



TOWN OF THOMASTON
13 VALLEY STREET
THOMASTON, MAINE 04861-0299
TEL: (207) 354-6107

November 10, 2020

Mr. John Maclaine
Maine Dept. of Environmental Protection
c/o State of Maine Division of Procurement Services
Augusta, Maine 04330

RE: RFP#202008127 Grant Application for Thomaston, Maine Stream Crossing Replacement

Dear Mr. Maclaine:

Enclosed is our application for a 2020 Grant for Stream Crossing Public Infrastructure Improvements. Beechwood Street, a town owned and maintained road, is one of the busiest north/south roads in Thomaston and has a lengthy, 12.3 mile, detour if it were not available. Several sink holes have appeared and been filled in in the last few years where the road crosses the East Branch of the Oyster River.

The attached summary of this project was prepared for the Selectboard in June 2020 to make them aware of the problem. At that time \$24,000 was added to the fiscal year 2020/21 budget and approved by the Town voters at the Town meeting in September. These funds were earmarked for the Beechwood Street Culvert Replacement Project.

Thomaston received a Stream Crossing Public Infrastructure Improvements grant in 2019 to replace a culvert on West Meadow Road that we had to return as no planning or funding had been done on this project. As noted above the current budget has \$24,000 for design of the Beechwood Street Culvert Replacement (Dirigo Engineering has been contracted to provide this), and \$24,000 is planned in the next budget. We are also actively seeking additional sources of funding.

Sincerely,

Kara George, Town Manager
cc: Selectboard

Beechwood Street Culvert Replacement Project

June 2020

Location: Thomaston, Maine where the East Branch of the Oyster River crosses Beechwood Street. Approximately 3.3 miles north of Route 1.

Existing structure: Two 6-foot diameter corrugated metal culverts approximately 62 feet long carry the normal flow of the stream. A third 5-foot diameter corrugated metal culvert is located above the two main culverts to carry any flow not handled by the main culverts.



Figure 1 Existing culverts viewed from downstream

Beechwood Street, a municipal road, is the major north-south road between Thomaston village and Route 90 in Warren. This section of the road has an average daily traffic count of about 2,000 vehicles.

Problem: Several sinkholes have appeared in the shoulder of the road next to the paving. These have been filled but investigation in June 2020 found that the culverts have significant



Figure 2 Showing holes allowing rocks to enter culvert

corrosion and that the fill material is ending up inside the culverts from holes rusted away in the sides of the culverts. This has also led to voids in the material around and between the culverts. In addition, the bottoms of the culverts have corroded away and the inlet end of one culvert has bent up blocking the flow. In June 2020 the Town contacted Dirigo Engineering to review the situation and provide advice on how

to proceed. After inspecting the site, they recommended that Thomaston completely replace the culverts as soon as possible. They have given Thomaston a proposal for engineering services that includes preliminary design, permit and grant applications, final design, bidding and construction services. The estimated cost of all engineering services is \$31,000 to \$34,000.



Figure 3 Bent up end

Design of replacement: The U.S. Army Corps of Engineer (USACE) is responsible for regulating culvert replacements in streams. They require

the replacement to follow Stream Simulation Design methodology. This requires the clear span of the new structures to be 1.2 times the bank full width of the stream and to have an open bottom or constructed natural substrate. This design provides greater flow capacity, capacity for debris passage during flooding, as well as improved passage for fish and wildlife. This design is considered more environmentally friendly and requires less maintenance over time.

The structure recommended for this location is a clear span modular steel bridge as shown in Figure 5.



Figure 4 Void between the culverts



Figure 5 The proposed bridge would be similar to this

Environmental benefits of this project: Besides reducing long-term maintenance costs there are other good reasons to use this design:

- Climate change is increasing the amount and intensity of precipitation. The bridge design will handle a wider range of flows.
- This design with its natural substrate stream bottom provides better conditions for fish, amphibians and other creatures who use the water.
- A more natural stream provides recreational opportunities as well as economic benefits.

**Maine Department of Environmental Protection
Request for Proposals for Stream Crossing Public Infrastructure Improvement Projects
Proposal Application Form – 2020R1
RFP# 202008127**

I. Applicant Information

Applicant Name
Brandon Allen, Public Works Director, Town of Thomaston

Applicant Mailing Address 13 Valley Street	City Thomaston	State ME	Zip 04861
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*Applicant Contact Phone # 207-354-2478	*Contact Email Address ballen@thomastonmaine.gov
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**Please note that the applicant contact should be the individual that will be the primary contact for the Department should the project be awarded.*

II. Agent/Consultant Information Check if not applicable

Agent Name
Randy Butler, Dirigo Engineering

Agent Mailing Address 2 Dirigo Drive	City Fairfield	State ME	Zip 04937
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Agent Phone # 207-453-2401	Agent Email Address rbutler@dirigoengineering.com
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III. Applicability

Please indicate the ability to demonstrate the following:

- The proposed structure to be upgraded is a culvert located on a municipal road and is not owned by a private or state entity.
- The proposed project includes matching funds from local or other sources

IV. Culvert/Stream Crossing Information**1. Site Information**

A. Municipality or Unorganized territory where project will take place:	Town of Thomaston		
B. GPS Location of crossing (Decimal degrees preferred) <i>Available on Google Maps by clicking the location on the map</i>	North	West	
	44.12271	-69.18563	
C. Culvert/crossing location Name of the road on which the culvert/crossing is located and the nearest intersection.	On Beechwood Street 670 feet south of the Thomaston/Warren town line.		
D. Watershed Location: List the HUC12 Watershed, name of the stream, brook, or the water body the culvert is located on, and the downstream waterbodies it drains to.	i. HUC12 Watershed: (can be found in Maine Stream Habitat Viewer)	Oyster River	
	ii. Waterbody name at project location (“Project Waterbody”):	East Branch Oyster River	
	iii. “Project Waterbody” drains to:	Oyster River to Saint George River	

2. Existing Crossing Information

Culvert/Crossing Shape		Culvert Material		Stream Bed Material in culvert	
<input type="checkbox"/> Closed bottom Box <input type="checkbox"/> Open bottom box <input checked="" type="checkbox"/> Circular <input type="checkbox"/> Open bottom arch <input type="checkbox"/> Closed bottom arch (pipe arch) <input type="checkbox"/> Oval <input type="checkbox"/> Bridge or span		<input checked="" type="checkbox"/> Corrugated Metal Pipe <input type="checkbox"/> Smooth Metal Pipe <input type="checkbox"/> Concrete <input type="checkbox"/> Plastic <input type="checkbox"/> Stone <input type="checkbox"/> Other (describe): _____		<input checked="" type="checkbox"/> none <input type="checkbox"/> Partial <input type="checkbox"/> Continuous	
Culvert	Width (diameter if round)	Height	Length	Approximate Culvert Age	
#1	6 foot diameter		62 feet	60 years ±	
(#2)	6 foot diameter		62 feet	60 years ±	
(#3)	5 foot diameter		62 feet	60 years ±	

3. Proposed Crossing Information

Culvert/Crossing Shape		Culvert Material	
<input type="checkbox"/> Closed bottom Box <input type="checkbox"/> Circular <input type="checkbox"/> Oval <input type="checkbox"/> Closed bottom arch (pipe arch) <input type="checkbox"/> Other (describe): _____	<input type="checkbox"/> Open bottom box <input type="checkbox"/> Open bottom arch <input checked="" type="checkbox"/> Bridge or span	<input type="checkbox"/> Corrugated Metal Pipe <input type="checkbox"/> Concrete <input checked="" type="checkbox"/> Other (describe): Concrete Block & Steel Beam	<input type="checkbox"/> Smooth Metal Pipe <input type="checkbox"/> Plastic <input type="checkbox"/> Stone
Width (diameter if round)	Height	Length	<i>If proposing a bridge/span</i>
			Clear Span Total Span
	11.5 feet	44 feet	34 feet 36 feet

13. Will the new crossing be sized to be 1.2 times the bankfull width of the stream?

 Yes

 No
4. Stream Channel Description

Measured Bankfull Width (beyond culvert influence, min. of 3 upstream and downstream measurements)	Upstream widths	1.	2.	3.	4.	5.	Average	Average value of upstream & downstream measurements
		17'	18'	19'			18'	
Downstream Widths	1.	2.	3.	4.	5.	Average		
	23'	21.5'	24.5'			23'	20.5'	
Estimated Bankfull width (<i>measured average bankfull width values are the most accurate method</i>)	Maine Stream Habitat Viewer http://webapps2.cgis-solutions.com/MaineStreamViewer/						15.5'	
	StreamStats https://streamstats.usgs.gov/ss/						15.8'	
	Other Hydraulic & Hydrologic Analysis (if performed)							
Has a Stream Bed Substrate analysis been performed?							<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Explain: Pebble count was performed								
Size of Downstream scour pool <input checked="" type="checkbox"/> N/A, No scour pool present		Width		Length		Max Depth		
		15'		15'		6"		

