>Designer:</b> Gorrill Palmer	
<b>FHWA Oversight:</b> Yes		<b>Engineer of Record:</b> Don Ettinger	

## LOCATION MAP

Broadway, Bangor



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## **PLANNING**

**Project History:** This project stretches 0.20 miles on Broadway (Route 15) from the I-95 Southbound Ramps to Center Street. This section of Broadway (Route 15) is a principal arterial with multiple high crash locations, and very few pedestrian or bicycle accommodations. The sidewalks and landings do not currently meet ADA standards and the intersections at either end of the project require geometric improvements.

The Southbound I-95 on ramp is currently aligned with Alden Street which negatively affects the signalization of the intersection. During a recent city project, Alden Street was removed from the signal and redesigned to be right in, right out only. This project will realign the I-95 Southbound on ramp with the I-95 Southbound off ramp to improve the operation of the signal.

The intersection of Broadway (Route 15) and Center Street is unsafe in the existing condition. There are two existing high crash locations within the intersection, and very few pedestrian or bicycle accommodations. Geometric and ADA improvements are required to increase accessibility and safety for all users.

**Purpose & Need:** The purpose of this project is to provide safety improvements to high crash locations as well as provide pedestrian, bicycle, and access management improvements to provide safety benefits for those users. Existing pedestrian accommodations are generally not compliant with current ADA standards.

**Brief Summary of Proposed Scope of Work:** This project will include design of roadway, lane and shoulder modifications, signal system operation improvements, realignment and access management of intersecting roads, pedestrian, bicycle and access management improvements throughout the corridor. The project will include the realignment of the I-95 Southbound on ramp, restriction of left turn movements at Earle Ave and the removal of the Center Street slip lane from Broadway (Route 15).

**Scope Changes:** There have not been any scope changes.

## **TRAFFIC**

### **Broadway (Route 15)/I-95 SB Ramps**

#### **Design Vehicle (without encroachment):**

- Broadway (Route 15) onto I-95 SB on ramp – Left Turn – WB-67
- Broadway (Route 15) onto I-95 SB on ramp – Right Turn – WB-67
- I-95 SB off ramp onto Broadway (Route 15) – Left Turn – WB-67
- I-95 SB off ramp onto Broadway (Route 15) – Dual Right Turn  
    Inside lane: WB-62  
    Outside lane: Passenger car

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## **Broadway (Route 15)/Earle Avenue**

### **Design Vehicle (without encroachment):**

- Broadway (Route 15) onto Earle Avenue – Right Turn – School Bus.
- Earle Avenue onto Broadway (Route 15) – Right Turn – School Bus.

### **Design Vehicle (with encroachment):**

- Broadway (Route 15) onto Earle Avenue – Right Turn – Ladder Truck. Larger vehicles will need to travel over channelization island.
- Earle Avenue onto Broadway (Route 15) – Right Turn – Ladder Truck. Larger vehicles will need to travel over channelization island.

## **Broadway (Route 15)/I-95 NB Ramps/Center Street**

### **Design Vehicle (without encroachment):**

Broadway (Route 15) onto I-95 NB on ramp – Right Turn – WB-67

Broadway (Route 15) onto I-95 NB on ramp – Left Turn – WB-67

I-95 NB off ramp onto Broadway (Route 15) – Right Turn – WB-67

I-95 NB off ramp onto Broadway (Route 15) – Left Turn – WB-67

Broadway (Route 15) onto Center Street – Right Turn – City Bus

Broadway (Route 15) onto Center Street – Left Turn – No left turn allowed from Broadway onto Center Street

Center Street onto Broadway (Route 15) – Right Turn – City Bus

Center Street onto Broadway (Route 15) – Left Turn – City Bus

### **Design Vehicle (with encroachment):**

Broadway (Route 15) onto Center Street – Right Turn – Ladder Truck.

