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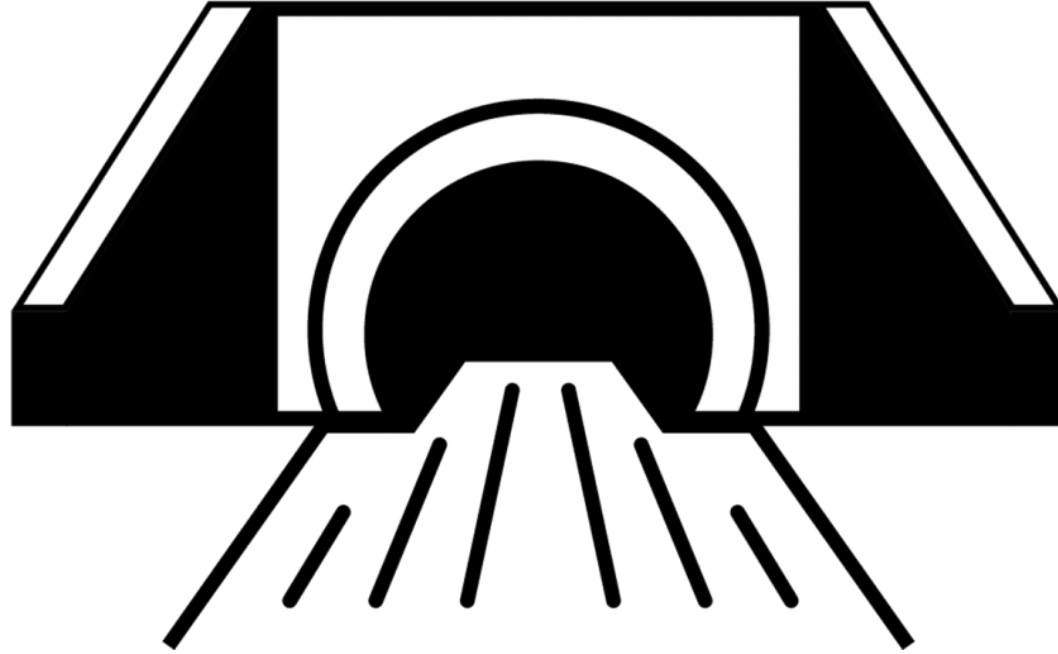
# Public Works and Engineering Department

## Capital Improvement Plan 2027-2031

- Stream Crossings
- Road Maintenance
- Major Road Projects
- Other Transportation Projects

Trey Crews, PE  
Town Engineer  
[tcrews@brunswickme.gov](mailto:tcrews@brunswickme.gov)

Ryan Leighton  
Public Works Director  
[rleighton@brunswickme.gov](mailto:rleighton@brunswickme.gov)



Stream Crossings

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### Comparison of Crossing Structures

Crossing Structure Type	Material	Cost	Life Span (years)	Advantages	Disadvantages
Bridge A	Steel-reinforced concrete abutments (poured in-place) and decking on steel I-beam stringers	\$\$\$	50-75	Natural bottom, durability, snow-plowable	High cost
Bridge B	Waste-block concrete abutments with steel I-beam stringers and timber deck (possibly paved or alternate decking)	\$	50-75; timber redeck 5-10	Natural bottom, low cost; simplicity	Limited abutment height; snow plowing limited
Bridge C (3-Sided Box Culvert)	Steel-reinforced concrete, galvanized steel or aluminum	\$\$	50-75	Natural bottom, simplicity	Weight of concrete structures can limit installation options
Open Bottom Arch	Galvanized Steel, aluminum, steel-reinforced concrete	\$\$	50-75	Natural bottom, ease of transport, can be low profile	Care must be taken to install and protect footings, assembly required for metal plate structures
Embedded Box Culvert	Steel-reinforced concrete	\$\$	50-75	Natural bottom if spans stream; variety of configurations	Must span stream and be set below stream elevation to avoid outlet perch
Embedded Pipe Arch	Galvanized steel, steel-reinforced concrete	\$ - \$\$	20-75	Natural bottom if spans stream; wide for given volume; low cost of steel	Steel short life span; not for use with ledge
Embedded Pipe	Round Galvanized steel, plastic, steel-reinforced concrete	\$	20-75	Natural bottom if spans stream; lowest cost	Limited to smaller sizes; not for use with ledge
Round Pipe (at stream grade)	Galvanized steel, plastic, steel-reinforced concrete	\$	20-75	May allow fish passage over time if spans stream; lowest cost	Rarely adequate for fish passage at less than stream width (develops outlet perch); limited to smaller sizes