V. Public Infrastructure Information (25 Points total):						Yes	No				
1. Has the crossing caused flooding or overtopping of the road in the last 10 years?						<input type="checkbox"/>	<input checked="" type="checkbox"/>				
2. How many times in the last 10 years? (indicate if approximate)											
3. Does this crossing regularly become obstructed by debris or require cleaning?						<input checked="" type="checkbox"/>	<input type="checkbox"/>				
How often?						Cleaned at least annually					
4. Has the crossing been damaged by flooding in the last 10 years?						<input type="checkbox"/>	<input checked="" type="checkbox"/>				
5. Do you have any photos of the flooding or damage? Please provide if available						<input type="checkbox"/>	<input checked="" type="checkbox"/>				
6. Has the crossing ever partially or fully failed in the last 10 years?						<input type="checkbox"/>	<input checked="" type="checkbox"/>				
7. List any dates and describe the severity of flooding/damage associated with the crossing. Include the duration of any full or partial road closures.											
8. Describe any issues with the current condition of the crossing						Much of the bottom and some of the sides of the culverts have corroded away, allowing material to wash into the culverts and creating voids around the culverts. This has created sinkholes and will ultimately result in collapse of the roadway.					
9. In how many years from now do you estimate the culvert/crossing would have a complete failure, a complete collapse, or total washout?						Less than 1 year	1-3 years	3-5 years	5-10 years	10+ years	
						<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
10. Would any homes, businesses, or critical infrastructure be <u>completely cut-off from access</u> if the crossing were to completely fail?						Yes	No				
						<input type="checkbox"/>	<input checked="" type="checkbox"/>				
11. If the culvert/crossing fails, how many businesses, or other critical infrastructure would be completely cut off or require a detour? (Note: see definition of "cut off" in RFP#202008127)						Homes		Businesses		Critical Infrastructure	
						Detour	Cut-off	Detour	Cut-off	Detour	Cut-off
						100	0	0	0	0	0
12. Using the space below, discuss what impacts would occur if the culvert/crossing were to fail. For instance, are there critical public services (fire or police station, hospital, school, public works facility) located on this road that would be cutoff or required to detour?						Services to Thomaston residents on the north side of the crossing would have very limited response from police, fire and ambulance service. It would make getting school children to the Thomaston schools difficult.					
13. Approximately how many vehicles per day travel this road (if known)?						1257 (MDOT Public Map Viewer, 2019)					
14. If an alternate route exists, what is the minimum distance to travel from one side of the crossing along a detour to access the other side of the crossing?						12.3 miles					
15. Using the space below, discuss any other safety concerns about the existing culvert/crossing.						The existing culverts are decayed nearly to the point of failure, which could lead to road washout and a hazard to traffic. Side slopes warrant guard rails.					

VI. Environmental Information (50 Points total):			Yes	No
1. Are fish present in the stream?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Source(s) of Information: <input checked="" type="checkbox"/> MDIFW <input checked="" type="checkbox"/> MDMR <input checked="" type="checkbox"/> Maine Stream Habitat Viewer <input type="checkbox"/> Other (describe):				
2. Has this crossing been identified by the Maine Stream Habitat Viewer, MDIFW, MDMR, or another qualified entity as a barrier to fish passage?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
Provide source of barrier information		Maine Stream Habitat Viewer calls it a Potential Barrier		
3. Is the existing culvert/crossing surveyed on Maine Stream Habitat Viewer? http://webapps2.cgis-solutions.com/MaineStreamViewer/			<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, what is the Maine Stream Habitat Viewer Crossing ID# for the crossing proposed for upgrade?		4516		
4. What is the Maine Stream Habitat Viewer Crossing ID# for the crossings upstream and downstream of the proposed upgrade?	Upstream Crossing ID#	Downstream Crossing ID#		
	No crossing		4493	
Are these considered to be a barrier to fish passage?	<input type="checkbox"/> Barrier <input type="checkbox"/> Partial/Potential Barrier <input type="checkbox"/> Not a Barrier	<input type="checkbox"/> Barrier <input type="checkbox"/> Partial/Potential Barrier <input checked="" type="checkbox"/> Not a Barrier		
5. Distance to the next barrier identified by the Maine Stream Habitat Viewer (miles)?	Upstream	Downstream		
	None		4± miles	
6. Indicate if any of the following species have been identified above or just below the crossing.				
<input checked="" type="checkbox"/> Wild brook trout <input type="checkbox"/> Sea-run brook trout <input checked="" type="checkbox"/> Atlantic salmon (sea-run) <input type="checkbox"/> Atlantic salmon (landlocked) <input checked="" type="checkbox"/> Alewives <input type="checkbox"/> Blueback herring <input checked="" type="checkbox"/> American eels <input type="checkbox"/> Sea-run rainbow smelt <input type="checkbox"/> other diadromous (sea-run) species (list): _____				
7. Have you contacted MDMR regarding this stream and crossing?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, please include any relevant information they provided or attach letter of support	"DMR would support the replacement of the culvert with a structure that improves passage for diadromous fish species..." Jason Bartlett Maine Department of Marine Resources Sea-Run Fisheries and Habitat 207-624-6349			
8. Have you contacted MDIFW regarding this stream and crossing?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, please include any relevant information they provided or attach letter of support	"The species assemblage consists of brook trout, American eel, blacknose dace, and creek chub. The presence of wild brook trout makes this crossing a priority for us, and the presence of American eel would most likely make it important to DMR". - Jason Seiders, Fisheries Resource Supervisor, MDIFW			
9. Are there any state or federal Threatened or Endangered species (aquatic or terrestrial) according to Beginning with Habitat Map Viewer within 1 mile of this crossing?			<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, list identified presence or habitat(s):	Deer wintering areas upstream and downstream of crossing.			

		Yes	No
10. Is the project adjacent to other significant resources (e.g. Significant Wildlife Habitat, significant fisheries, "Heritage" waters, alewife ponds, etc.) according to the Maine Stream Habitat Viewer or Beginning with Habitat Map Viewer?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, list identified resource(s):			
11. Have any priority habitats such as spawning areas been identified by the Maine Habitat Stream Viewer, MDIFW, or MDMR?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, List habitats identified and source of information:			
12. Is the current crossing undersized?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, how was this determined and what was the metric used?	Analyzed with Streamstats flows and HY-8 software, which shows 100-year flood overtops two lower 6' dia. culverts and passes through upper 5' dia. culvert.		
15. Will the new crossing contain an open bottom?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
16. Will the new crossing be embedded below the stream bed?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
17. If the new crossing will be embedded, is stream bed backfill proposed?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
If yes, how will material used for streambed backfill be determined?	Material will be specified from pebble count.		
18. Will the new crossing contain constructed stream banks within the structure?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
19. Will this new crossing meet Maine DOT 100-yr flood criteria?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
20. Is the upstream or downstream habitat degraded due to this crossing's orientation, slope, or sizing? (e.g. large scour pool, instability or stream bank erosion, significant downstream sedimentation, etc.)		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Describe:	Scour pool and aggradation downstream of culvert.		
21. Is the crossing located on a stream or reach where other culvert/crossing upgrades have been performed within the last 5 years leading to improved fish passage?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, describe any additional biological, ecological, or cost-saving benefits that could result from the current project:			
22. Describe any reasons the crossing or the waterbody should be considered a priority for restoration, including any input from Maine DMR or Maine IF&W Biologists:		The culvert coatings have failed and the bottoms are severely deteriorated. If not replaced within 1 year, it will likely fail. Terrestrial animal passage is extremely limited. Both lower 6' diameter culverts are sloped against stream flow direction.	
23. Provide other information about the design or importance of the proposed project that benefits fish and/or wildlife such as terrestrial passage, stream banks within the structure, stream simulation design, or other factors:		Replacement structure will decrease flow velocities and provide terrestrial passage, which is limited at this time. New crossing will meet stream simulation design standards, including 1.2 times bankfull width and stabilized streambanks.	