Center Street onto Broadway (Route 15) – Right Turn – Ladder Truck

Center Street onto Broadway (Route 15) – Left Turn – WB-67

### **Auxiliary Lanes:**

There are auxiliary lanes on Broadway, I-95 ramps and Center Street. There is a two-way center turn lane on Broadway.

### **Crash Data**

**Analysis Period:** 2015-2017

**High Crash Locations (including Critical Rate Factor and number of crashes):**

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1. Intersection of Broadway (Route 15) and Earle Ave
  - Number of Crashes: 24
  - Critical Rate Factor: 3.54
  
2. Broadway roadway segment between Earle Ave and Center Street
  - Number of Crashes: 25
  - Critical Rate Factor: 2.50
  
3. Intersection of Broadway (Route 15), Center Street, and the I-95 NB Ramps
  - Number of Crashes: 34
  - Critical Rate Factor: 1.21

## **DESIGN CRITERIA**

*This section should reflect the criteria listed in the Highway Design Requirements (HDR) form.*

### **Basic Design Controls**

	<b>Broadway (Route 15)</b>	<b>I-95 SB on Ramp</b>	<b>I-95 SB off Ramp</b>	<b>Earle Avenue</b>	<b>Center Street</b>
<b>Corridor Priority</b>	2	1	1	6	4
<b>Functional Class</b>	Principal Arterial	Principal Arterial Interstate	Principal Arterial Interstate	Local Road	Major Urban Collector
<b>NHS/Non-NHS</b>	NHS – Other	NHS – Interstate	NHS – Interstate	Non fed-aid non-NHS	Fed-aid non-NHS
<b>Posted Speed</b>	25 MPH	30 MPH	30 MPH	25 MPH	25 MPH
<b>2019 AADT (Current)</b>	19898	5330	4570	333	5934
<b>2039 AADT (Design)</b>					
<b>DHV</b>					
<b>Scope</b>	Spot Improvement	Reconstruction	Spot Improvement	Spot Improvement	Spot Improvement
(New Construction, Reconstruction, Rehabilitation, Restoration/Resurfacing, Spot Improvement)					

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### Controlling Criteria

Element	Required Standard				
	Broadway (Route 15)	I-95 SB on Ramp	I-95 SB off Ramp	Earle Avenue	Center Street
Design Speed	25 MPH	30 MPH	30 MPH	25 MPH	25 MPH
Lane Width	11' - 12'	14'	13' (Multi-Lane)	11' - 12'	11' - 12'
Shoulder Width	3' - 5'	Left: 4' Right: 8'	Left Side: 2'-4' Right Side: 6'-10'	1' - 3'	3' - 4'
Horizontal Curve Radius	154'	231'	231'	154'	154'
Superelevation Rate	4%	6%	6%	4%	4%
Stopping Sight Distance	155'	200'	200'	155'	155'
Maximum Grade	8%	5% - 7%	5% - 7%	14%	10%
Cross Slope (Travelway)	1.5% - 2.5%	1.5% - 2.5%	1.5% - 2.5%	1.5% - 2.5%	1.5% - 2.5%
Vertical Clearance	16' 6"	16' 6"	16' 6"	15' 6"	15' 6"
Clear Zone	10'	30'	30'	10'	10'

### Typical Section

Element	Proposed Value				
	Broadway (Route 15)	I-95 SB on Ramp	I-95 SB off Ramp	Earle Avenue	Center Street
Lane Width	10' - 11'	14'	13'	10'	10' - 11'
Shoulder Width	3' - 4'	4' - 8'	1' - 2'	2'-4'	2' - 7.5'
Cross Slope (Travelway)	Match Existing	2%	Match Existing	Match Existing	Match Existing
Side Slopes*	3:1 or Flatter	4:1 or Flatter	4:1 or Flatter	3:1 or Flatter	3:1 or Flatter

*\*If side slope standards cannot be met, no Design Exception will be required. If not meeting side slope standards results in clear zone standards not being met, a clear zone design exception will be required.*