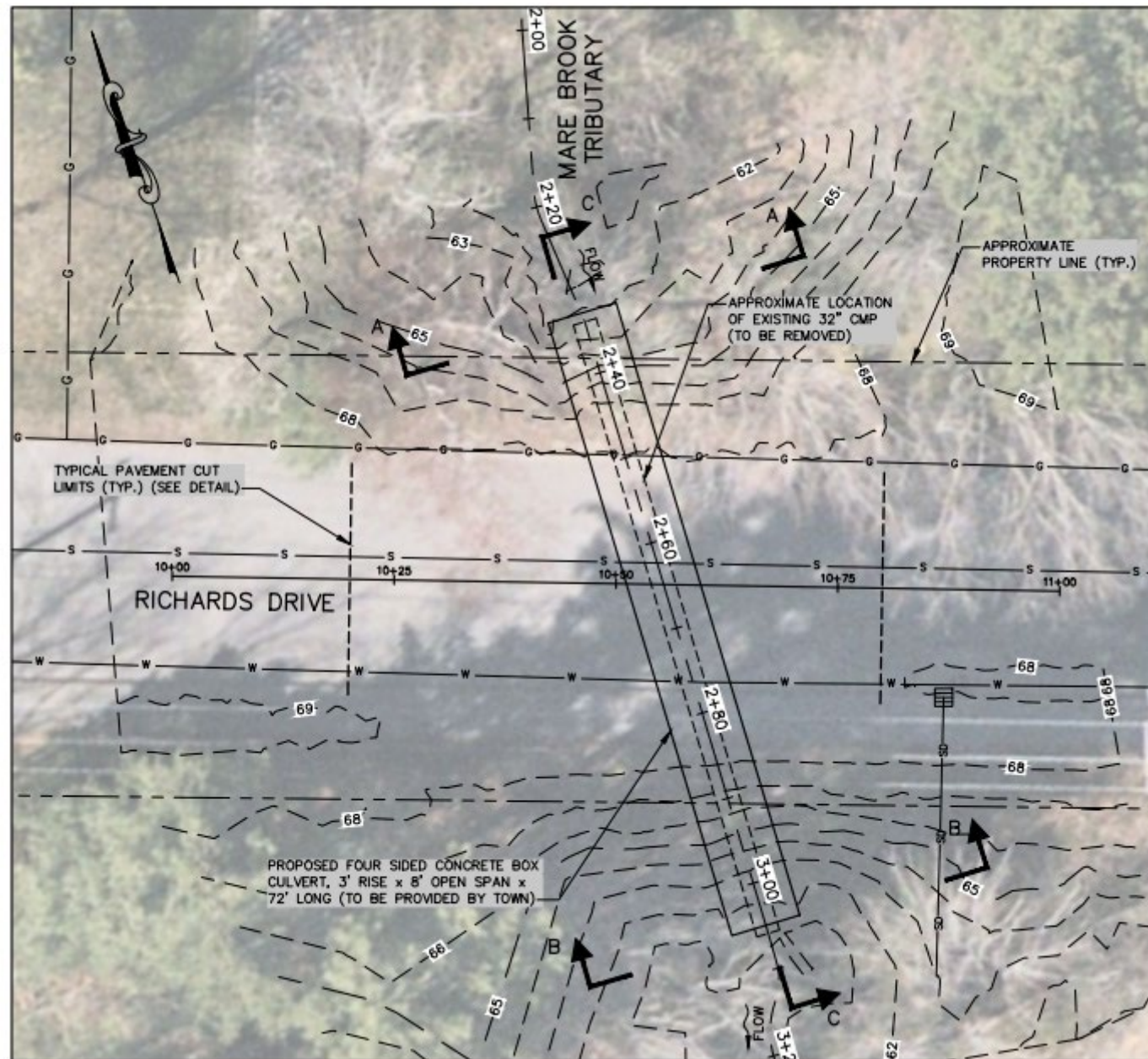


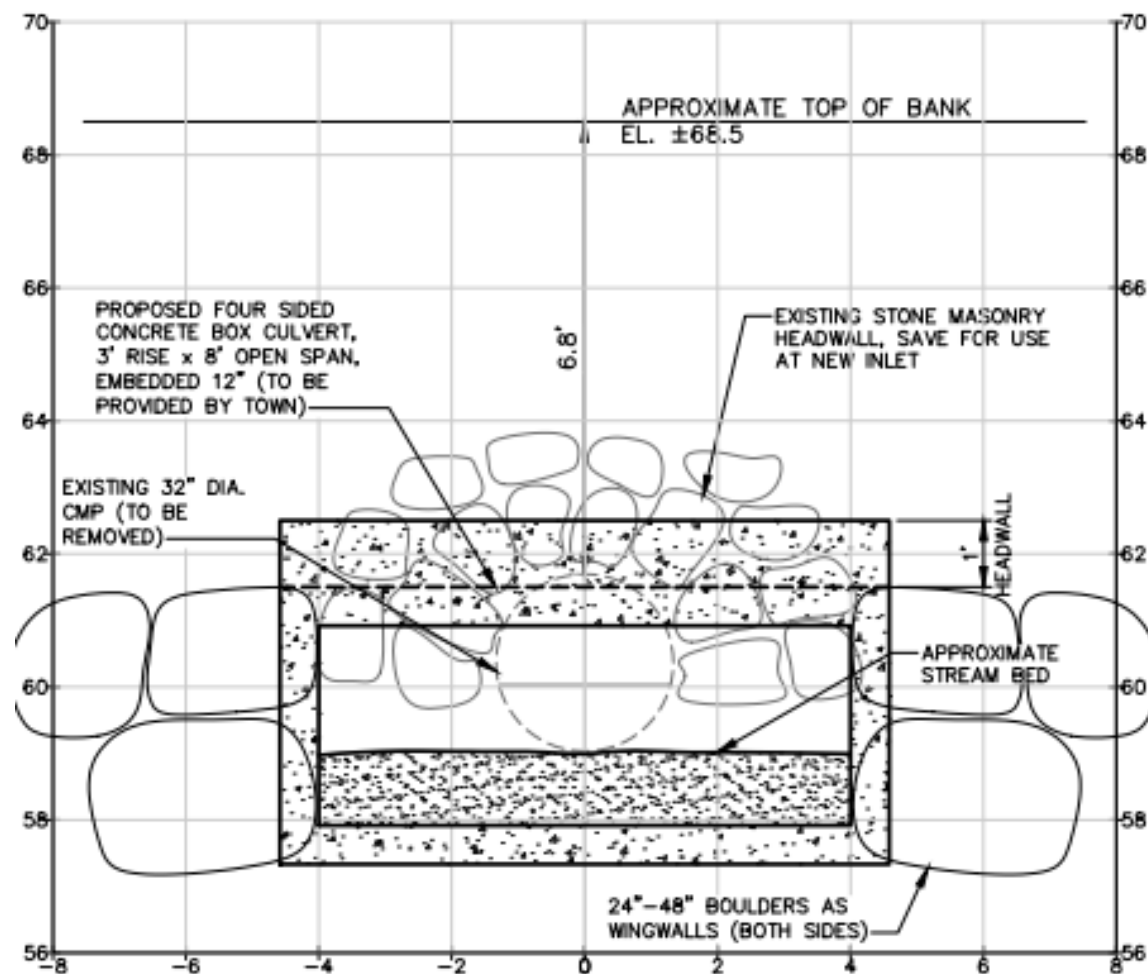
# Richards Culvert Replacement

Design paid for by 319 grant

Construction funding request of \$450,000 for 2026-27

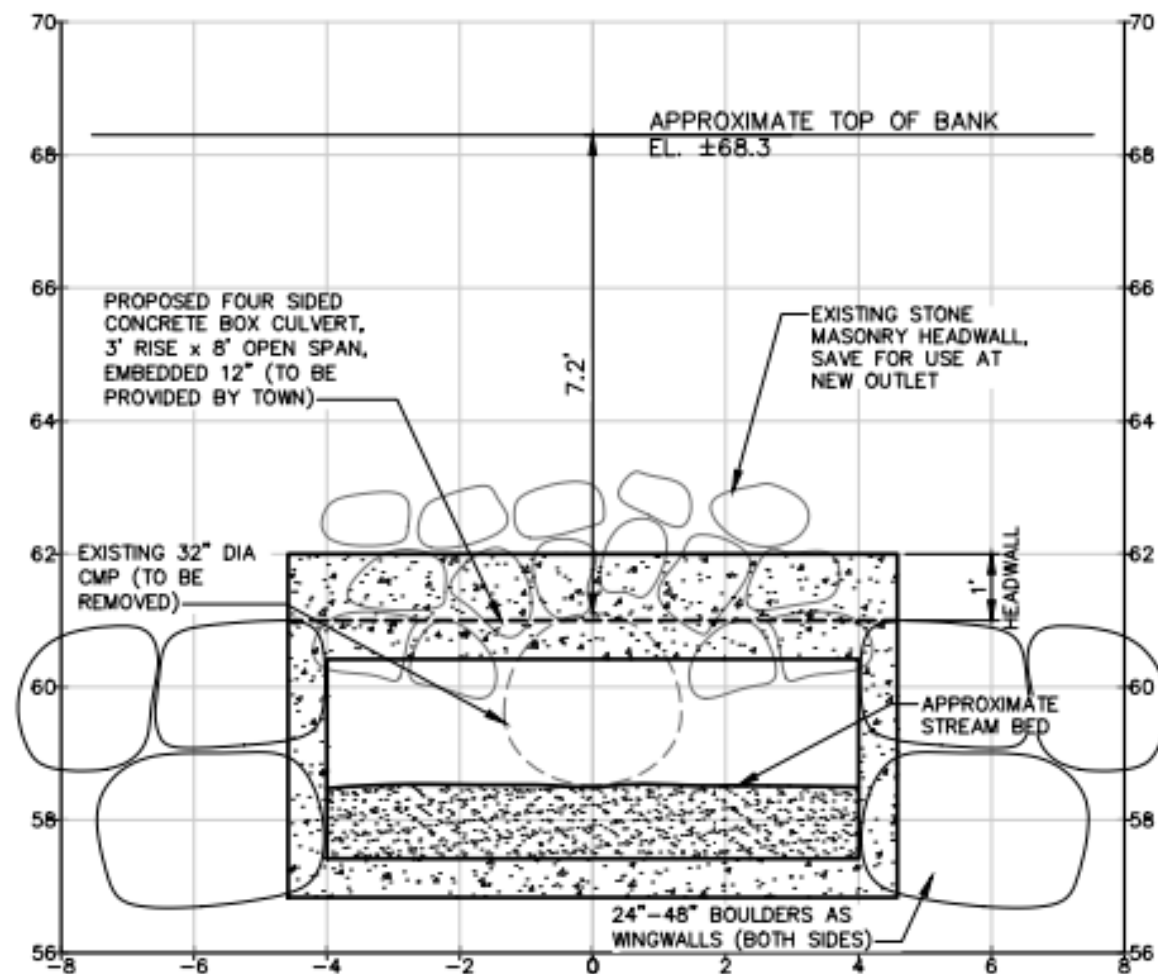






### SECTION A-A UPSTREAM

SCALE: 1"=2' HORIZ. & VERT.



### SECTION B-B DOWNSTREAM

SCALE: 1"=2' HORIZ. & VERT.





# Sparwell Road Culvert Replacement and Road Realignment

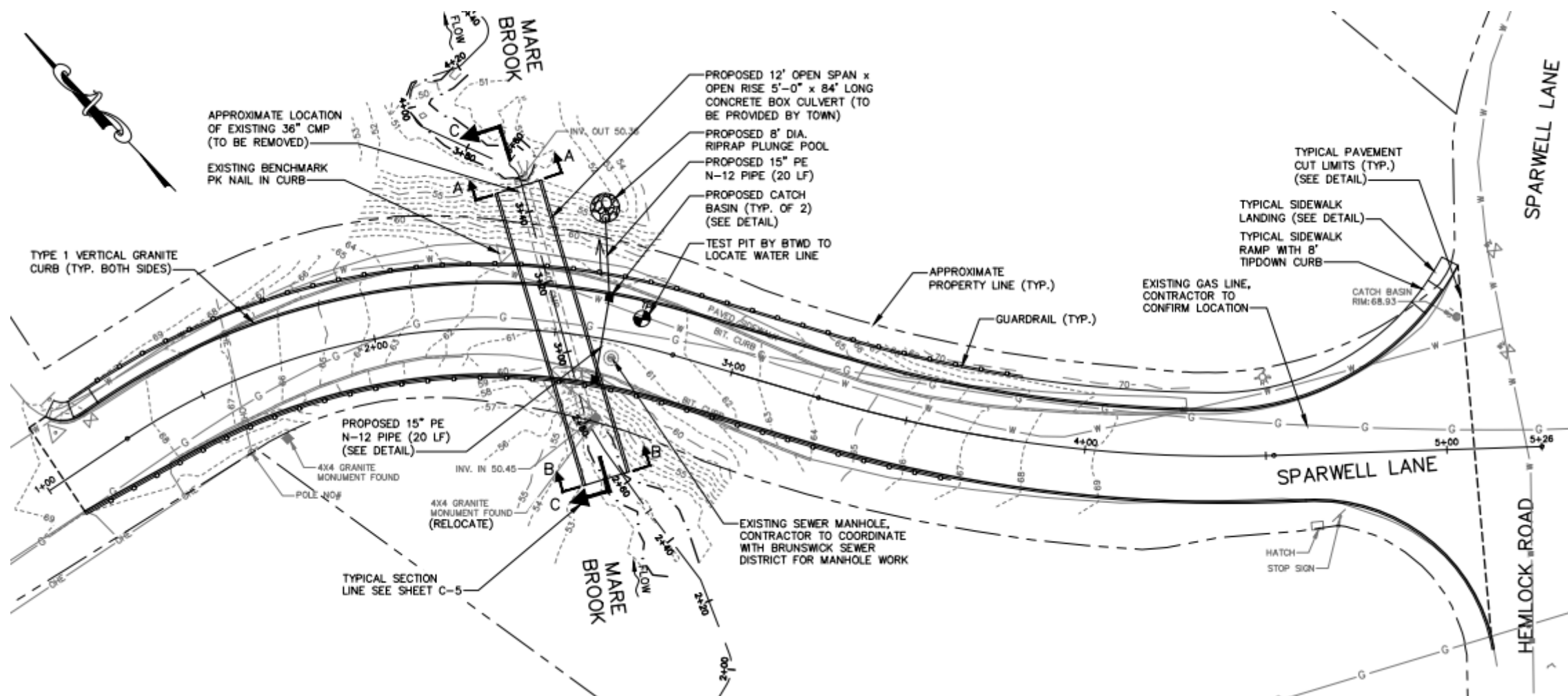
Design paid for by 319 grant

Construction funding request of \$1,00,000 for 2026-27





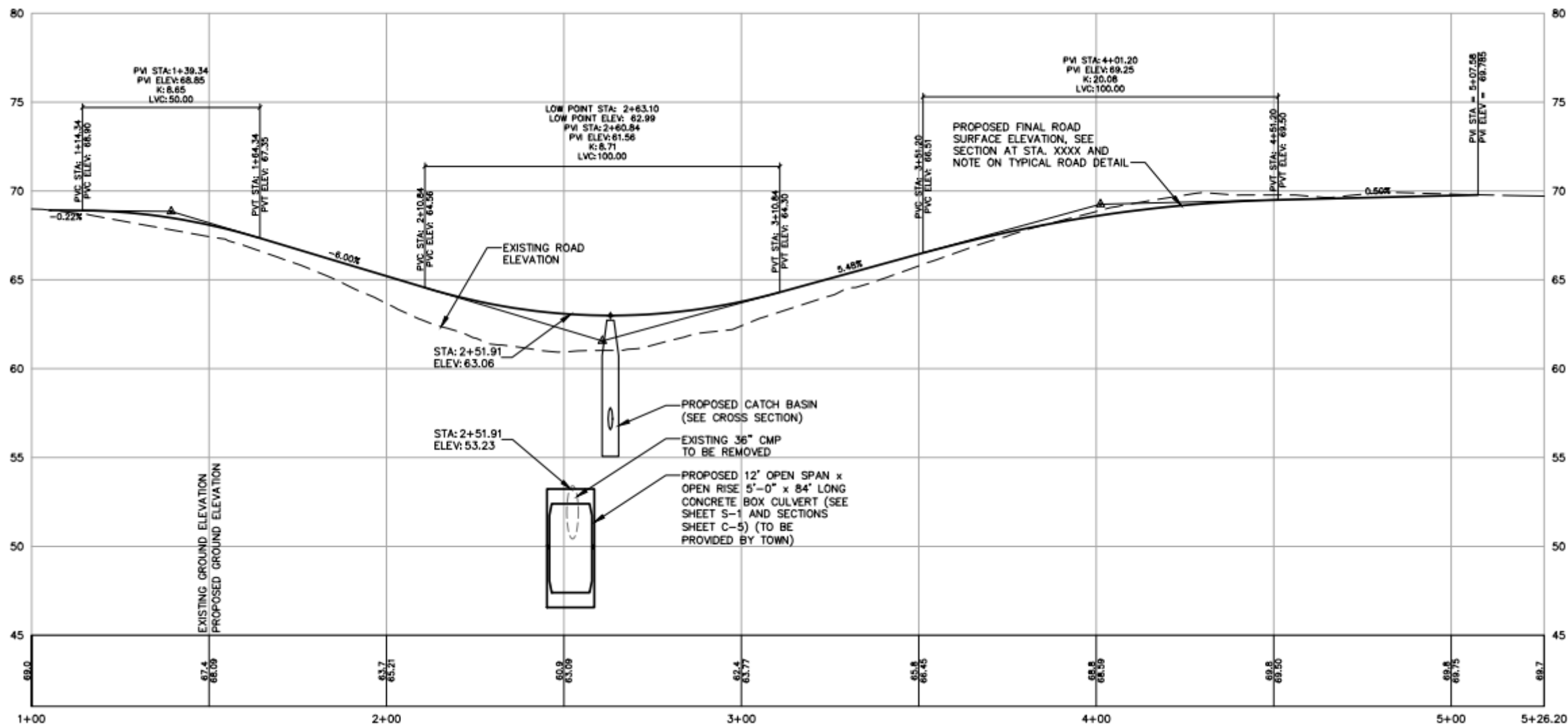










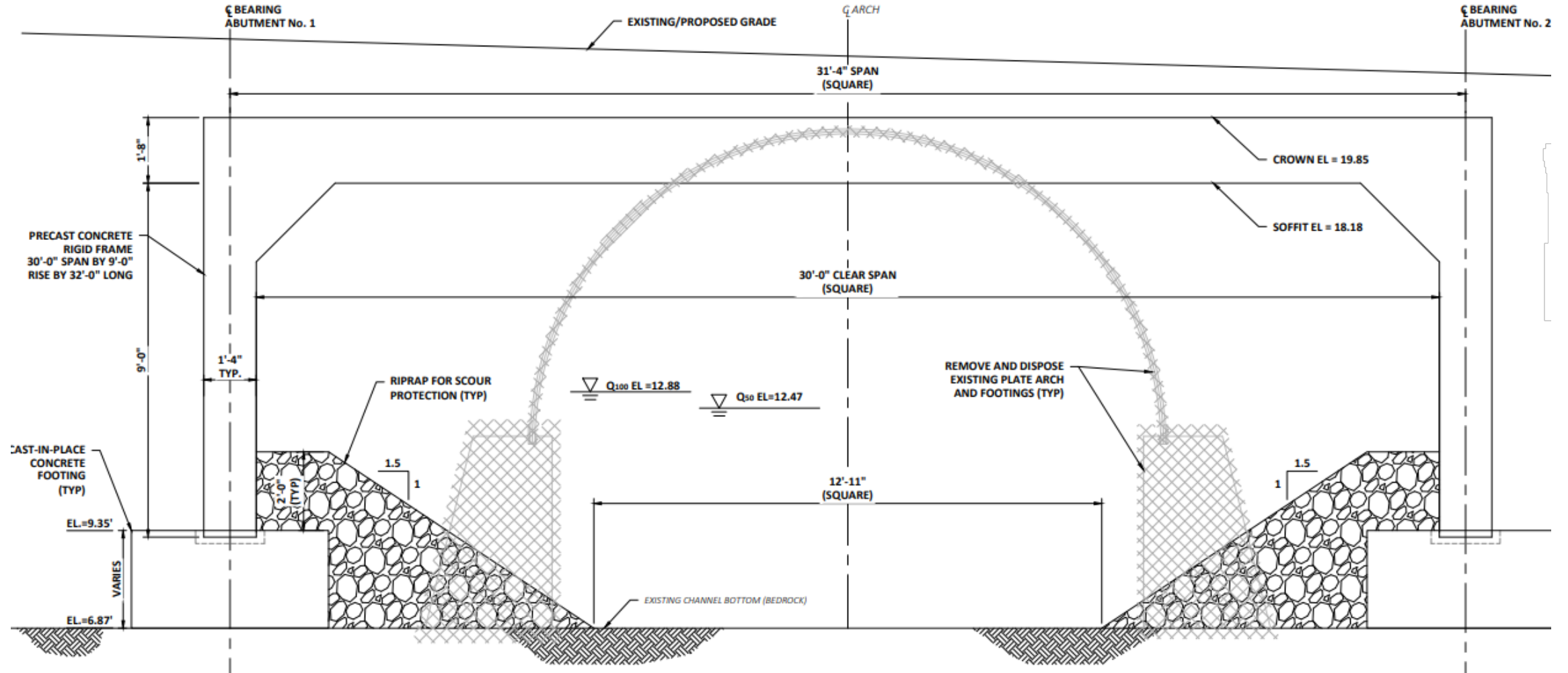




# Bunganuc Road Culvert Bridge Replacement

\$150,000 already appropriated for design and permitting  
\$2,200,000 estimated construction cost in 2028-29