VII. Cost & Budget Information (25 Points total):			
1. How much money has been spent on physical repairs within the last 10 years on the culvert/crossing (exclude normal maintenance costs such as painting).		\$1,000	
2. Describe the types of expenditures made on repairs	Riprap and other fill		
3. Do you have engineered design plans and construction specifications for the replacement culvert/crossing?		Yes	No
		<input checked="" type="checkbox"/>	<input type="checkbox"/>
A. If yes, identify who designed the plans, and when the plans were completed.	Randy Butler, Dirigo Engineering; plans are 90% complete		
B. Will final plans be stamped by a Maine Licensed Engineer?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. If the new crossing will be over 20 feet in width, are you planning to request that the Maine Department of Transportation (MDOT) take responsibility for the structure?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
If yes, have you had the design reviewed by MDOT's Bridge Maintenance Program? (If No, please contact MDOT Bridge Program as soon as possible)		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Important NOTE: For all crossings proposed to be 20 feet or greater, please refer to Maine DOT's Bridge Design Guide: https://www.maine.gov/mdot/bdg/ and contact MaineDOT Bridge Program for requirements and limitations.			
5. This project will likely require a permit from the Army Corps of Engineers. Have you contacted Army Corps regarding this project?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Have you submitted an application to Army Corps of Engineers?		<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Do you already have a permit in-hand from Army Corps of Engineers?		<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. What is the anticipated construction duration?	6 weeks		
9. If awarded, when is construction anticipated to begin? (Keep in mind that the typical window for in-water work is July 15-October 1)	Start Date:	Completion Date:	
	7/30/2021	9/15/2021	
10. Provide any additional information regarding the efficiency and cost-effectiveness of the project in the space below:			
Dirigo Engineering has designed several similar crossings over the past few years and has received valuable feedback from contractors and suppliers regarding construction costs. This design is based around Dirigo Precast Inc.'s concrete components (no connection to Dirigo Engineering), which have been found to save as much as 20% compared to conventional 3-sided box culverts or metal arch-plates. We will also allow the option of a conventional box culvert with stream substrate interior.			
11. Provide any additional information as to why this project should be funded by a public infrastructure grant in the space below:			
Beechwood Street is used as a bypass route from Route 90 in Warren to Route 1 in Thomaston. Any businesses or other commercial enterprises would suffer from the loss of traffic if the culverts fail. Emergency service delays due to extended detours decrease the safety and security of the public in this area.			

**State of Maine
Department of Environmental Protection
COST PROPOSAL FORM
RFP# 202008127**

2020 Grants for Stream Crossing Public Infrastructure Improvements

Bidder's Organization Name:	Town of Thomaston, Maine
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Instructions: The cost proposal must include: the total amount of funds requested under this RFP, the total cost of the project to completion, and the amount of local matching funds dedicated to the project.

The cost proposal may not exceed \$125,000. Local matching funds must be included. The Department cannot fund 100% of any project.

1. Total Amount of Funds being Requested	\$125,000
2. Total Matching Funds Committed to Project	\$164,000
3. Total Cost to Complete Proposed Project (total of items 1&2 above)	\$289,000
4. All Sources of Matching Funds (list):	Town of Thomaston Dragon Products

Budget Items	
5. Total Engineering Costs	\$24,000
6. Permitting and Bidding	(Included in Item 5)
7. Erosion & sediment controls (including de-watering, stream bypass, cofferdams, temporary and permanent stabilization measures)	\$15,000
8. All other items	\$250,000

State of Maine
Department of Environmental Protection
DEBARMENT, PERFORMANCE and NON-COLLUSION CERTIFICATION
RFP# 202008127
2020 Grants for Stream Crossing Public Infrastructure Improvements

Bidder's Organization Name:	Town of Thomaston, Maine
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By signing this document, I certify to the best of my knowledge and belief that the aforementioned organization, its principals and any subcontractors named in this proposal:

- a. *Are not presently debarred, suspended, proposed for debarment, and declared ineligible or voluntarily excluded from bidding or working on contracts issued by any governmental agency.*
- b. *Have not within three years of submitting the proposal for this contract been convicted of or had a civil judgment rendered against them for:*
 - i. *Fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a federal, state or local government transaction or contract.*
 - ii. *Violating Federal or State antitrust statutes or committing embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;*
 - iii. *Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (b) of this certification; and*
 - iv. *Have not within a three (3) year period preceding this proposal had one or more federal, state or local government transactions terminated for cause or default.*
- c. *Have not entered into a prior understanding, agreement, or connection with any corporation, firm, or person submitting a response for the same materials, supplies, equipment, or services and this proposal is in all respects fair and without collusion or fraud. The above-mentioned entities understand and agree that collusive bidding is a violation of state and federal law and can result in fines, prison sentences, and civil damage awards.*

Failure to provide this certification may result in the disqualification of the Bidder's proposal, at the discretion of the Department.

Name (Print): Brandon Allen	Title: Public Works Director
Authorized Signature: 	Date: 11-10-20

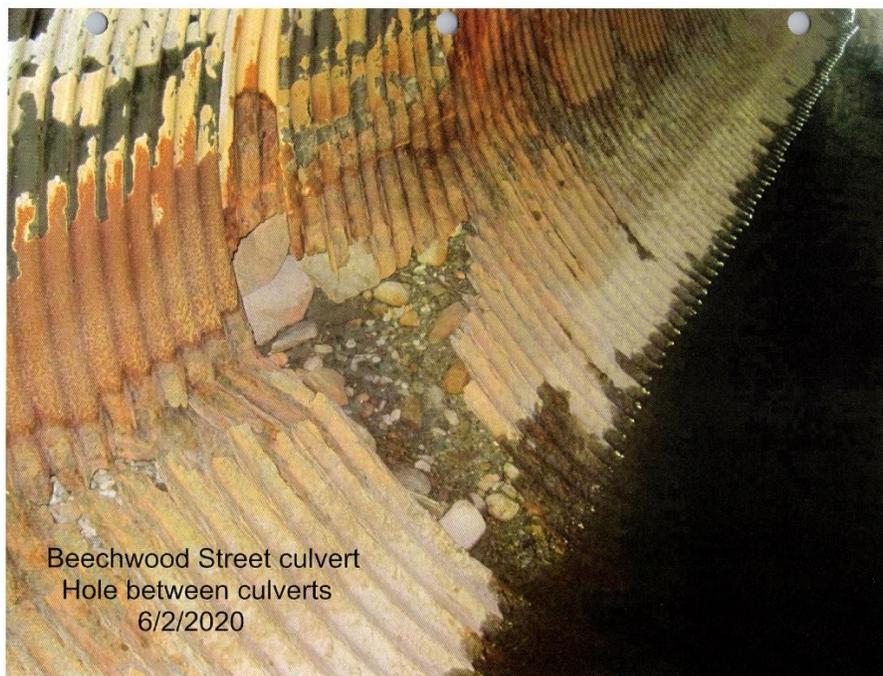
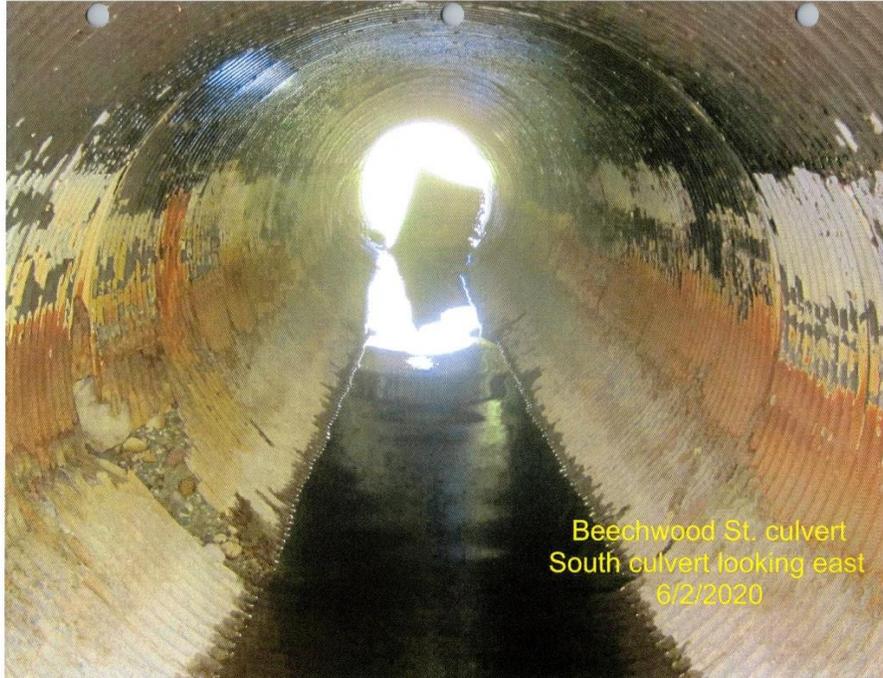
Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