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## DESIGN EXCEPTION SUMMARY

**Controlling Criteria** – Design Exceptions have not been approved at this time.

Element	Required Standard	Proposed Value	Date Approved
Lane Width (LW) Broadway (Route 15)	11' – 12'	10' - 11'	(TBD)

**Drives and Entrances** – There are no anticipated driveway design exceptions at this time.

Station	Maximum Grade	Grade Change	Date Approved

## PAVEMENT STRUCTURE

*(To be completed by Pavement Design & Quality Section)*

**Pavement Assessment Report (Title and Location):** N/A

**Design Review Date:** N/A

**Design Guidance Subgrade Soil Type (1-3):** N/A

### **Pavement Structure Design**

Design Method Layer	Design Guidance		Pavement-ME	
	Thickness	Type	Thickness	Type
Hot Mix Asphalt Pavement				
Recycled Layer				
Base Course Gravel				
Subbase Course Gravel				
Shoulder Pavement				

**Pavement Design Coachpoint Date:**

### **Final Pavement Structure Design**

Design Method Layer	Design Guidance		Pavement-ME	
	Thickness	Type	Thickness	Type
Hot Mix Asphalt Pavement				
Recycled Layer				
Base Course Gravel				
Subbase Course Gravel				
Shoulder Pavement				

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**Comments:** No pavement design has been completed to date. Work assumes 6" hot mix asphalt and 24" aggregate subbase course gravel in roadway and shoulder reconstruction areas along Broadway and Center Street as well as the reconstruction areas on the I-95 ramps.

## COMPLETE STREETS COMPLIANCE

*A Complete Street is a roadway that provides safe and efficient access to the transportation system to all users. Each element of a Complete Street shall be considered according to the guidelines set forth in the MaineDOT Complete Streets Policy.*

**Select and summarize the Complete Streets elements that have been incorporated into the project:**

**Sidewalks**

ADA compliant sidewalk improvements are proposed throughout the project. Esplanades will be added behind the sidewalk when adjacent to a parking lot or paved surface. Sidewalk ramps will be reconstructed at every intersection and side road to comply with the current ADA standard.

**Crosswalks**

New crosswalks are proposed at the Broadway/I-95 SB ramps, Broadway/Alden Street, Broadway/Earle Ave, Broadway/I-95 NB ramps/Center Street, and Center Street/Poplar Street intersections.

**Lighting (street or pedestrian scale)**

**Pedestrian Signals**

Pedestrian signal improvements are proposed at the Broadway/I-95 SB ramps, and the Broadway/I-95 NB ramps/Center Street intersections.

**Streetscaping (benches, landscaping, etc.)**

The City of Bangor would like to incorporate plantings, benches and additional landscaping features to create a pocket park. The park would be located in the space provided by removing the Broadway slip lane onto Center Street and by closing the second entrance to Tri-City Pizza. The City of Bangor will be responsible for generating all landscaping plans.

**Shoulder Improvements**

Shoulder Improvements will be limited to minor widening on the Broadway (Route 15) and at the intersections of Broadway (Route 15) and the I-95 Northbound/Southbound ramps.

**Bike Lanes/Shared Use Paths**

A design exception for reduced lane widths is proposed to better accommodate bike traffic in the shoulders. With reduced lane widths, the shoulder widths on both sides of Broadway would be 3' - 4'.

**Public Transit (bus stops, etc.)**

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**Other (explain)**

*There are several reasons these elements may not be incorporated:*

*Use by pedestrians, bicyclists, and others is prohibited by law.  
The cost is disproportionate to the need or probable use.  
Components are outside the scope, due to the nature of the project.*

**Summarize the reasons any elements were not incorporated:**

The need for public transit along this section of Broadway was noted, however, due to the roadways limited right of way, large AADT (more than 19000), and high crash frequency, it was determined that this was not a desirable location for additional transit related work.