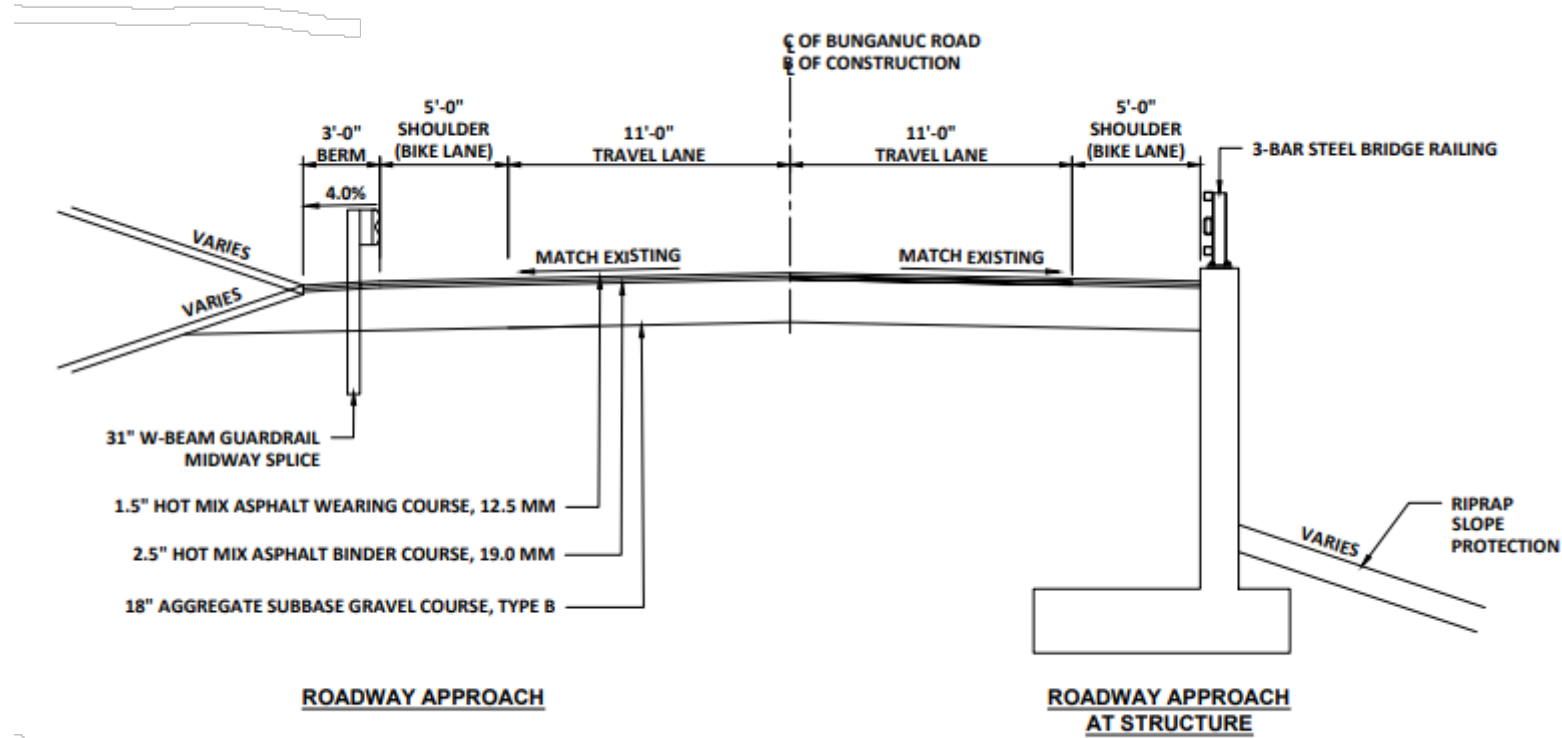


**LONGITUDINAL SECTION**  
**ALTERNATIVE 2: PRECAST CONCRETE RIGID FRAME**  
 SCALE: 1/2"=1'-0"









## TYPICAL ROADWAY APPROACH SECTION

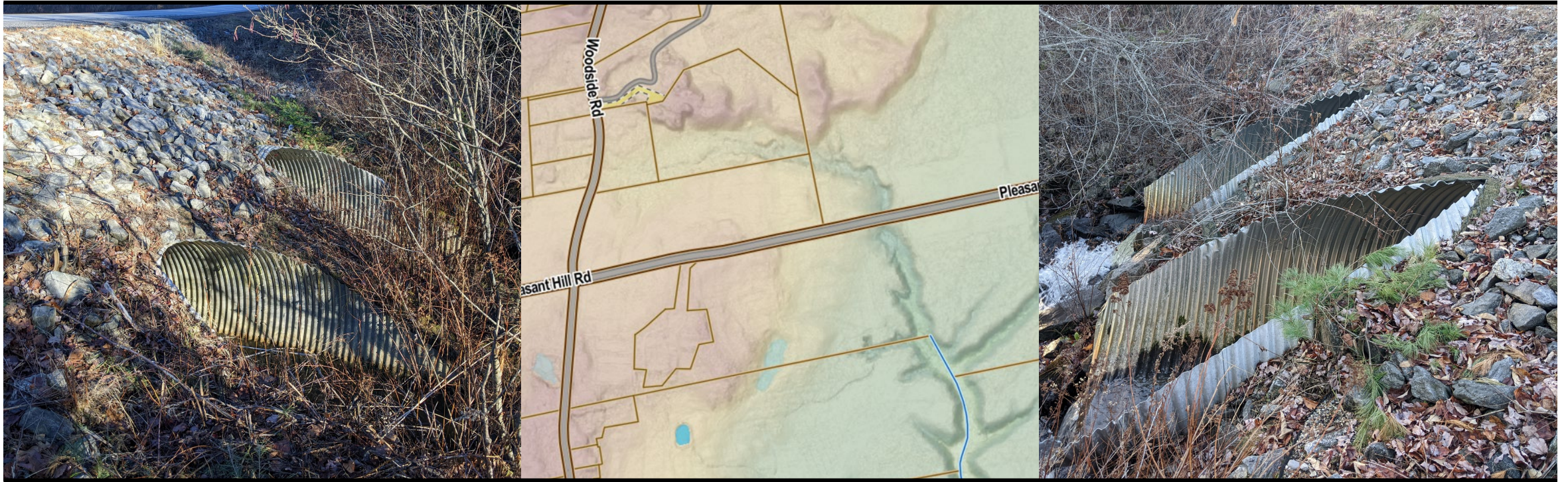
SCALE: 1" = 5'



# River Road Culvert

Design/Permitting \$75,000 Appropriated  
Construction Request \$1,000,000 in 2028-29





# Pleasant Hill Rd Culvert

Design/Permitting Request \$100,000 in 2026-27

Construction Request \$1,000,000 in 2029-30

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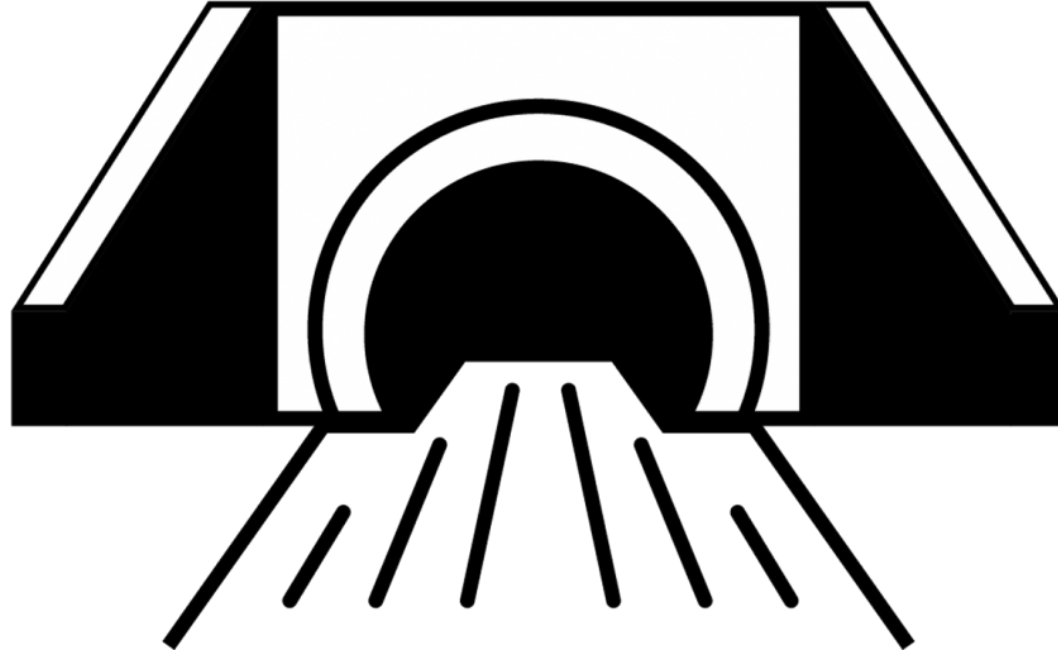


# Highland Road Culvert

Design/Permitting Request \$100,000 in 2028-29

Construction Request \$450,000 in 2029-30





# Stream Crossings New Projects

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# Harpswell Rd Culvert

Design/Permitting Request \$200,000 in 2026-27

Construction Request \$1,750,000 in 2028-29







# Maine St Culvert

Design/Permitting Request \$200,000 in 2027-28

Construction Request \$1,500,000 in 2029-30



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Comments  
Questions  
Concerns

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# Road Maintenance





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# PAVEMENT MANAGEMENT GOALS

- Identify roads in poor condition and evaluate different treatment options and costs
  - Prepare three-year plan to balance costs and scheduling with other projects
  - Proactive coordination with Public Works, Brunswick Sewer District, and Brunswick-Topsham Water District to share costs and do other upgrades/replacements
  - Repair and improve sidewalks, curbing, crosswalks, and bike lanes where existing
  - Evaluate roads with regards to the Town of Brunswick Complete Street Policy (ie accommodating all modes of transit)
  - Reconstruct inadequate roads (ie roads with severe structural issues or costly annual maintenance)
-