EXISTING CULVERT DAMAGE



Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

EXISTING CULVERT DAMAGE



Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

EXISTING CULVERT DAMAGE



Beechwood Street culvert
Hole between culverts
6/2/2020



Beechwood Street culvert
Damage to north culvert
6/2/2020

Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

DOWNSTREAM CULVERT VIEW



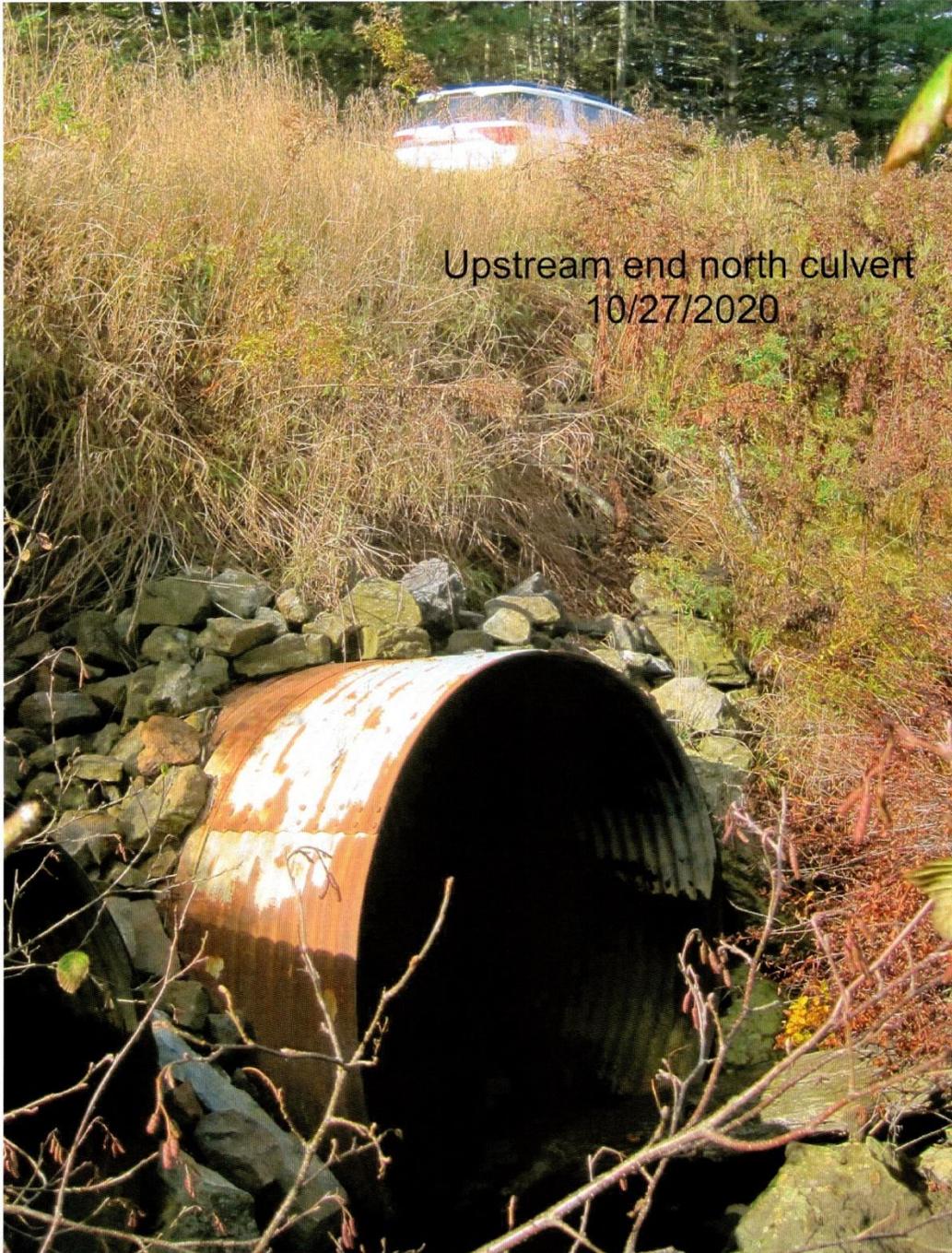
Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

UPSTREAM CULVERT VIEW



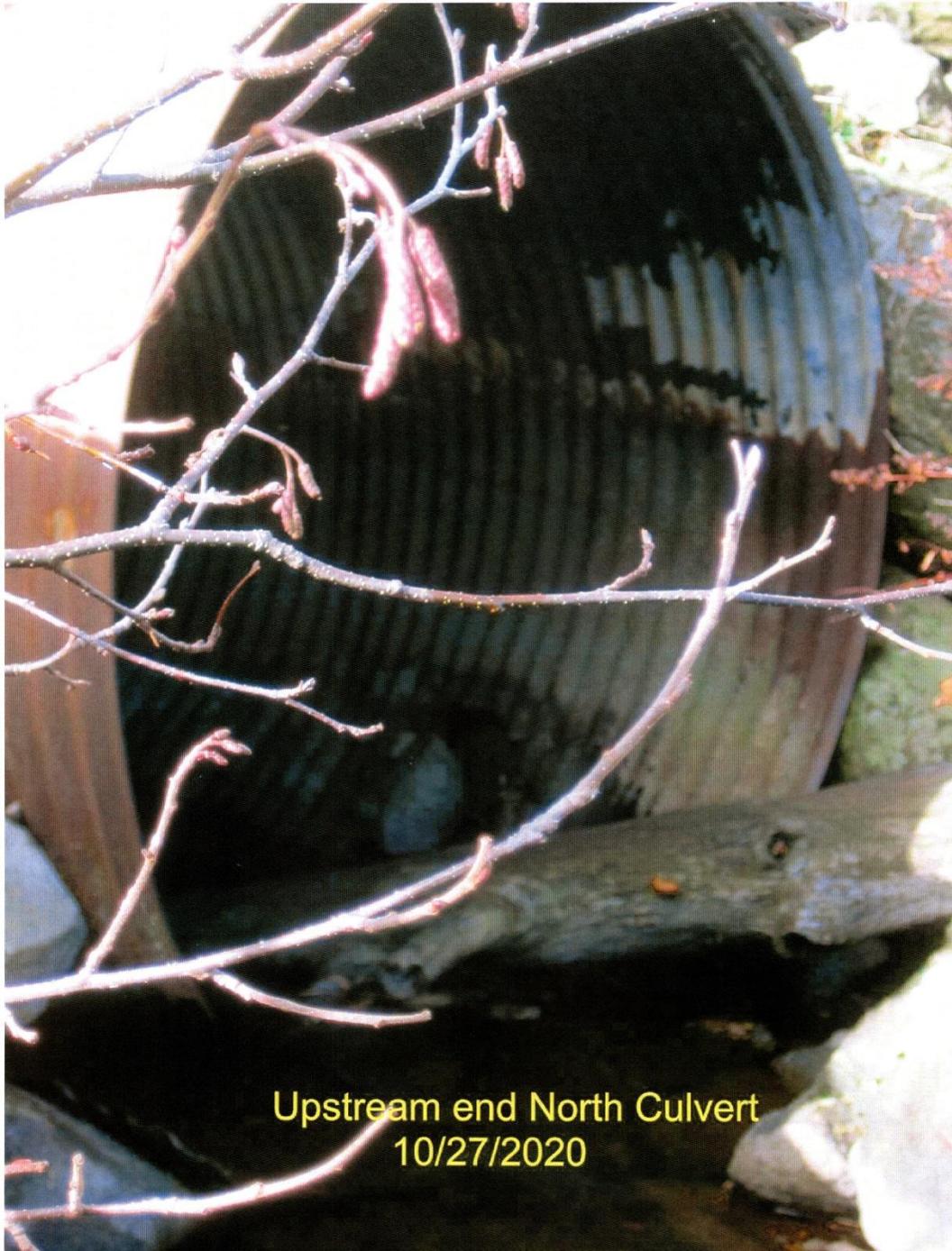
Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