Lighting (street and pedestrian) is provided via existing cobra style lights on existing utility poles. Additionally, dual purpose signal poles are proposed at both intersections to improve intersection lighting. The city has received numerous requests from its residents asking them to provide additional lighting under the I-95 Bridge that spans Broadway. The city would like the MaineDOT to consider adding pedestrian lighting to the scope of Project WIN 22276.00, I-95 Bridge Improvements Project.

Pedestrian and bicycle improvements under the I-95 Bridge that spans Broadway is also an area where the city would like the MaineDOT to consider making such improvements as part of the upcoming bridge project. The limits of this work are shown on the preliminary plans.

## **ADA COMPLIANCE**

*Pedestrian facilities shall be upgraded according to the guidelines set forth in the MaineDOT ADA Compliance Policy. The need for design exceptions shall be based on the MaineDOT Design Guidance on ADA Requirements for Pedestrian Facilities. This includes the discussion on "technical infeasibility". Design Exceptions will be requested using the ADA specific request form.*

**Minimum Improvements based on the Policy:** Install or upgrade intersection pedestrian facilities to meet current ADA standards including curb ramps and pedestrian signal systems.

*On some project scopes, due to the nature of the work, pedestrian facilities will be reconstructed by default. These facilities must be upgraded to meet current ADA standards. On some project scopes, the nature of the work may not require that pedestrian facilities be reconstructed. However, if these facilities do not meet current ADA standard, they may still need to be upgraded.*

**Summarize the proposed improvements:** ADA compliant sidewalk ramps/tip downs are proposed at the Broadway/I-95 SB ramps, Broadway/Earle Ave, Broadway/I-95 NB ramps/Center Street, and Center

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Street/Poplar Street intersections. New pedestrian countdown heads will be proposed at all signalized ramps/tip downs. In addition, ADA compliant sidewalks are proposed along Broadway.

### Existing Pedestrian Facilities

Element	Compliant? (Y/N)	Upgrades Proposed? (Y/N)	ADA Design Exception? (Y/N)
<b>Curb Ramps</b>			
Running Slope	No	Yes (8.33% maximum)	No
Cross Slope	No	Yes (2% maximum)	No
Width	Yes	Yes (5' minimum)	No
Counter Slope	Yes	Yes (0.5% to 2.0%)	No
Flared Sides	No	Yes (8' curbed tip down)	No
Landings	No	Yes (4'x4' minimum)	No
Diagonal Ramps	No	Yes (8' ramp)	No
Detectable Warnings	Location Dependent	Yes	No
<b>Sidewalks</b>			
Width	Yes	Yes (5' minimum)	No
Cross Slope	No	Yes (0.5% to 2.0%)	No

### Are pedestrian signals proposed to be installed or upgraded if required?

Pedestrian signal improvements are proposed at the Broadway/I-95 SB ramps, and the Broadway/I-95 NB ramps/Center Street intersections.

### ENVIRONMENTAL PERMITS / ISSUES

**Team Member:** Danielle Tetreau (MaineDOT), Jared Winchenbach (Gorrill Palmer)

NEPA	TBD (MaineDOT Led)
Section 106	TBD (MaineDOT Led)
Section 4(f)	TBD (MaineDOT Led)
Endangered Species	TBD (MaineDOT Led)
Essential Fish Habitat	Not applicable
Fish Passage	Not applicable
In-Stream Window	Not applicable
Hazardous Material	TBD (MaineDOT led with assistance from municipality)
Dredge Material	Not applicable
Stormwater/MS4	TBD (1)

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<b>DEP/LUPC</b>	TBD (2)
<b>ACOE</b>	TBD (2)
<b>Mitigation</b>	Not required.
<b>Other</b>	

**Avoidance & Minimization:** TBD

**Additional Comments:**

1. Stormwater Permit may be required.
2. Since the project does not include or reside on any wetlands, streams or vernal pools, the project should not require an ACOE or DEP/LUPC permit.