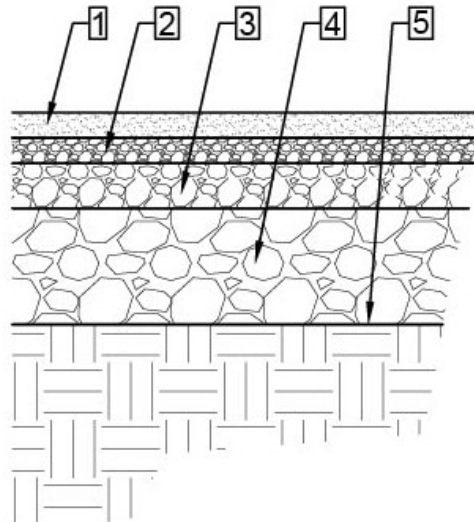


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# Pavement Typical Section

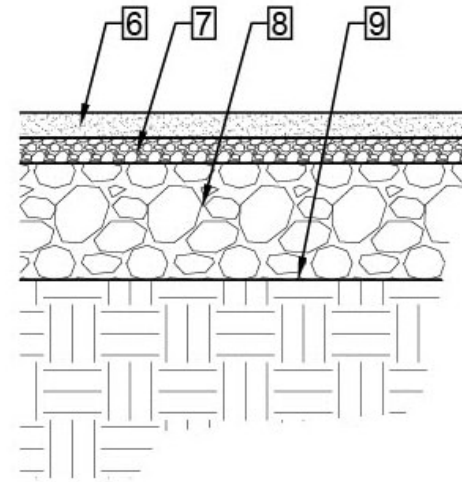
## HIGH VOLUME ROADWAY

1. HMA SURFACE COURSE
2. HMA INTERMEDIATE COURSE
3. HMA BASE COURSE
4. GRAVEL SUBBASE
5. SUBGRADE

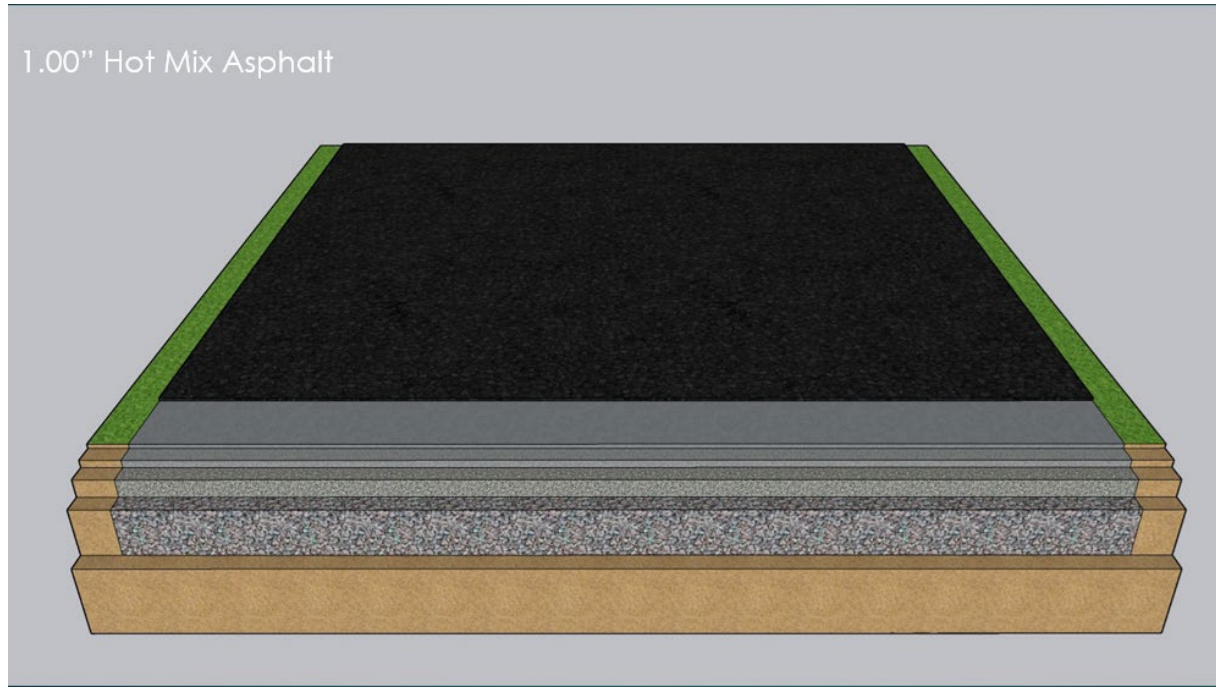


## LOW VOLUME ROADWAY

6. HMA SURFACE COURSE
7. HMA INTERMEDIATE SURFACE
8. GRAVEL BASE COURSE
9. SUBGRADE







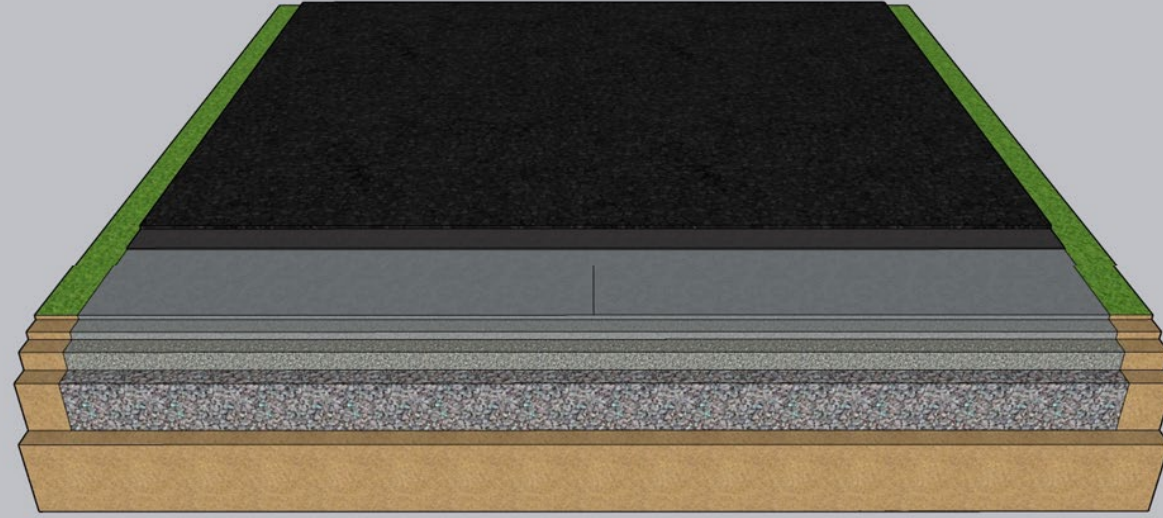
# Overview of Treatments – Resurfacing

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1.25" Hot Mix Asphalt  
0.50" Hot Mix Asphalt – Shim



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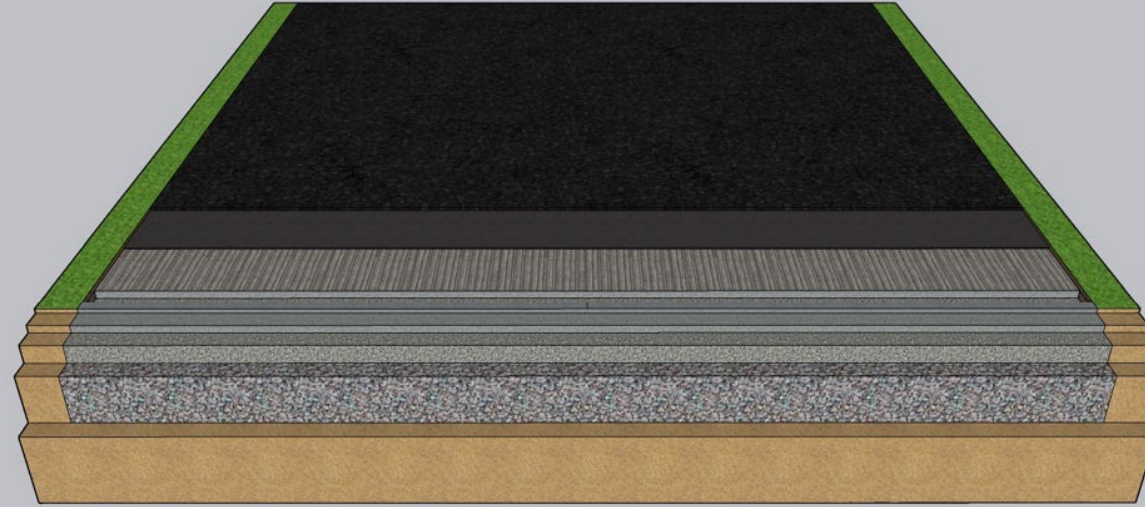
## Overview of Treatments – Shim & Overlay

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1.25" Hot Mix Asphalt - Surface  
0.50" Hot Mix Asphalt - Shim  
Mill Roadway



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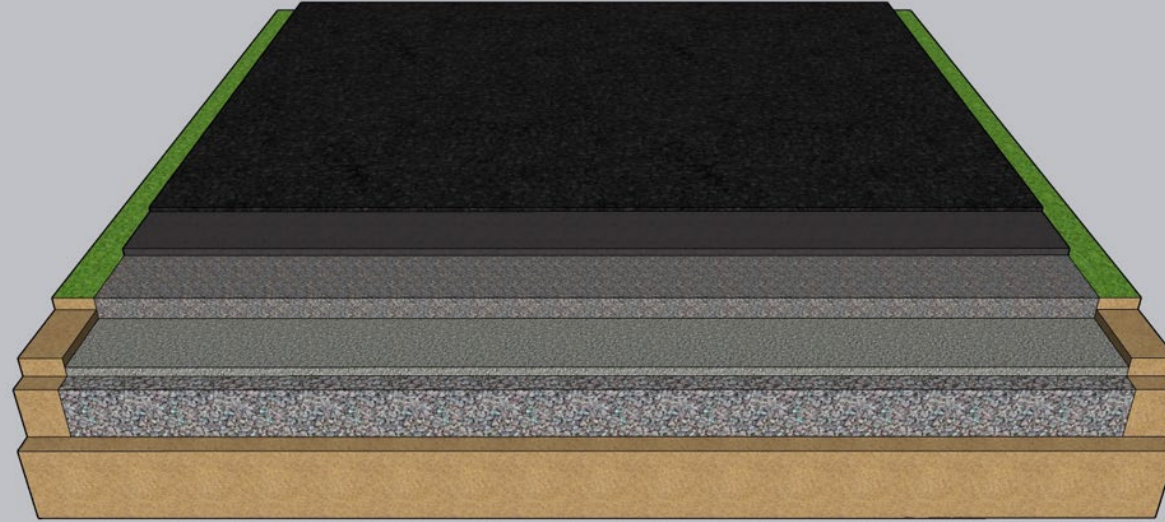
## Overview of Treatments – Mill & Fill

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1.25" Hot Mix Asphalt - Surface  
2.50" Hot Mix Asphalt - Binder  
Reclaim Roadway



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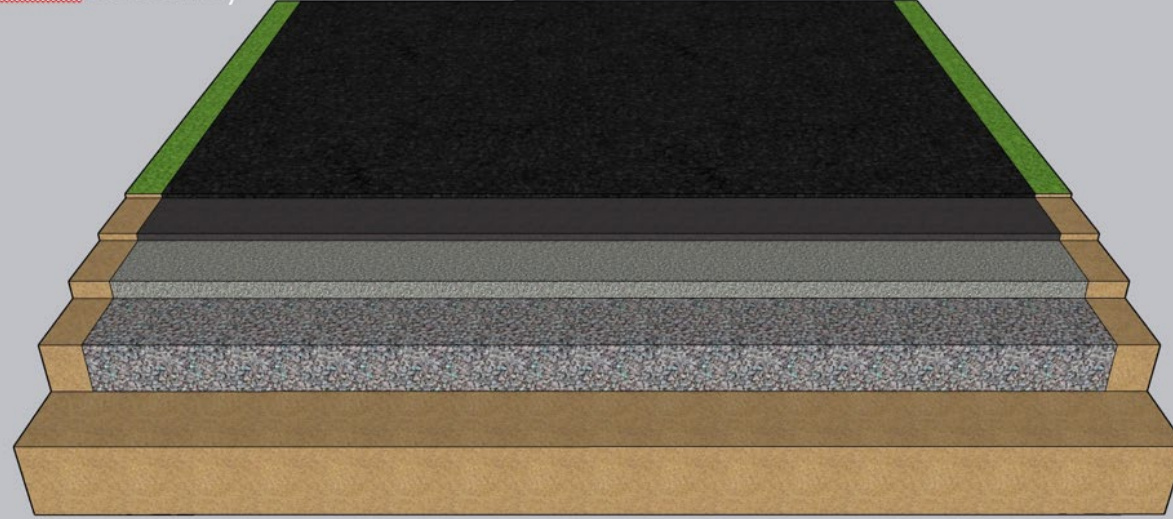
## Overview of Treatments – Reclaim

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1.50" Hot Mix Asphalt - Surface  
2.50" Hot Mix Asphalt - Binder  
21.00" Gravel  
Boxcut Roadway



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## Overview of treatments – Full Depth Reconstruction

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# Treatment Selection

## - **Less intensive treatments**

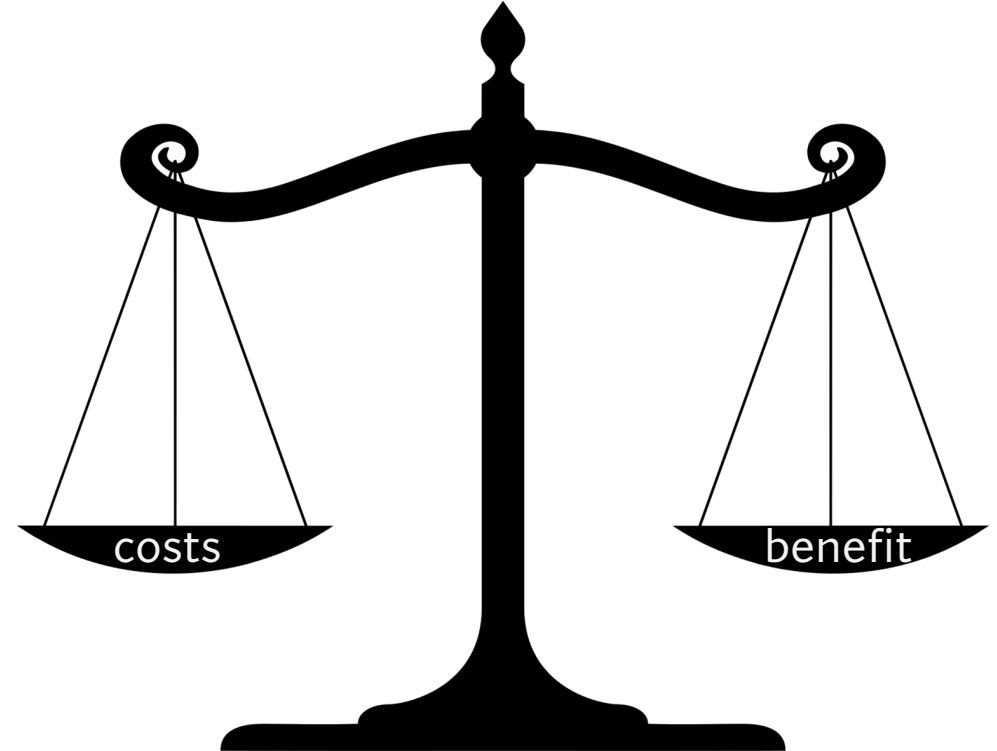
- Pros: low cost = more miles paved
- Cons: can negatively affect drainage as road is built up. Cannot address structural failures which lowers potential service life