UPSTREAM CULVERT VIEW



Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

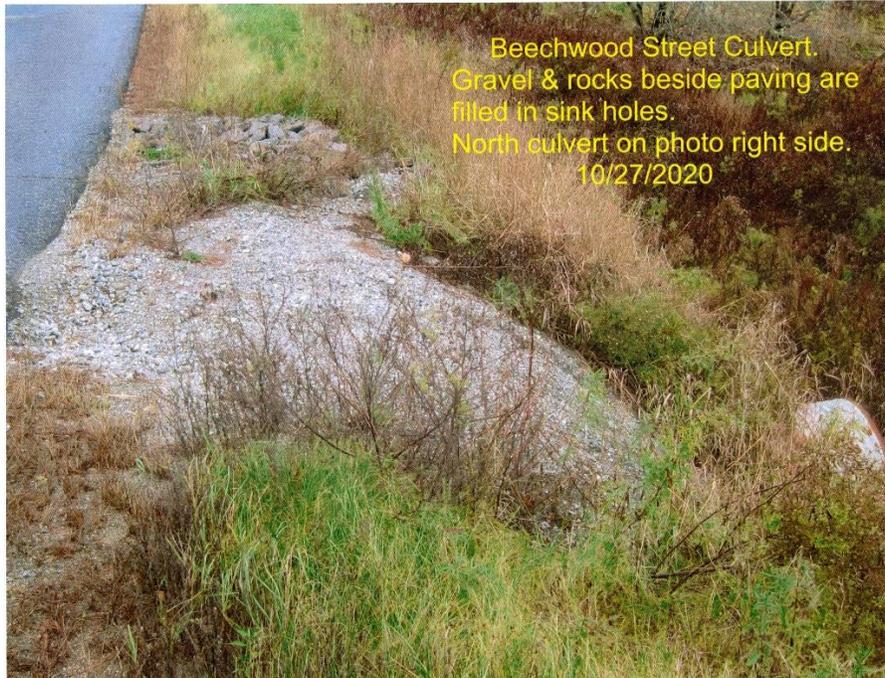
UPSTREAM CULVERT VIEW



Upstream end North Culvert
10/27/2020

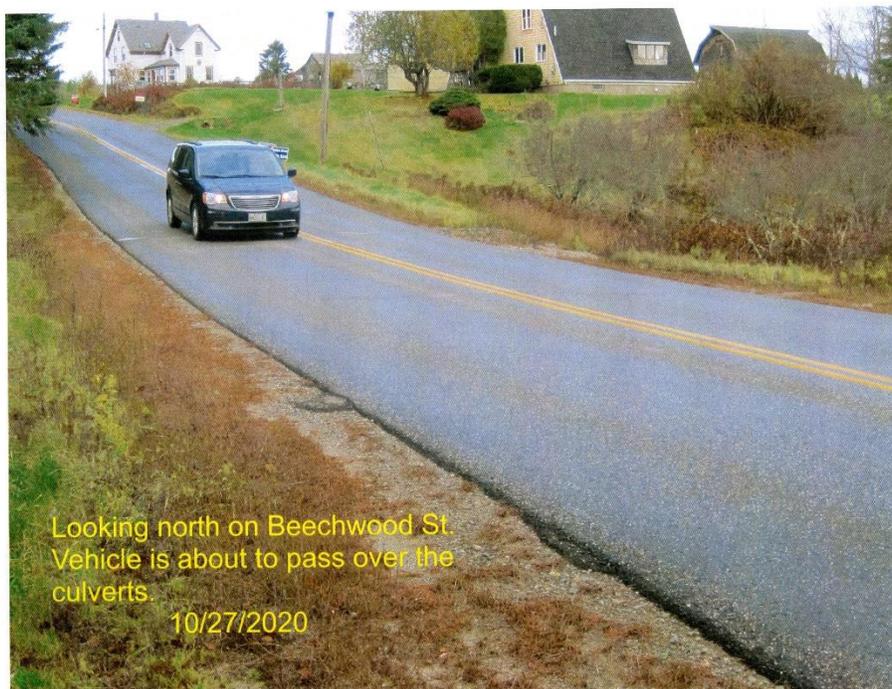
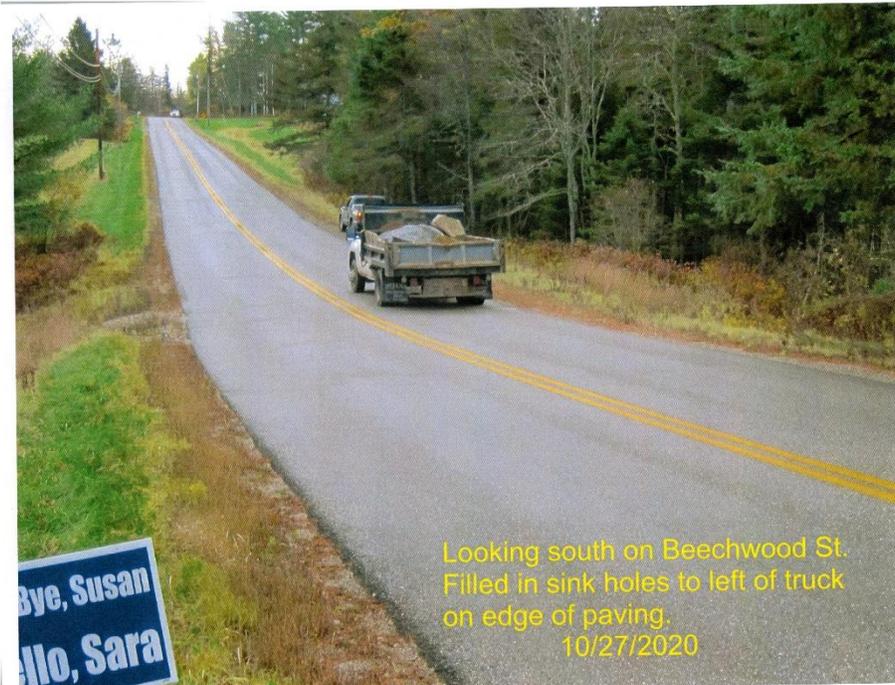
Attachment 1
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

SINKHOLE LOCATIONS



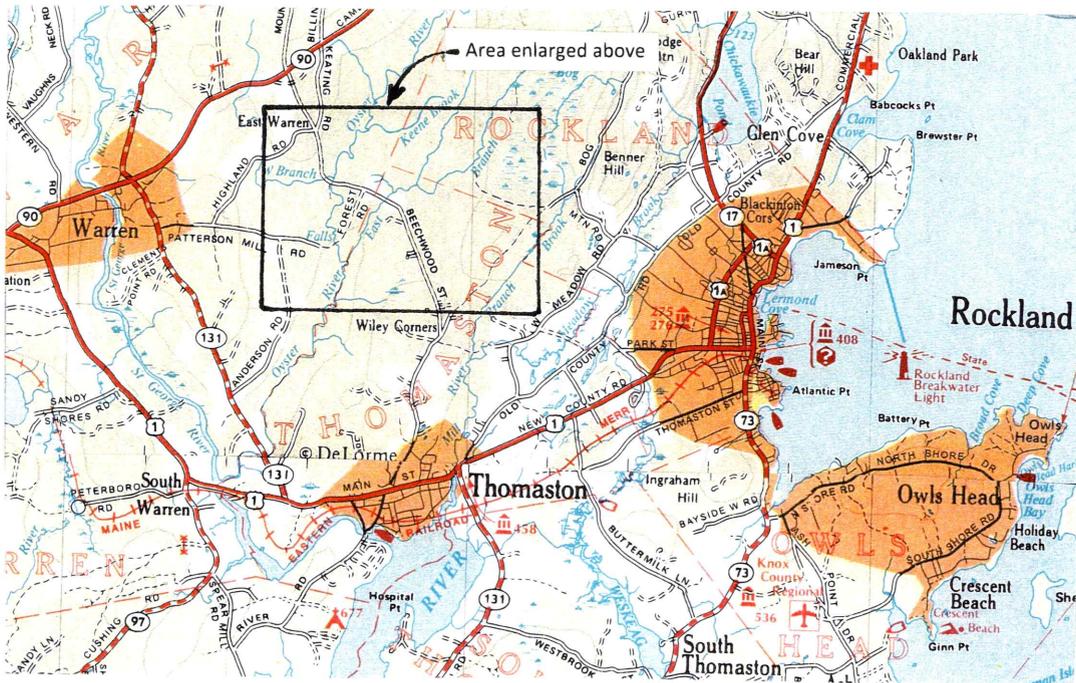
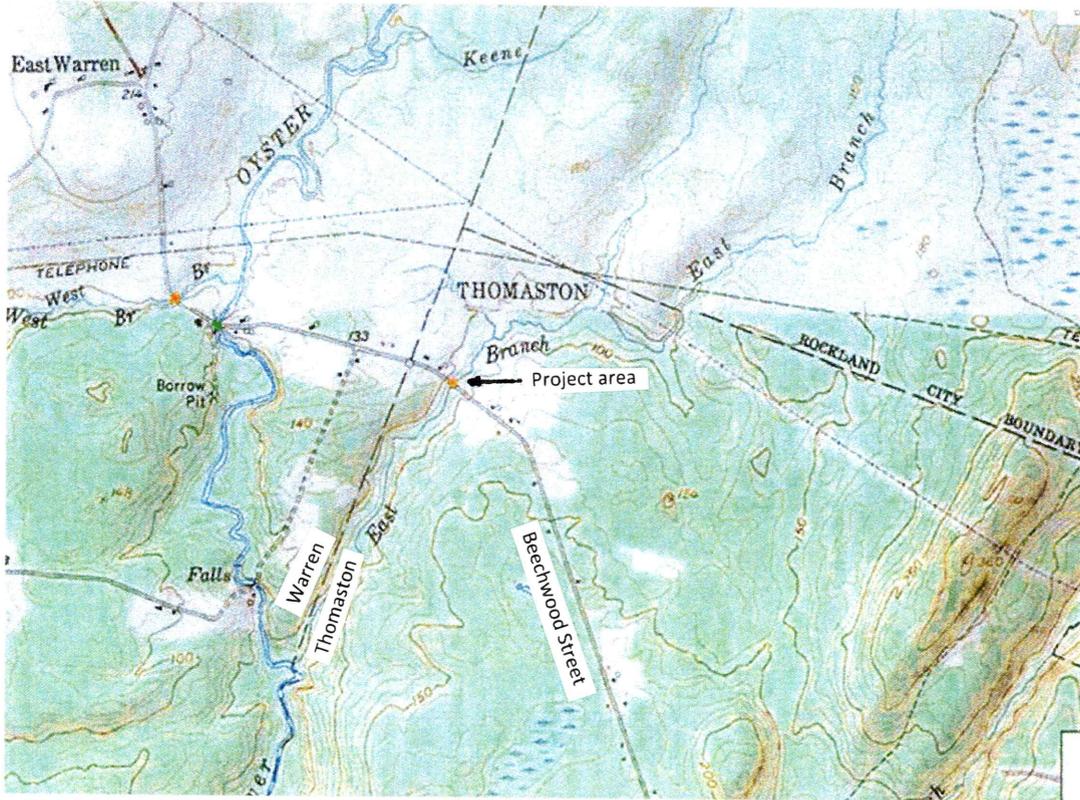
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Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