### RIGHT-OF-WAY COORDINATION

**Team Member:** Andrew Johnson (MaineDOT)

	<b>Broadway (Route 15)</b>	<b>I-95 SB * on Ramp</b>	<b>I-95 SB * Off Ramp</b>	<b>Earle Avenue</b>	<b>Center Street</b>
<b>Total Existing Width:</b>	70'-72'	NA	NA	50'	60'
<b>Total Proposed Width:</b>	70-72'	NA	NA	50'	60'
<b># of Abutters:</b> 15					
<b># of Acquisitions:</b> 10 properties requiring temporary grading rights. 2 properties requiring construction and maintenance easements for drainage purposes.					
<b># of Relocations:</b> None					
<b>Building Availability:</b> N/A					
<b>Reserved Limits:</b> None Known					

\*The I-95 Southbound ramps do not have a standard ROW width as they border the I-95 corridor.

### UTILITY IMPACTS/ISSUES

**Team Member:** Derrick Carleton (MaineDOT), Jared Winchenbach (Gorrill Palmer)

**Above Ground Utilities:** AT&T Co (Bangor Office), Charter Communications, Eastern Maine Healthcare Systems, Emera, FairPoint Communications – Northern New England Telephone Operations LLC, Lincolnville Telephone Company, Maine Fiber Company, Oxford Networks, Revolution Networks, Time Warner Cable (Bangor Central Office), University of Maine System.

**Below Ground Utilities:** Bangor Fire Department, Bangor Gas Company, Bangor Sewer Department, Bangor Water District, City of Bangor, Buckeye Partner, Central Maine & Quebec Railway, MaineCom Services, OTT

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Communications (North), Springfield Terminal Railway, U.S. Geological Survey, University of Maine – Office of Facilities Management.

	<b>Necessary for this Project? (Yes or No)</b>	<b>Coordination Still Needed? (Yes or No)</b>
<b>Pole List:</b>	Yes	Yes
<b>Utility Agreements:</b>	TBD	Yes
<b>RR PRTS:</b>	No	No
<b>Railroad Agreement:</b>	No	No

**ROW issues related to utilities:** TBD

### GEOTECHNICAL COORDINATION

**Team Member:** Kate Maguire (MaineDOT)

**Available Soils Information:** None

**Additional Borings Required?** Yes, borings will be required at all signal pole locations.

**Additional Geotechnical Analysis Required?** No

**Comments by Geotechnical Engineer:** None

**Are Foundations for Overhead Sign Structures, Traffic Signals or Lighting Required?** Yes, one per foundation location.

### PUBLIC PROCESS

**Proposed Public Contact Method and Date(s):** Numerous public meetings have been held in the past. Specific to this project, two public meetings have occurred (3/22/18, 9/27/18) and a third public meeting will be scheduled for June 2019.

#### **Concerns Identified at Preliminary Public Meeting:**

Concerns were raised with restricting left turn movements at Earle Ave. Concerns were raised by the business owners located adjacent to the intersection of Earle Ave and Broadway.

**Municipal Agreement:** Yes

### M&O ISSUES /CONCERNS

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None anticipated at this time

## CONSTRUCTION SCHEDULE

PS&E Date	08/17/2020
Advertise Date	09/07/2020
Construction Begin Date	10/12/2020
Construction Complete	TBD

## TAME RESULTS *(Transfer results from returned Tame Request Form)*

Morning Restrictions	TBD
Evening Restrictions	TBD
Maximum Closure Length	TBD
Minimum Lane Width	TBD

**Additional Comments:** None at this time

## BUDGET

	Programmed	Available	PDR Estimate
Date	03/28/2019	03/28/2019	05/30/2019
Preliminary Engineering	\$100,000	\$99,500	\$130,000
Right of Way	\$0.00	\$500	\$40,000
Construction	\$0.00	\$0.00	\$1,296,000
Construction Engineering	\$0.00	\$0.00	\$100,000
Other	\$0.00	\$0.00	\$0.00
<b>TOTAL</b>	\$100,000	\$100,000	\$1,566,000
<b>Total Cost per Mile:</b>	N/A	N/A	N/A
<b>Funding Strategy (Sources):</b>	The project is not currently funded for construction.		