## - **Medium intensive treatments**

- Pros: longer service life, fewer negative effects on existing drainage patterns
- Cons: Can fix structural issues in upper layers of pavement, but not lower

## - **High intensity treatments**

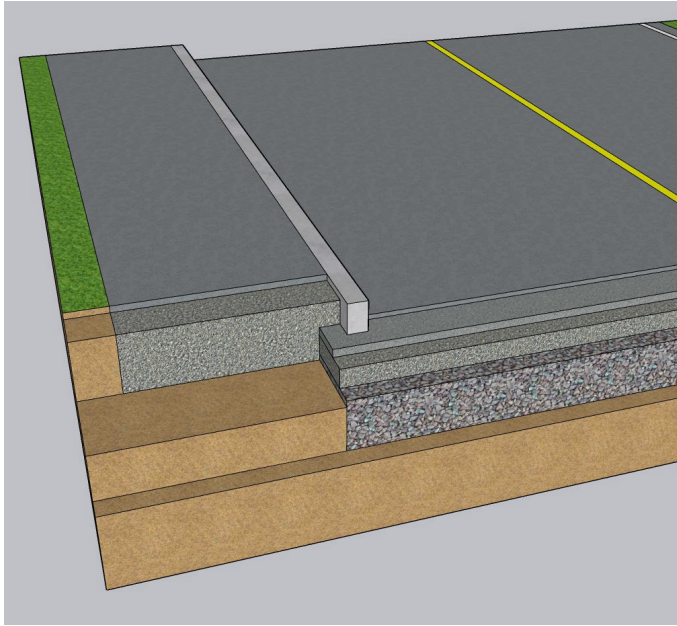
- Pros: rebuilt roads have significantly longer projected lifespans, can address drainage issues, and bring up to modern road standards (widths, material, amenities)
- Cons: Cost is high and longer design and construction process.



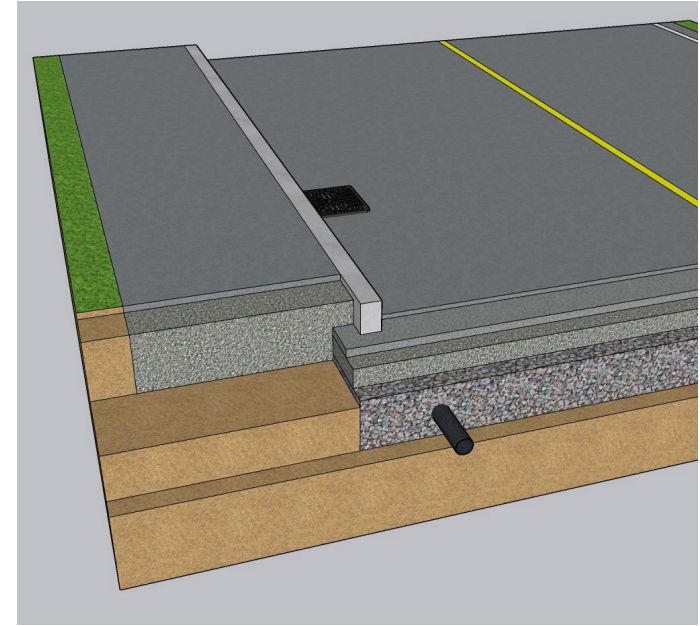


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# Amenities and Enhancements

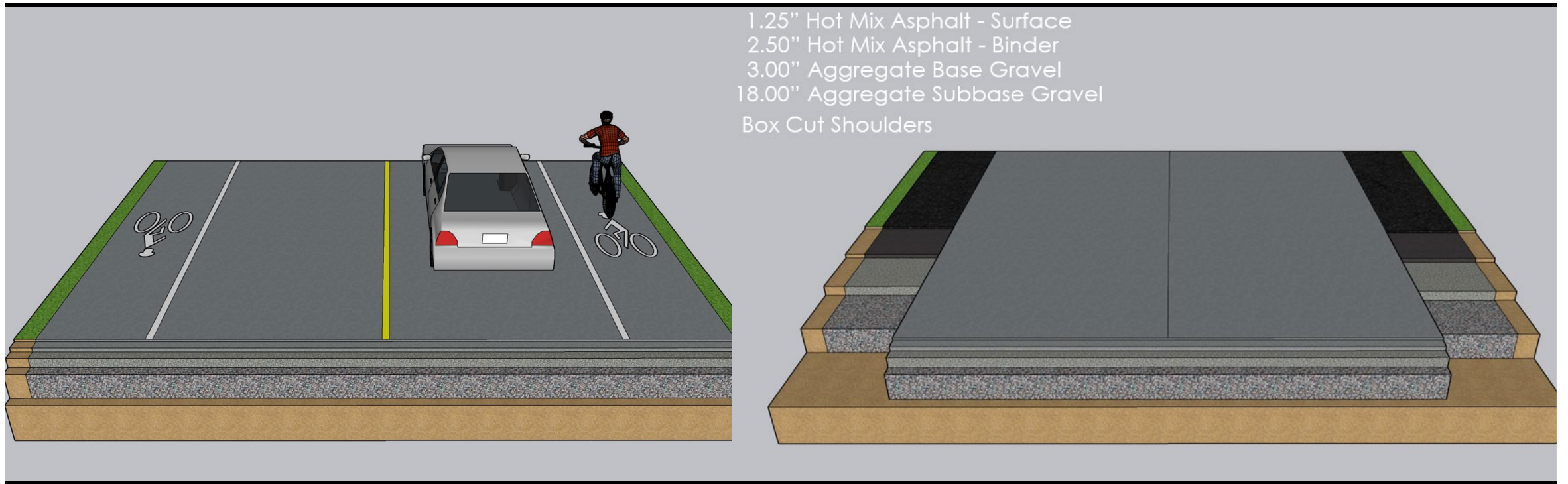


New curb, sidewalk, no drainage



New curb, sidewalk, and drainage

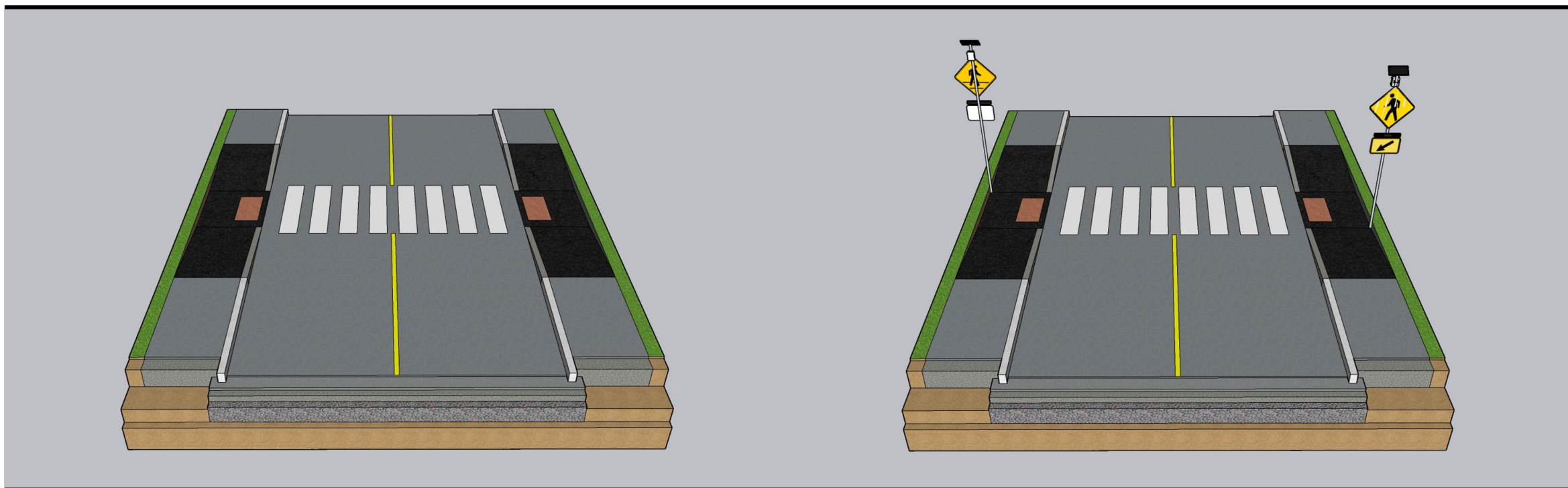
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# Amenities and Enhancements

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# Amenities and Enhancements

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	Avg. Cost	Annual Maintenance
<b>Pavement Management</b>		
Surface Treatment	\$350,000 per mile	-
Shim and Overlay	\$425,000 per mile	-
Mill and Fill	\$550,000 per mile	-
Reclaim and Pave	\$800,000 per mile	-
Full Depth Reconstruction	\$1,500,000 per mile	-
<b>Bicycle Upgrades</b>		
Bike Lanes (stripping only)	\$5,000 per mile	\$1,200 per mile
Bike Symbols (markings only)	\$5,000 per mile	\$1,000 per mile
Bike Lanes (widening road)	\$600,000 per mile	\$5,000 per mile
<b>Pedestrian Upgrades</b>		
Adding sidewalk and slipform curb	\$350,000 per mile	\$500 per mile
Adding sidewalk and granite curb	\$750,000 per mile	\$500 per mile
Adding sidewalk, slipform curb, and drainage	\$1,000,000 per mile	\$1,000 per mile
Adding sidewalk, granite curb, and drainage	\$2,000,000 per mile	\$1,000 per mile
<b>Crosswalk Upgrades</b>		
Adding marked crosswalk	\$10,000 per installation	\$500 each
Adding crosswalk with RRFB	\$30,000 per installation	\$750 each



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# Annual Road Maintenance



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# Miles Paved by Fiscal Year

2014 – 4      2020 – 8

2015 – 3      2021 – 4

2016 – 5      2022 – 4

2017 – 4      2023 – 7

2018 – 5      2024 – 4

2019 – 6      2025 – 9

Avg: 5.3 miles/year





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# Annual Paving Maintenance Reserve

Miles of Town Maintained Roads	Approximately 147 Miles
Maintenance Goal	Approximately 147 Miles / 20 years or 7.4 mi/yr

2023-2024 Paving Budget	\$2,200,000
2024-2025 Paving Budget	\$2,250,000
2025-2026 Paving Budget	\$2,400,000
2026-2027 Proposed Budget	\$3,500,000

Does not include major road reconstruction projects which are their own CIP items or MPI projects performed with Maine DOT

Annual reserves for paving maintenance establishes a baseline of funding. Work performed in a year can be highly variable due to weather, contractor availability, and type of maintenance treatments

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# 2026 Paving Plans

Morse Court	– Reclaim	– 500 FT	– Cost sharing with BSD work
Maine St	– Mill and Fill	– 7,600 FT	– MPI project with Maine DOT
Old Bath Rd	– Reclaim	– 10,600 FT	– MPI project with Maine DOT
Jordan Ave	– Full Depth Recon	– 2,700 FT	– Bonded town project
Lunt Rd	– Reclaim	– 9,500 FT	– Annual paving reserve
Mountain Ash	– Reclaim	– 950 FT	– Annual paving reserve
Balsam Rd	– Reclaim	– 580 FT	– Annual paving reserve
Wildwood Dr	– Reclaim	– 3,300 FT	– Annual paving reserve
Aspen Dr	– Reclaim	– 575 FT	– Annual paving reserve
Hickory Dr	– Reclaim	– 1,860 FT	– Annual paving reserve
Black Cherry Dr	– Reclaim	– 440 FT	– Annual paving reserve
Basswood Rd	– Reclaim	– 1,280 FT	– Annual paving reserve
Poplar Dr	– Full Depth Recon	– 800 FT	– Annual paving reserve