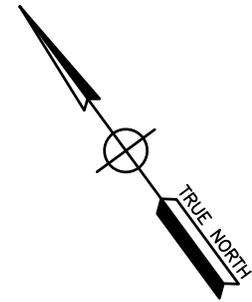
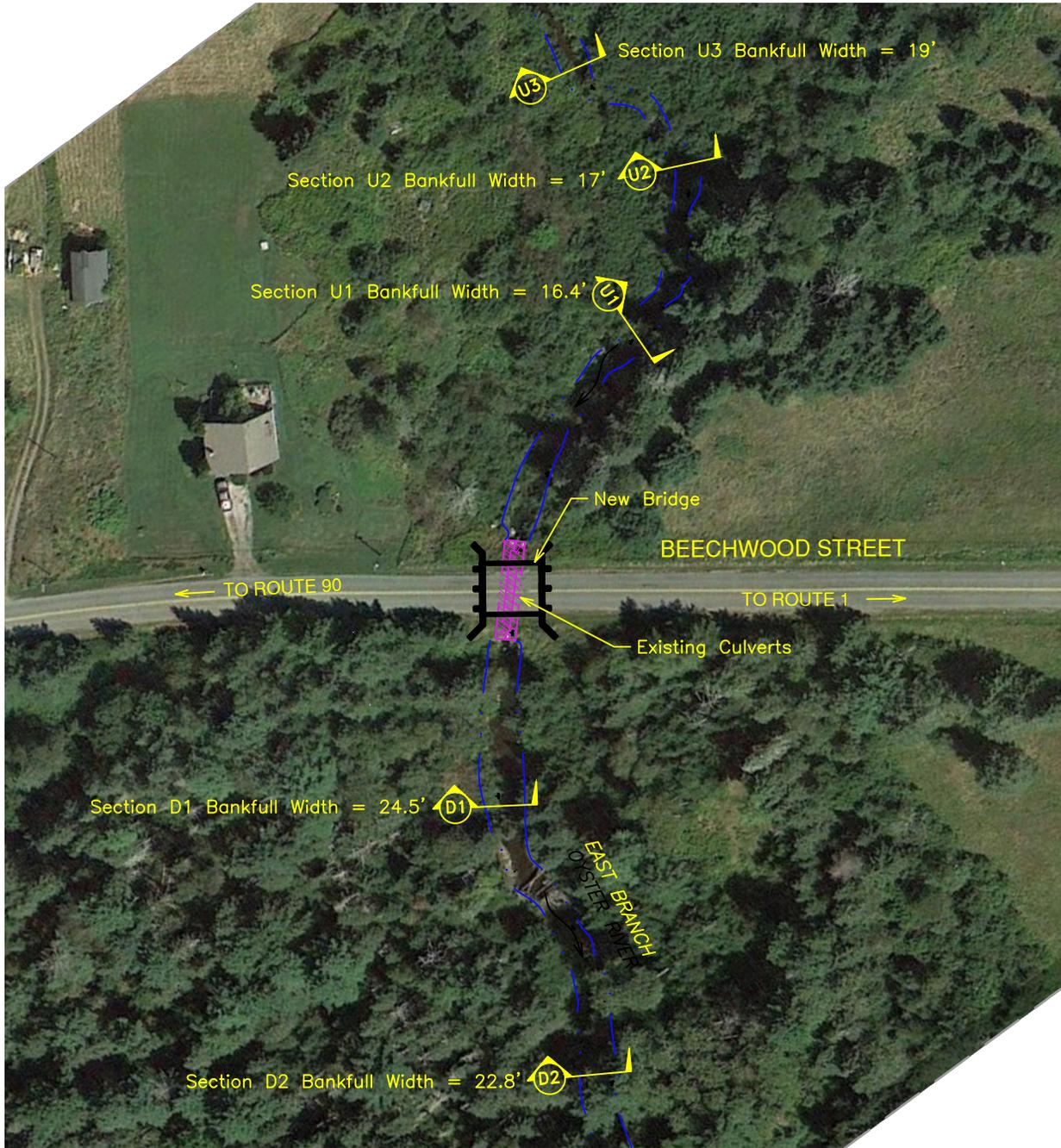
ROAD OVER CULVERTS



Attachment 2
Town of Thomaston
Application for 2020 Stream Crossing Public Infrastructure Grant

LOCATION MAP





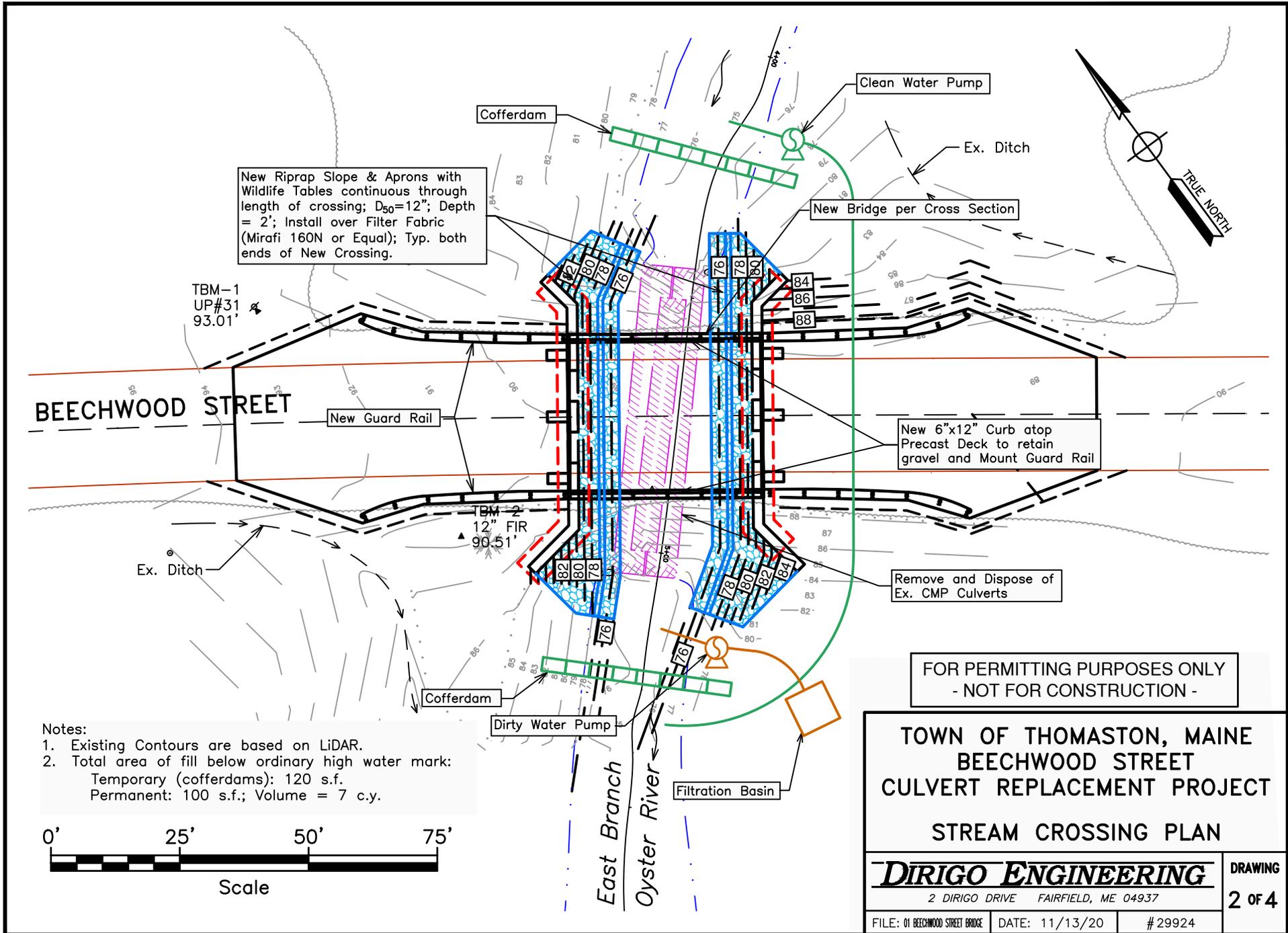
TOWN OF THOMASTON, MAINE
 BEECHWOOD STREET
 CULVERT REPLACEMENT PROJECT

AERIAL PLAN

DIRIGO ENGINEERING
 2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING
 1 OF 4

FILE: 01 BEECHWOOD STREET BRIDGE DATE: 11/13/20 # 29924



New Riprap Slope & Aprons with Wildlife Tables continuous through length of crossing; $D_{50}=12"$; Depth = 2'; Install over Filter Fabric (Mirafi 160N or Equal); Typ. both ends of New Crossing.