## SUMMARY OF PRELIMINARY ENGINEERING

### Alternatives Analysis

*(This may only be applicable to some projects, such as Large Culverts, Rehabilitations, and Roundabouts.)*

This section is not applicable to this project.

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## **Design Variances**

*(Discuss design elements that do not meet standard but do not require a formal design exception)*

There are no design variances for the project at this time.

## **Proposed Design Elements**

*(Discuss existing vs. proposed condition)*

### **Horizontal Alignment:**

The proposed horizontal alignment for Broadway (Route 15), I-95 SB off ramp, Earle Avenue, I-95 NB ramps, and Center Street will match the existing horizontal alignment.

The proposed horizontal alignment for the I-95 SB on ramp has been redesigned to relocate the intersection with Broadway (Route 15) 75' to the South. The new ramp design better aligns with the I-95 SB off ramp and reduces the size of the intersection, making the signal operations along the Broadway corridor more efficient.

### **Vertical Alignment:**

The proposed vertical alignment for Broadway (Route 15), I-95 SB off ramp, Earle Avenue, I-95 NB ramps, and Center Street will not be altered during this project.

The proposed vertical alignment for the I-95 SB on ramp has been redesigned based on the new horizontal alignment noted above. The proposed ramp profile was designed match the grades and low point of the existing ramp profile.

### **Typical Section:**

**Broadway (Route 15)** – The existing 58' roadway section (five 11' travel ways with 1.5' paved shoulders) is curbed with sidewalks on both sides. The proposed typical section will be restriped to maintain four 10' travel ways (design exception required), one 11' two-way center turn lane, and 3.5' – 4' shoulders. In areas, of new curb or redesigned intersection geometry, a 2' pavement sawcut with 6" hot mix asphalt, 24" gravel box, and vertical granite curb is proposed. Varying width bituminous sidewalks are set to replace existing non-compliant sidewalks along Broadway.

**I-95 SB on Ramp** – The existing 20' ramp section (16' travel way with 2' paved shoulders) is curbed with ditching on both sides. The proposed typical section features a full depth reconstruction of the ramp on an alternate alignment. The new roadway will maintain a 14' travel way, 4' left side shoulder and an 8' right side shoulder with sloped curb and ditching. The section will be composed of 6" hot mix asphalt and 24" subbase aggregate course – gravel, type D.

**I-95 SB Off Ramp** – The existing 28' ramp section (two 12' travel ways with 2' paved shoulders) is curbed with ditching on both sides. The proposed typical section will be restriped to maintain two 13' travel ways and 1' paved shoulders. In areas of new curb ramps or redesigned intersection geometry, a 2' pavement sawcut with 6" hot mix asphalt, 24" box gravel and sloped granite curb is proposed.

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I-95 NB On/Off Ramps – The proposed ramp typical section in areas of curb work consists of a 2' pavement sawcut with 6" hot mix asphalt, 24" gravel box and new sloped granite curb. Curb work on the northbound ramps is limited to areas of sidewalk ramp improvements and no striping improvements are associated with this section of the project.

Earle Avenue – The existing 30' roadway section (15' travel ways with no striped shoulder) is curbed with a sidewalk on the south side, adjacent to Tri-City Pizza. The proposed design introduces a curbed channelization island to force right in, right out turning movements. The exterior of the island will be constructed with a 2' pavement sawcut with 6" hot mix asphalt, 24" gravel box and new sloped granite curb. The interior of the island will be composed of 6" of hot mix asphalt with 12" of new gravel. The outside shoulders of Earle Avenue will be constructed with a 2' pavement sawcut with 6" hot mix asphalt, 24" gravel box, vertical granite curb with either a 5.5' bituminous sidewalk (south side) or a 10' esplanade (north side). The roadway will be restriped to maintain 10' travel lanes with minimum 1' paved shoulders.