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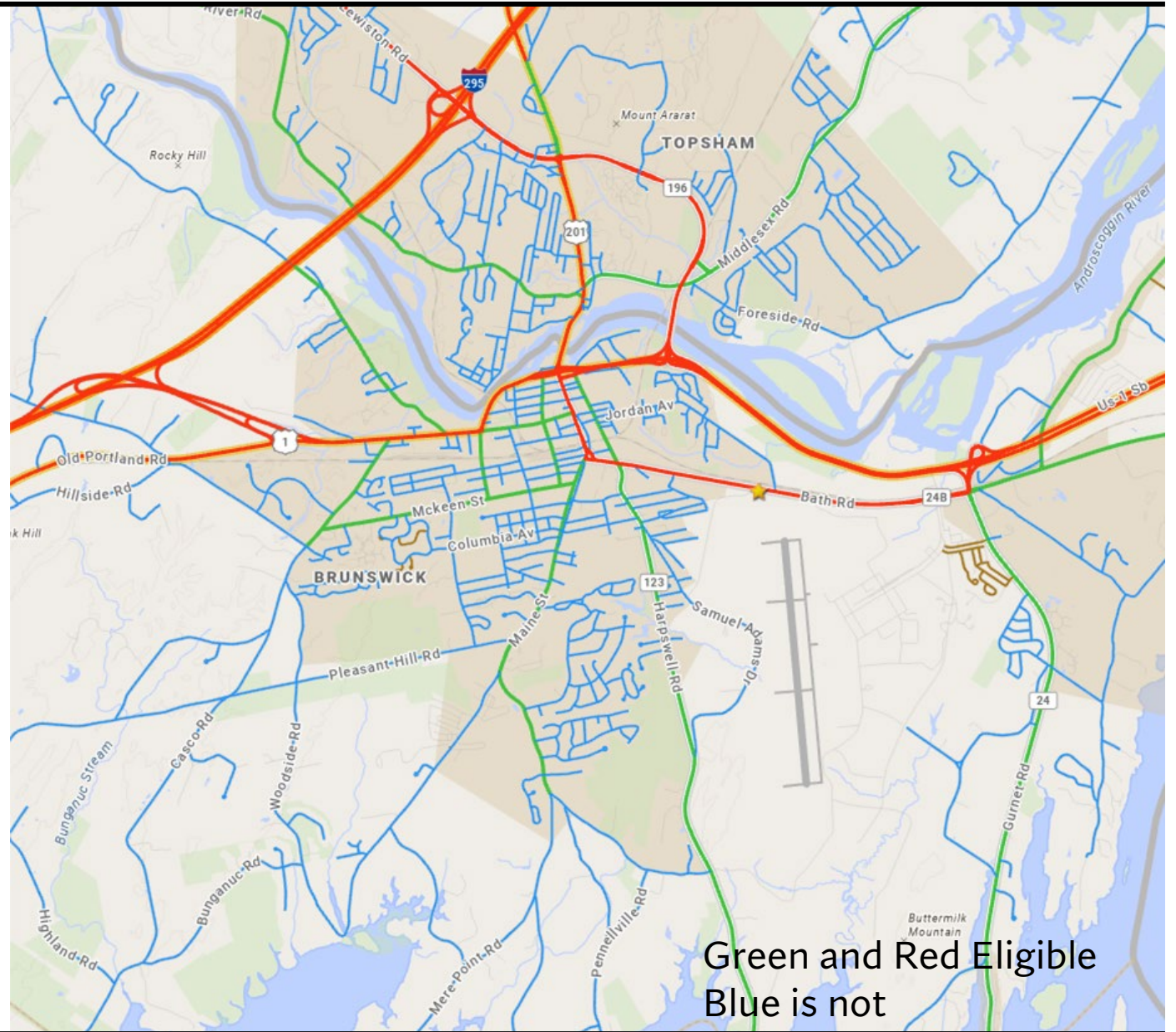
Total 40,685 Feet or 7.7 Miles



<u>Street</u>	<u>From</u>	<u>To</u>	<u>Treatment</u>	<u>~Length (FT)</u>	<u>Width (FT)</u>	<u>2025-2026</u>	<u>2026-2027*</u>	<u>2027-2028</u>	<u>2028-2029</u>	<u>2029-2030</u>
Robinson Avenue	Pleasant Street	Owen Street	Reconstruct	460	22	\$ 115,000				
Owen Street	Church Road	Robinson Avenue	Reconstruct	375	22	\$ 93,750				
Union Street	McKeen Street	Station Ave	Mill & Fill	1200	26	\$ 120,000				
Cressey Road	Mason Street	Columbus Drive	Reclaim	1200	22	\$ 132,000				
Columbus Drive	Cressey Road	End	Reclaim	700	22	\$ 77,000				
Crestview Lane	Casco Road	End	Shim and Overlay	3100	22	\$ 232,500				
Pleasant Hill Road	Raymond Road	TL	Shim and Overlay	7320	28	\$ 549,000				
Blue Heron Road	Middle Bay Road	End	Shim and Overlay	985	20	\$ 73,875				
Middle Bay Road	Mere Point Road	Harpswell Road	Shim and Overlay	6140	24	\$ 460,500				
Pennelville Road	Middle Bay Road	Old Penneville	Shim and Overlay	2795	22	\$ 209,625				
Sandy Ridge Road	Thomas Point Road	End	Shim and Overlay	1500	24	\$ 112,500				
Cleaveland Street	Federal St	Maine Street	Mill & Fill	620	24	\$ 120,000				
Morse Court	Spring Street	End	With Sewer Work	500	12		\$ 75,000			
Lunt Road	Durham Road	Town Line	Reclaim	9500	24		\$ 922,000			
Mountain Ash	Wildwood Dr	End	Reclaim	950	24		\$ 238,000			
Balsam	Wildwood Dr	Black cherry	Reclaim	580	24		\$ 135,000			
Wildwood Dr	Gurnet	Gurnet Road	Reclaim	3300	24		\$ 915,000			
Aspen Drive	Basswood	Wildwood	Reclaim	575	24		\$ 136,000			
Hickory Drive	Wildwood Dr	Wildwood	Reclaim	1860	24		\$ 443,000			
Black Cherry	Balsam	Mountain Ash	Reclaim	440	24		\$ 100,000			
Basswood	Wildwood Dr	Hickory	Reclaim	1280	24		\$ 298,000			
Poplar Dr	Basswood	Wildwood	Reconstruction	800	24		\$ 221,000			
Highland Road	Pleasant Hill Road	Bunganuc Road	Reclaim	8605	24			\$ 1,000,000.00		
Highland Road	Old Portland Road	Pleasant Hill Road	Reclaim	8370	24			\$ 875,000.00		
Adams Road	Howards Point	Bull Rock Road	Shim and Overlay	7700	22			\$ 440,000		
Harding Road	Bull Rock Road	Bath Road	Shim and Overlay	2450	22			\$ 183,750		
Woodside Road	Pleasant Hill Road	Maquoit Road	Shim and Overlay	9085	24				\$ 681,375	
Maquoit Road	Woodside Road	Maine Street	Shim and Overlay	9895	30				\$ 742,140	
Casco Road	Bunganuc Road	Pleasant Hill Road	Shim and Overlay	10000	22				\$ 750,000	
Bibber Parkway	Industrial Parkway	End	Shim and Overlay	1380	30				\$ 103,500	
Industrial Parkway	Church Road	Greenwood Road	Shim and Overlay	3470	30				\$ 260,250	
Business Parkway	Industrial Parkway	End	Shim and Overlay	1475	30				\$ 110,625	
Coombs Road	Wildwood Dr	Gurnet Road	Shim and Overlay	9335	22					\$840,150
Collinsbrook Road	Durham Road	End	Reclaim	8976	24					\$987,360
			<b>Estimated Budget</b>			<b>\$ 2,175,750</b>	<b>\$3,483,000</b>	<b>\$ 2,498,750</b>	<b>\$2,647,890</b>	<b>\$ 1,827,510</b>
*SUBJECT TO CHANGE*			<b>Total Length of Road Work (Feet):</b>			25,775	19,785	27,125	33,830	18,311
			<b>Total Length of Road Work (Miles):</b>			4.88	3.75	5.14	6.41	3.47

# Maine DOT MPI Program

- State and State-Aid highways maintenance program requires a 50% match with the Maine DOT capped at \$750,000 per project.
- Qualifying Projects: Paving, drainage, bridges, intersection improvements, or retaining walls, on any state or state aid highway regardless of Urban Compact Limits
- Non-Qualifying Projects: Projects consisting solely of sidewalks, benches or other landscaping improvements, street lighting, striping, and other ancillary items. These may be included as components of a larger project addressing the core of the road. Projects on local roads do not qualify.





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# MPI Reserve Program

## Recent Projects

2023 – Church Rd (Pleasant St to Greenwood Rd) – Mill and Fill

2024 – McKeen St (Church Rd to Stanwood St) – Mill and Fill with ADA Upgrades and drainage improvements

## Approved Projects

2025 - Maine St (Bath Rd to Richards) – Mill and Fill with ADA Upgrades

2025 – Maine St (Richards Dr to Mere Point Rd) – Mill and Fill with ADA Upgrades

2026 - Old Bath Rd (Maplewood Ave to Bay Bridge Rd) – Reclaim

## Proposed Projects

Federal St (Bath Rd to Mason St) – Mill and Fill with ADA Upgrades

River Rd (Pleasant St to I-295) – Mill and Fill with ADA Upgrades

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Comments  
Questions  
Concerns

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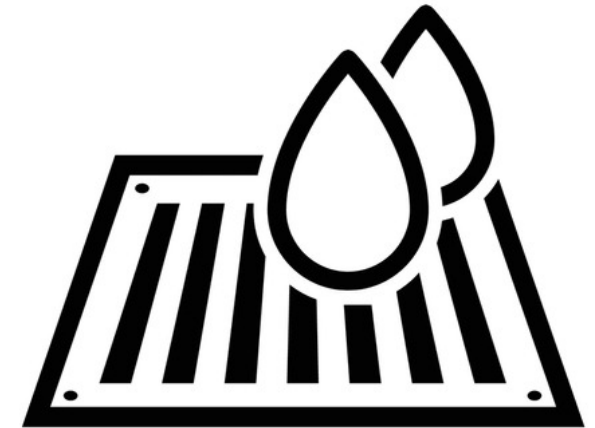




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# Major Road Reconstruction

## Existing CIP Updates





# Cushing St

Design/Permitting Appropriated \$200,000  
Construction Request \$2,500,000 in 2027-28