TBM-1
UP#31
93.01'

BEECHWOOD STREET

New Guard Rail

New 6"x12" Curb atop Precast Deck to retain gravel and Mount Guard Rail

TBM-2
12" FIR
90.51'

Ex. Ditch

Remove and Dispose of Ex. CMP Culverts

FOR PERMITTING PURPOSES ONLY
- NOT FOR CONSTRUCTION -

- Notes:
- Existing Contours are based on LiDAR.
 - Total area of fill below ordinary high water mark:
Temporary (cofferdams): 120 s.f.
Permanent: 100 s.f.; Volume = 7 c.y.



Cofferdam
Dirty Water Pump

Filtration Basin

East Branch
Oyster River

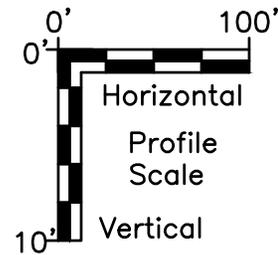
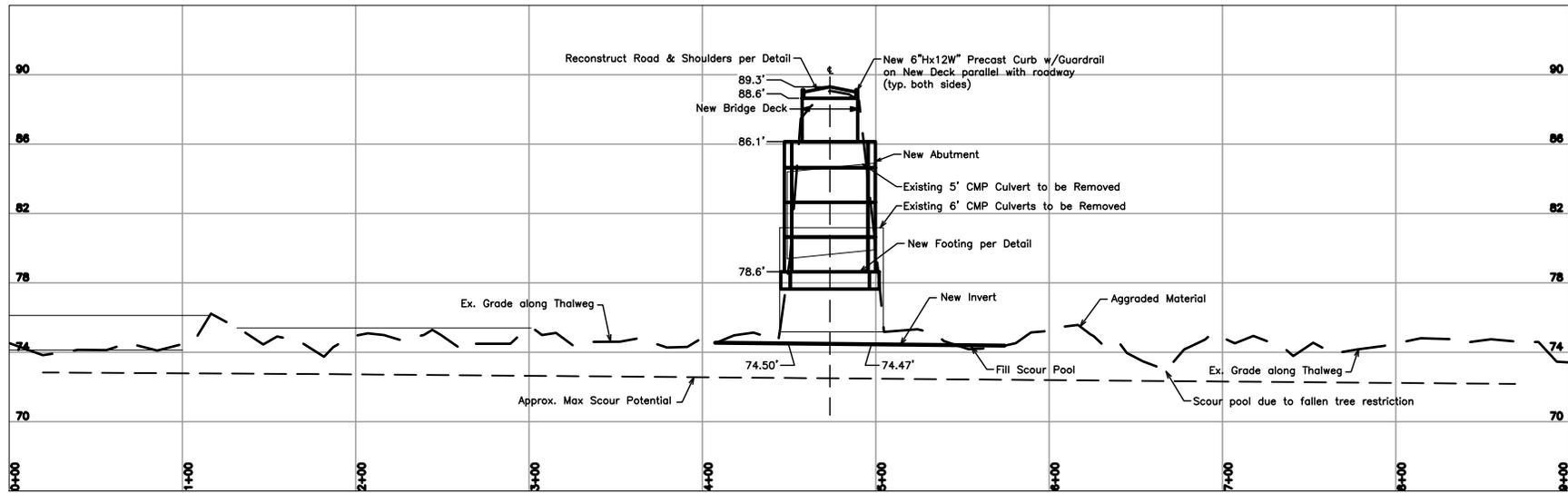
TOWN OF THOMASTON, MAINE
BEECHWOOD STREET
CULVERT REPLACEMENT PROJECT

STREAM CROSSING PLAN

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING
2 OF 4

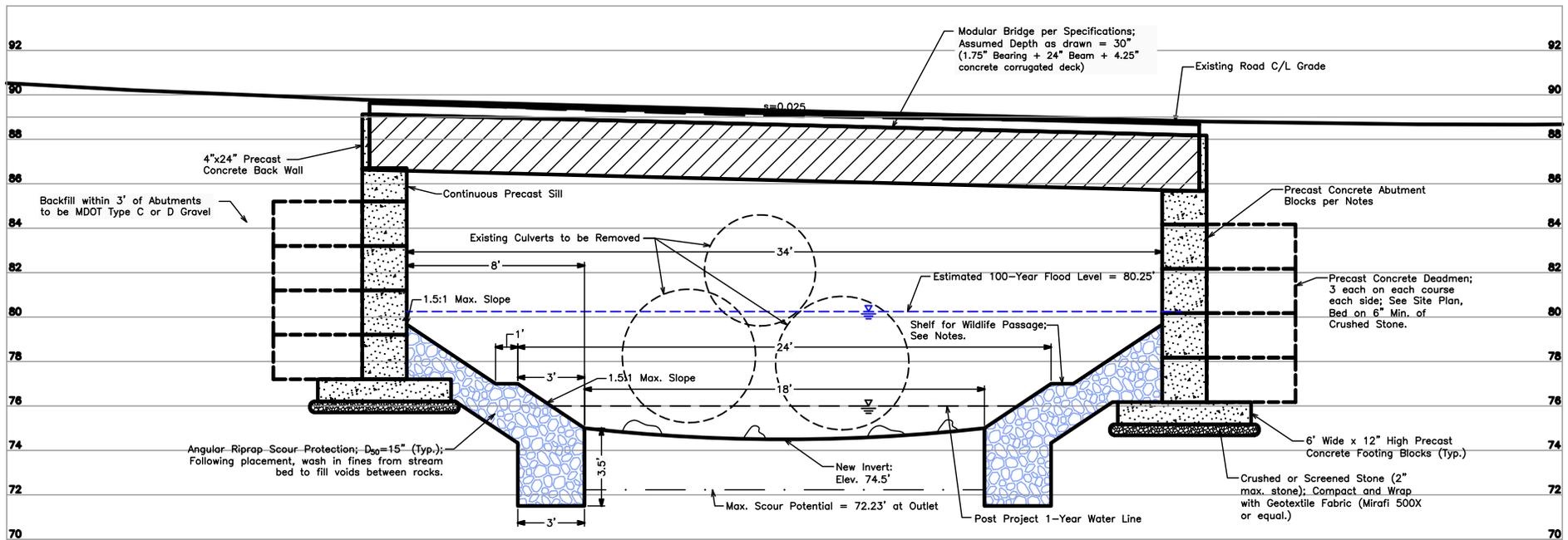
FILE: 01 BEECHWOOD STREET BRIDGE DATE: 11/13/20 # 29924



FOR PERMITTING PURPOSES ONLY
- NOT FOR CONSTRUCTION -

TOWN OF THOMASTON, MAINE
BEECHWOOD STREET
CULVERT REPLACEMENT PROJECT
LONGITUDINAL PROFILE

DIRIGO ENGINEERING		DRAWING 3 of 4
2 DIRIGO DRIVE FAIRFIELD, ME 04937		
FILE: 01 BEECHWOOD STREET BRIDGE	DATE: 11/13/20	# 29924



CROSS SECTION AT INLET

0' 3' 6' 9'

Scale

FOR PERMITTING PURPOSES ONLY
- NOT FOR CONSTRUCTION -

TOWN OF THOMASTON, MAINE
BEECHWOOD STREET
CULVERT REPLACEMENT PROJECT
CROSS SECTIONS

DIRIGO ENGINEERING		DRAWING 4 OF 4
2 DIRIGO DRIVE FAIRFIELD, ME 04937		
FILE: 01 BEECHWOOD STREET BRIDGE	DATE: 11/13/20	# 29924