Center Street – The intersection of Broadway (Route 15) and Center Street is being reconstructed. The design removes the Center Street slip lane from Broadway and improves the intersection geometry by reducing the skew of the entering lanes. The area previously occupied by the slip lane will be turned into a pocket park by the city. Center Street will be widened and restriped at the intersection to maintain three 11' travel ways with 2'-4' paved shoulders. New curb (a combination of vertical granite and bituminous), a 4' minimum width esplanade and 5' bituminous sidewalk will be constructed along both sides of Center Street. The typical section will be constructed with a 2' pavement sawcut, 6" hot mix asphalt and 24" gravel box.

Areas of island removal/ intersection reconstruction – In these sections it is assumed that the subbase is acceptable and will require partial depth reconstruction. The typical section will be composed of 6" hot mix asphalt and 12" of new gravel.

## **Pavement Structure:**

In roadways - The proposed pavement structure for roadways on this project is 6" hot mix asphalt and 24" aggregate subbase course - gravel. type D.

In Commercial Drives/ Parking Lots - The proposed pavement structure for commercial drives on this project is 3" hot mix asphalt and a minimum 11" aggregate subbase course - gravel, type D.

In Residential Drives - The proposed pavement structure for residential drives on this project is 2" hot mix asphalt and a minimum 12" aggregate subbase course - gravel, type D.

Bituminous Sidewalks and inside Curbed Islands – The proposed pavement structure for sidewalks and interior island pavements is 2" hot mix asphalt and 12" aggregate subbase course - gravel, type D. Earle Ave channelization island will receive 6" hot mic asphalt.

## **Drainage/Hydrology:**

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Closed drainage exists along the project, drainage will tie into existing drainage features where possible. Open drainage will be required along the I-95 ramps and will tie into proposed closed drainage design via field basins.

**Guardrail:**

There is no guardrail required on this project.

**Intersection Geometry:**

Broadway (Route 15)/I-95 SB Ramps Intersection – The intersection was designed to accommodate a WB-67 vehicle in every direction.

Broadway (Route 15)/Earle Avenue – The intersection was redesigned with a channelization island to force right in, right out movements. This island was developed to accommodate school buses and a ladder fire truck. Larger vehicles accessing Earle Ave will be required to travel over the channelization island.

Broadway (Route 15)/I-95 NB Ramps/Center Street – The intersection accommodates different design vehicles on either side of Broadway (Route 15), see above for additional details:

**Right-of-Way:**

See above for information.

**Utilities:**

Coordination with overhead and underground utilities will be required during final design.

**Other Design Issues:**

*(Discuss any issues that have been identified but have not yet been resolved.)*

**DRAFT PDR DISTRIBUTION TEAM COMMENTS AND RESPONSE**

*(Minor edits and corrections can be made to the body of this document above without reference in this section. More significant comments that result in design or other changes should be noted in this section before the Final Distribution.)*

**Comments:**

<b>Comment Deadline</b>	<b>Date:</b>
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# **MaineDOT - HIGHWAY PRELIMINARY DESIGN REPORT**

**Project Name:** *Broadway Roadway and Intersection Improvements*  
**WIN:** 21663.00

**Draft Distribution Date:** 05/30/2019  
**Final Distribution Date:** TBD

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## **APPROVALS**

### **Local Agency Approval**

<b>Preliminary Design Report Complete</b>		<b>Date:</b>
<b>LPA certified official</b>		

### **MaineDOT Approval**

<b>Preliminary Design Report Complete</b>		<b>Date:</b>

***For Large Culvert Projects, Preliminary Design Report Complete also signifies Plan Impacts Complete.***