Dunning St

DON'S  
BOTTLE  
REDEMPTION

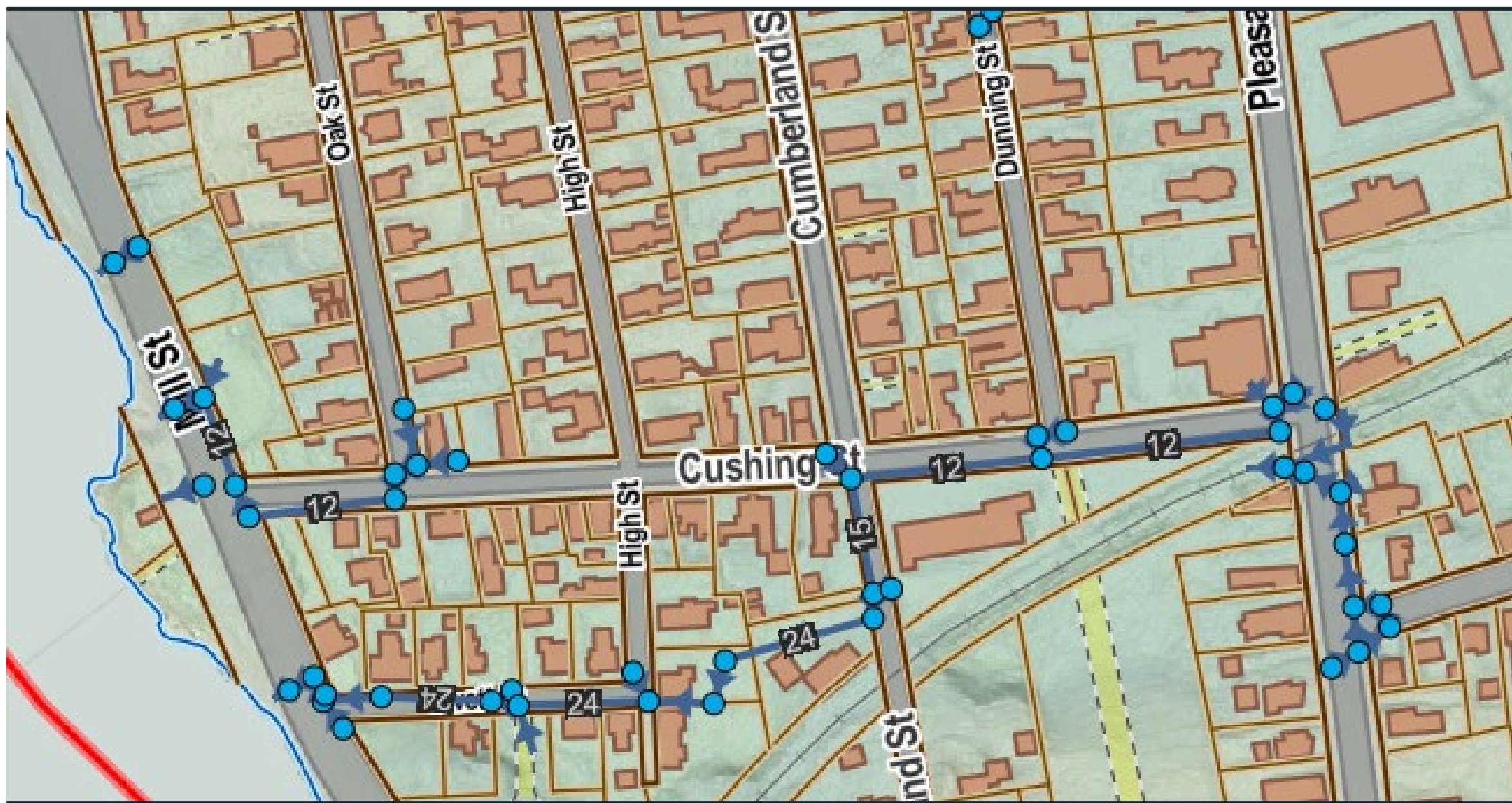
BRUNSWICK  
BOTTLE  
REDEMPTION















# Longfellow Ave

Design/Permitting Request \$150,000 in 2027-28

Construction Request \$1,300,000 in 2029-30

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# MacMillan Dr

Design/Permitting Request \$100,000 in 2027-28

Construction Request \$750,000 in 2029-30

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# Columbia Ave

Design/Permitting Request \$200,000 in 2027-28

Construction Request \$1,500,000 in 2029-30

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END  
SCHOOL  
ZONE









# Thomas Point Rd

Design/Permitting Request \$200,000 in 2027-28

Construction Request \$3,000,000 in 2030-31





QUICK  
MINUTE  
CHANGE  
LOW PRICES  
\$29.95  
BLEND OIL CHANGE









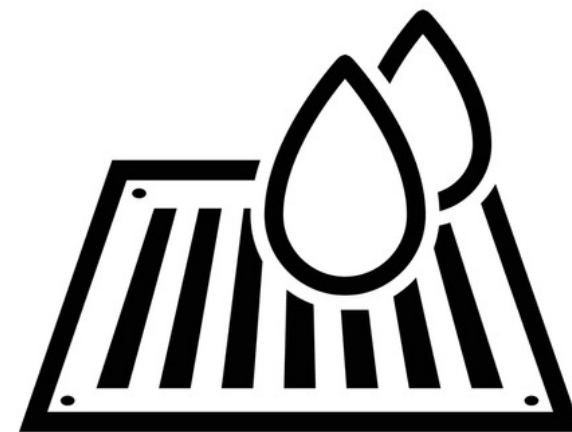




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# Major Road Reconstruction

## New Capital Improvement Projects







# Bowker Street

Design Complete and in Utility Coordination Phase  
Construction Request \$700,000 in 2028-29

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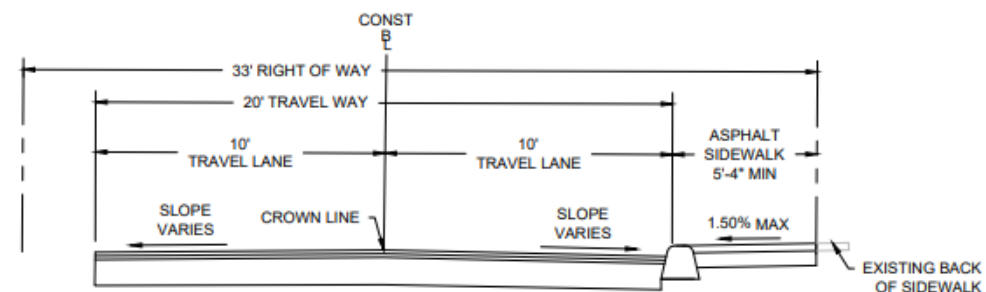
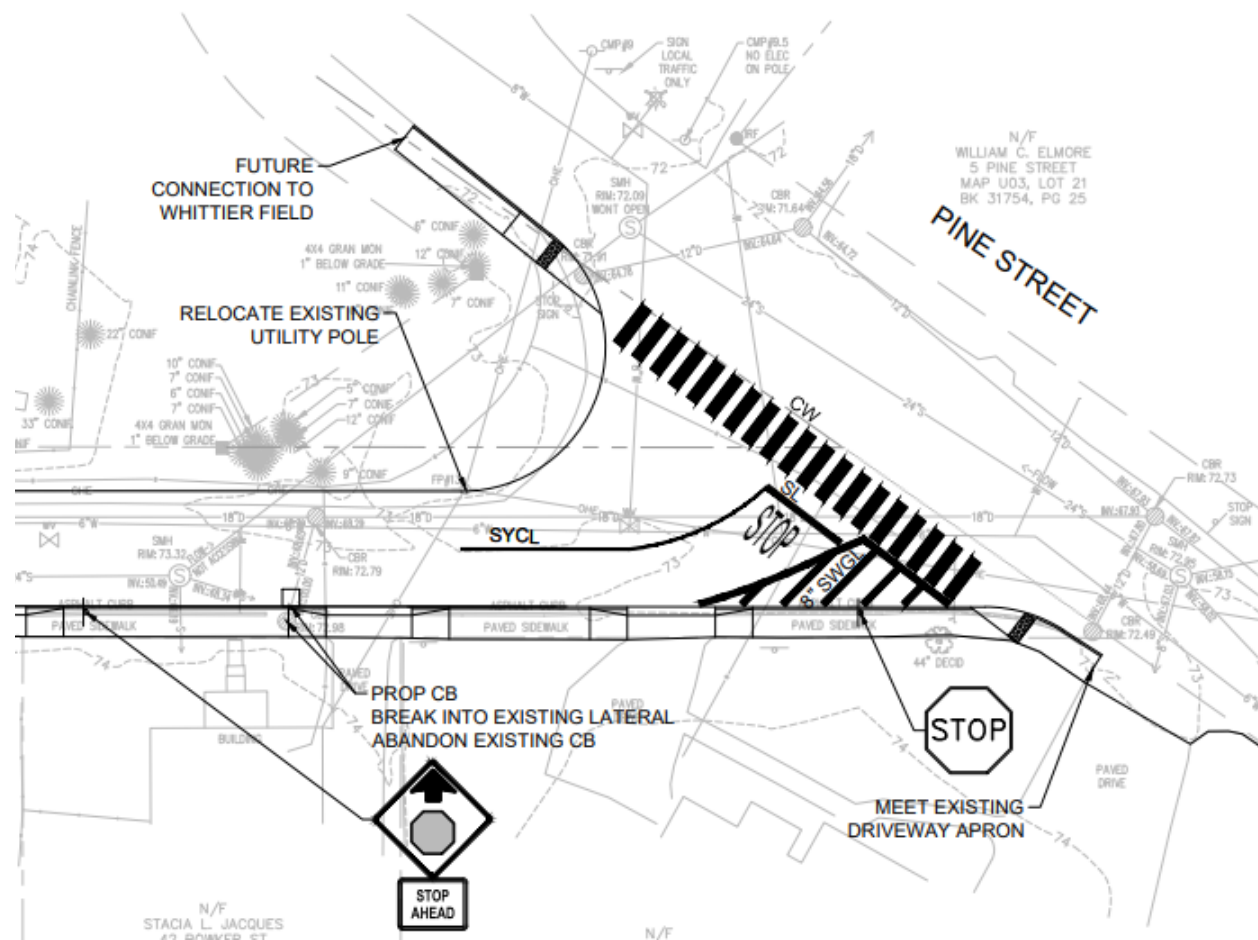












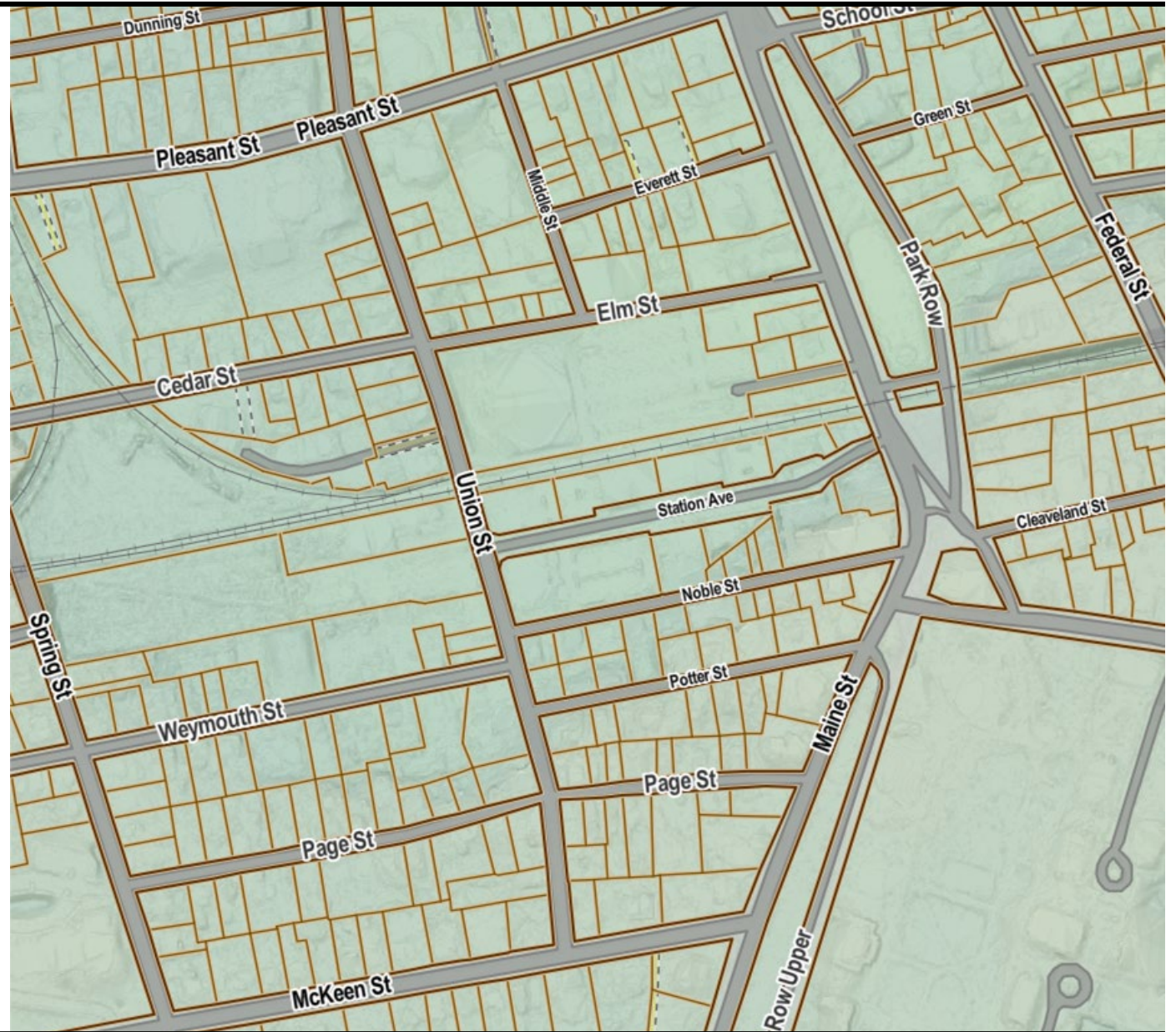
**BOWKER STREET  
SECTION B-B  
SCALE: NTS**