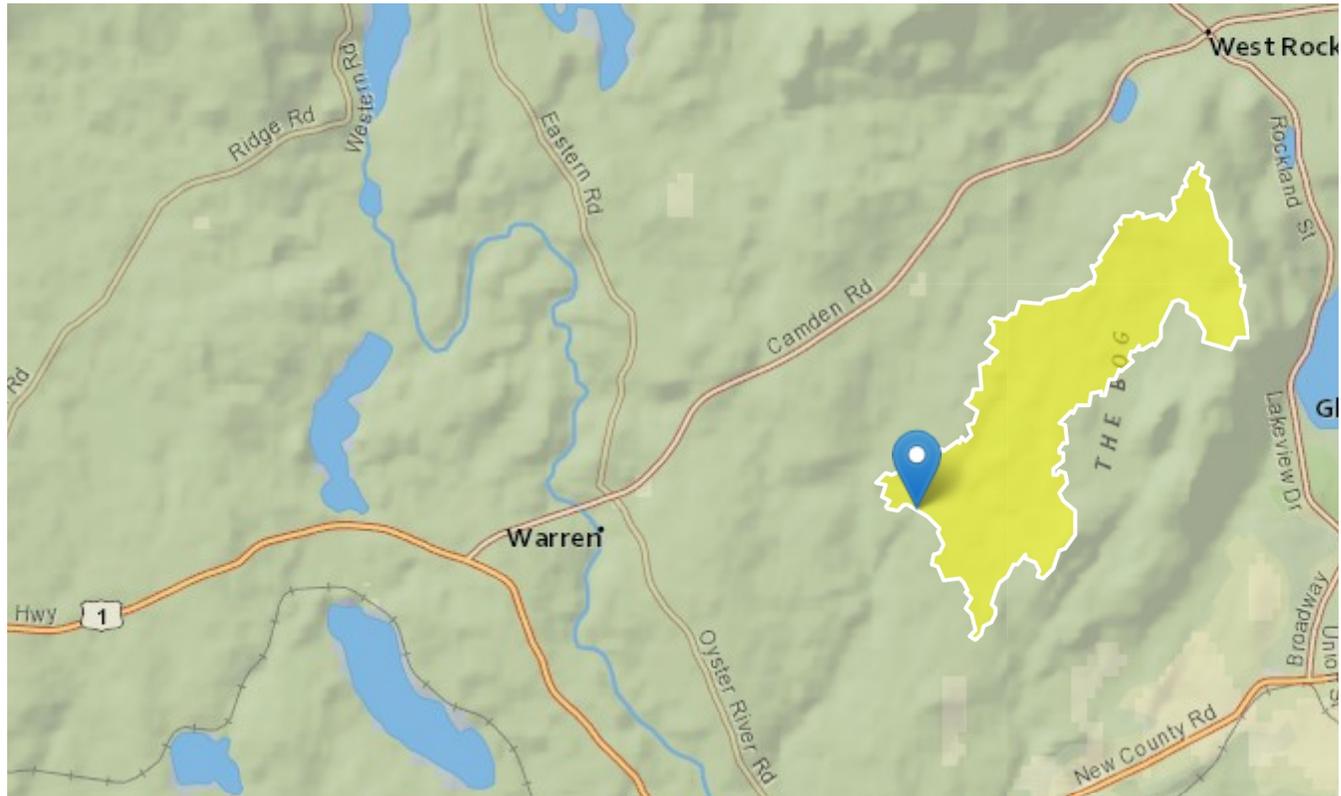
Thomaston Beechwood Street StreamStats Report

Region ID: ME

Workspace ID: ME20200602125208539000

Clicked Point (Latitude, Longitude): 44.12264, -69.18574

Time: 2020-06-02 08:48:35 -0400



East Branch Oyster River

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4	square miles
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0	dimensionless
STORNWI	Percentage of storage (combined water bodies and wetlands) from the National Wetlands Inventory	12.69	percent

Low-Flow Statistics Parameters[Statewide LowFlow SIR 2004 5026]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4	square miles	9.79	1418
SANDGRAVAF	Fraction of Sand and Gravel Aquifers	0	dimensionless	0	0.455

Low-Flow Statistics Disclaimers[Statewide LowFlow SIR 2004 5026]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Low-Flow Statistics Flow Report[Statewide LowFlow SIR 2004 5026]

Statistic	Value	Unit
7 Day 10 Year Low Flow	0.117	ft ³ /s

Low-Flow Statistics Citations

Dudley, R.W., 2004, Estimating Monthly, Annual, and Low 7-Day, 10-Year Streamflows for Ungaged Rivers in Maine: U.S. Geological Survey Scientific Investigations Report 2004-5026, 22 p. (<http://water.usgs.gov/pubs/sir/2004/5026/pdf/sir2004-5026.pdf>)

Peak-Flow Statistics Parameters[Statewide Peak Flow DA LT 12sqmi 2015 5049]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4	square miles	0.31	12
STORNWI	Percentage of Storage from NWI	12.69	percent	0	22.2

Peak-Flow Statistics Flow Report[Statewide Peak Flow DA LT 12sqmi 2015 5049]

PII: Prediction Interval-Lower, Plu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	SEp
1.01 Year Peak Flood	37.5	ft ³ /s	38

Statistic	Value	Unit	SEp
2 Year Peak Flood	126	ft ³ /s	34
5 Year Peak Flood	197	ft ³ /s	35
10 Year Peak Flood	246	ft ³ /s	37
25 Year Peak Flood	323	ft ³ /s	39
50 Year Peak Flood	374	ft ³ /s	41
100 Year Peak Flood	438	ft ³ /s	42
250 Year Peak Flood	491	ft ³ /s	44
500 Year Peak Flood	585	ft ³ /s	47

Peak-Flow Statistics Citations

Lombard, P.J., and Hodgkins, G.A., 2015, Peak flow regression equations for small, ungaged streams in Maine— Comparing map-based to field-based variables: U.S. Geological Survey Scientific Investigations Report 2015–5049, 12 p. (<http://dx.doi.org/10.3133/sir20155049>)

Bankfull Statistics Parameters[Central and Coastal Bankfull 2004 5042]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4	square miles	2.92	298

Bankfull Statistics Flow Report[Central and Coastal Bankfull 2004 5042]

Statistic	Value	Unit
Bankfull Streamflow	22.3	ft ³ /s
Bankfull Width	15.8	ft
Bankfull Depth	0.952	ft
Bankfull Area	15	ft ²

Bankfull Statistics Citations

Dudley, R.W., 2004, Hydraulic-Geometry Relations for Rivers in Coastal and Central Maine: U.S. Geological Survey Scientific Investigations Report 2004-5042, 30 p (<http://pubs.usgs.gov/sir/2004/5042/pdf/sir2004-5042.pdf>)

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Application Version: 4.3.11

Maine Stream Habitat Viewer Report
Beecher Street Crossing at East Branch Oyster River, Thomaston, ME

Crossings and Barriers: Crossings
Site ID: 4516
Crossing Type: Multiple Culvert
Crossing Class: Potential Barrier
Survey Date: 2012-07-02
Stream: Oyster River
Town: Thomaston
County: Knox
Road: ~~Warren Rd~~ Beechwood Street

Photos

[Downstream](#) [Inlet](#) [Outlet](#) [Upstream](#)

Detailed Stream Crossing Information

Latitude: 44.12271
Longitude: -69.18563
Road Type: Paved
Road Class: Town
Number Of Culverts: 3
Crossing Condition: Poor
Structure Type: Round Culvert
Material: Metal
Inlet Grade: At Stream Grade
Inlet Width (ft): 4.92
Inlet Water Depth (ft): 1.05
Inlet Height (ft): 6.23
Crossing Length (ft): 49.21
Outlet Grade: At Stream Grade
Outlet Width (ft): 5.58
Outlet Water Depth (ft): 0.98
Outlet Drop (ft): 0.00
Outlet Height (ft): 6.23
Structure Substrate Matches Stream: None
Physical Barriers: No data
Physical Barrier Severity: No data
Road Fill Height (ft): 3.30
Total Opening Width (ft): 15.10
Area of Opening (sq ft): 60.00
Estimated Bankfull Width (ft): 15.50
Upstream Blocked Miles: 6.13
Upstream Total Miles: 6.13
Upstream Barriers: 0
Downstream Barriers: 0

Potential Effects of this Crossing

Atlantic Salmon Modeled 100 sq m Habitat Units Blocked: 100.88

Alewife Pond Acres Blocked: -1.00

Wild Eastern Brook Trout Habitat: Unknown

Rainbow Smelt Habitat: No data

Tidal Marsh: No data

Other Habitat Considerations

Beginning with Habitat Connectors: Yes

Threatened Endangered or Rare Species: No data

Non-Native Fish: Documented Downstream

Tidal Waterfowl & Wading Bird Habitat: No data

Inland Waterfowl & Wading Bird Habitat: No data

Beginning with Habitat Focus Area: No data

Watersheds

HUC 12 Subwatershed Name: Oyster River

HUC 10 Watershed Name: St. George River

HUC 8 Sub-basin Name: St. George-Sheepscot

HUC 6 Basin Name: Maine Coastal