# Union Street

Under Design

Construction Request \$950,000 in  
2027-28











# Noble Street

Design/Permitting Request \$100,000 in 2026-27

Construction Request \$700,000 in 2027-28

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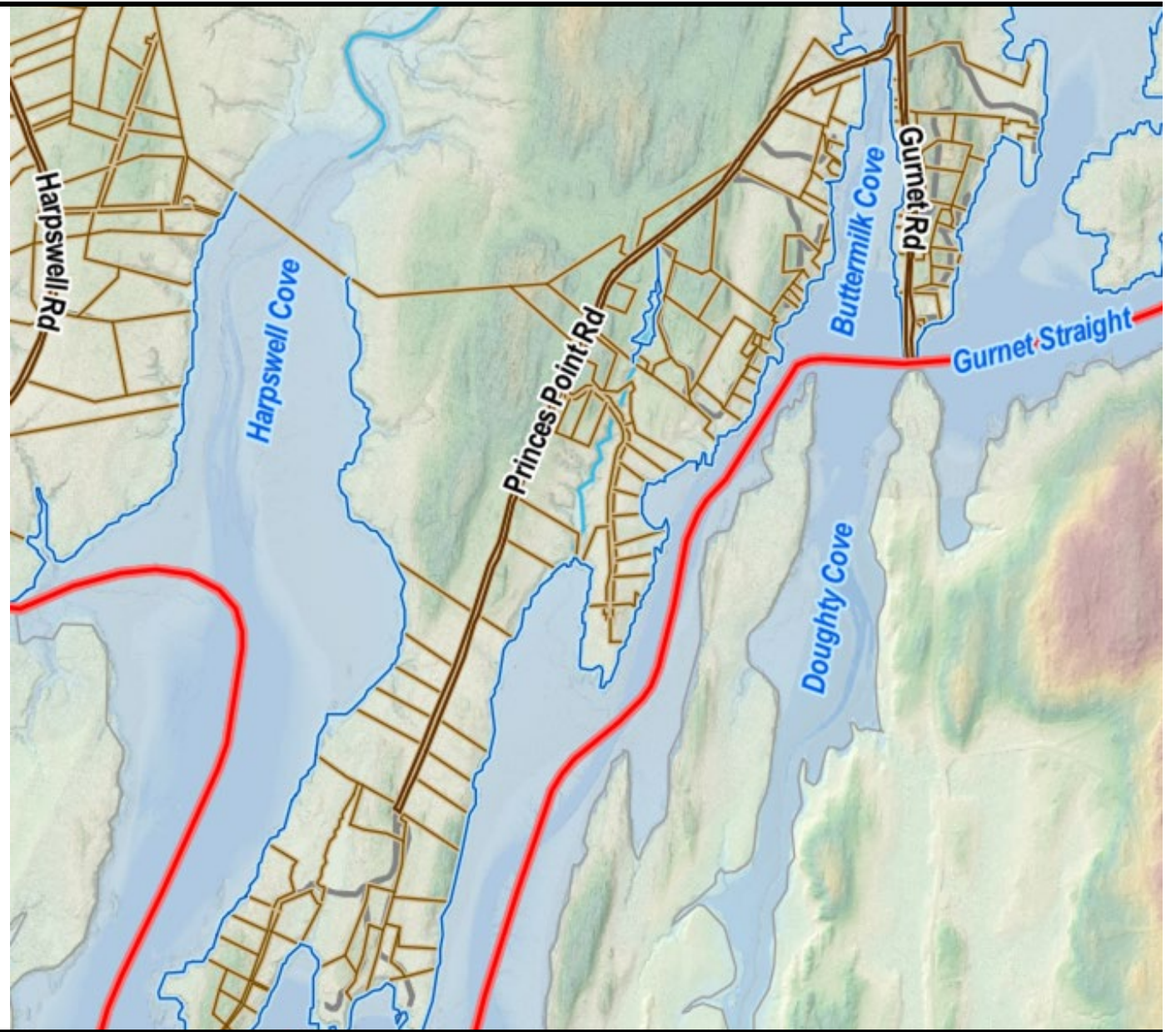




# Princes Point Rd

Design/Permitting Request  
\$200,000 in 2027-28

Construction Request \$3,000,000  
in 2030-31











# Greenleaf St, Stimpson St, Androscoggin St

Design in house 2026-27

Construction Request \$915,000 in 2028-29





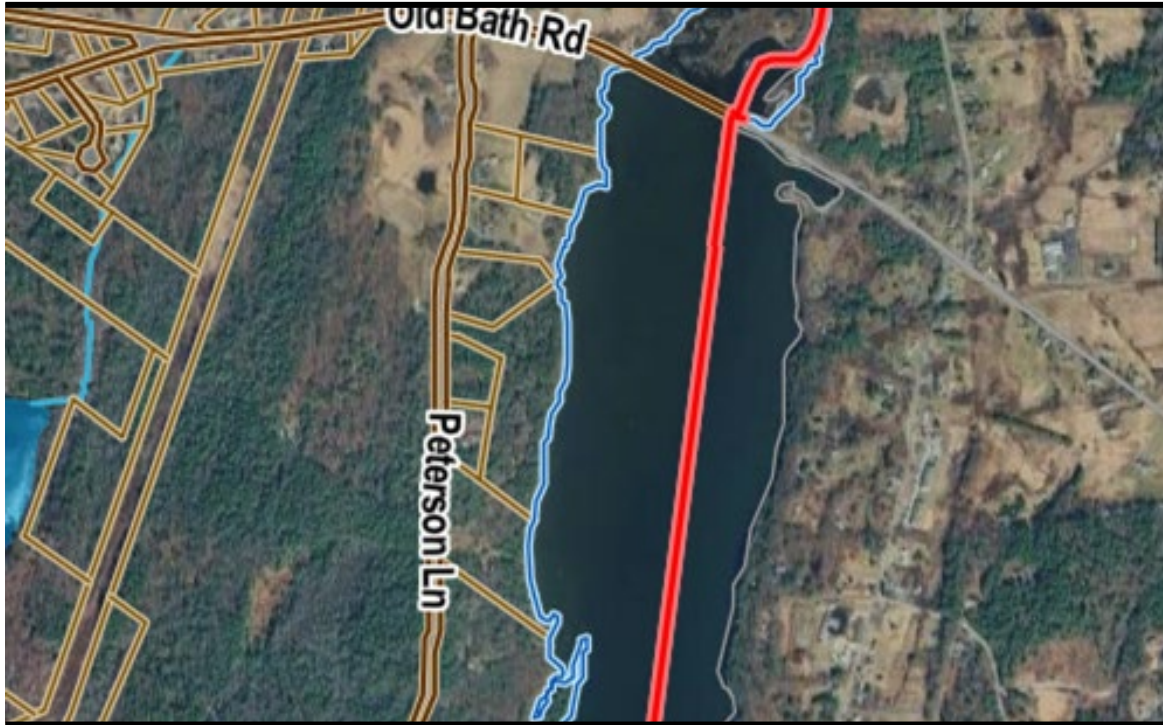
# Old Pennellville Rd

Design in house 2027-28

Construction Request \$450,000 in 2028-29





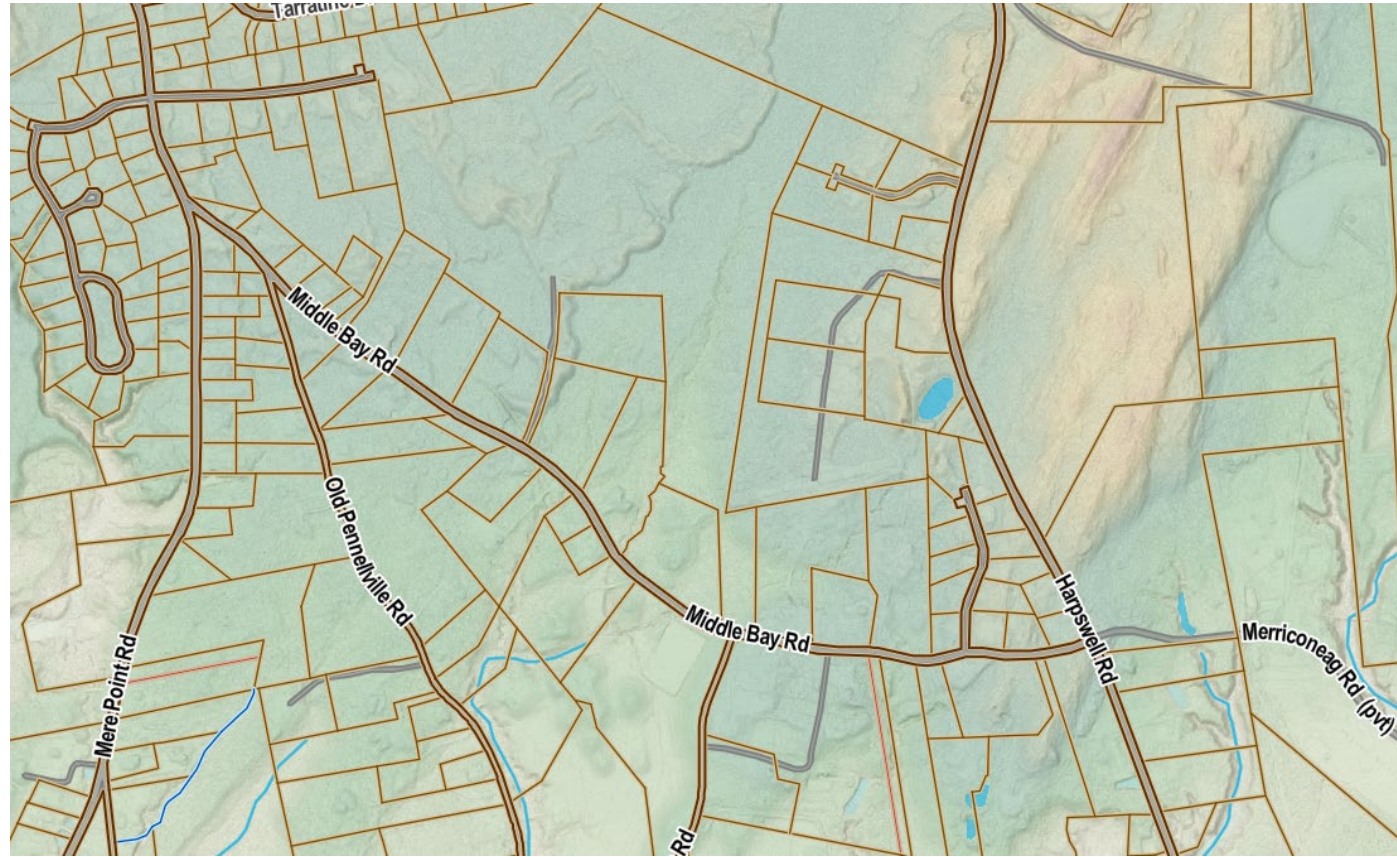


# Peterson Lane

Design/Permitting Request \$75,000 in 2029-30

Construction Request \$1,350,000 in 2030-31





# Middle Bay Rd

Concept and Preliminary Design \$225,000 2030-31







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Comments  
Questions  
Concerns

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# Other New Transportation Projects

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# Mere Point Rd and Maquoit Rd Intersection Improvements

Design/Permitting Request \$200,000 in 2026-27  
Construction Request \$1,000,000 in 2030-31





# Church Rd and Pleasant Hill Rd Intersection Improvements

Design/Permitting Request \$150,000 in 2028-29

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# Collinsbrook Rd, Durham Rd, and Hacker Rd Intersection Improvements

Design and Construction Request \$350,000 in 2030-31



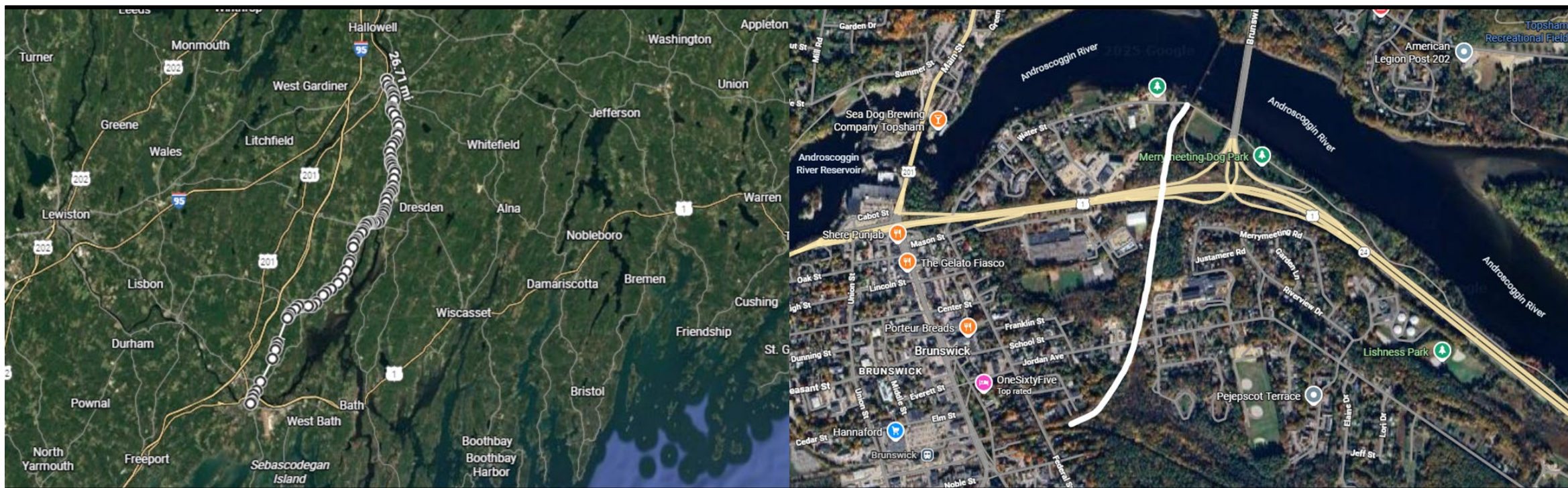


# Town Commons Hybrid Beacon

Design and Construction Request \$750,000 in 2030-31

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# Lower Road Trail

Preliminary Design Request \$150,000 in 2027-28

Final Design/Permitting Request \$200,000 in 2028-29

Construction Funding Request \$1,000,000 in 2030-31





















# Range Road

Design/Construction Request \$500,000 in 2030-31

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Comments  
Questions  
Concerns

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