STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

RFP #: 202106082
RFP TITLE: 2021 Grants for Stream Crossing Infrastructure Improvements
BIDDER: 2021R-41 Starks, Locke Hill Road
DATE: 11/16/22, 1/4/22, 1/5/22, 1/6/22, 1/7/22, 1/28/22

SUMMARY PAGE

Department Name: Environmental Protection
Name of RFP Coordinator: John Maclaine
Names of Evaluators: Jon Cullen, David Waddell, James Stahlnecker, John Maclaine

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Pass/Fail Criteria	Pass	Fail
Section I. Applicability		
• The proposed structure to be upgraded is located on a municipal road, is not owned by a private or state entity, and is not located on a road segment classified as a "State-Aid" road.	**X**	
• The proposed project includes matching funds from local or other sources.	**X**	
• The proposed project is for the upgrade of a culvert, not currently a bridge as defined by the RFA.	**X**	
Scoring Sections	Points Available	Points Awarded
Section II: Public Infrastructure Information/Public Safety	**25**	**22**
Section III: Benefits to Fish & Wildlife	**50**	**45**
Section IV: Cost Efficiency and Effectiveness	**25**	**14**
Total Points	**100**	**81**

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OVERVIEW OF SECTION I
Applicability

Section I. Applicability

Evaluation Team Comments:

Project qualifies for scoring under RFP#202106082.

Contact information:
Town of Starks
Ernie Hilton

Consultant/Agent Info:
n/a

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EVALUATION OF SECTION II
Public Infrastructure Information/Public Safety

	Points Available	Points Awarded
Section II: Public Infrastructure Information/Public Safety	**25**	**22**

Evaluation Team Comments:

Town Name: Starks
Road name: Locke Hill Road
Stream Name: Duley Brook

Existing Culvert Size & Material: 3'Dx60'L, HDPE

Crossing Age: 1 years

Bankfull width and method: 13. Multiple Field Average, upstream only (higher than models)

New Structure size & type: 17.8'Sx8'HX40L, Open bottom concrete box
Contacted DOT Bridge Program if 10' or greater?: No, indicated contact upon award

Estimated time to failure: 1-3 years

Previous flooding or failure events, documentation, culvert condition, age: Overtops 1x per year, requires cleaning, severe damage noted in photos (2020); number of 36 inch culverts have been tried and failed over years
Change in culvert width: 5.2
flooding photos, complete washout in 2020, replaced in kind

Design meets DOT 100-year flood standard: Yes

Regularly obstruction or maintenance required?: Yes, annually

Impact
Cut Offs: 15 homes, 10 businesses
Detours: 0
Affected residents, business, affected critical infrastructure, other safety issues, traffic:
AADT:80
homes & businesses
town water line, no guard rails, emergency access & deliveries cut off
many businesses, homes cut off

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EVALUATION OF SECTION III
Benefits to Fish & Wildlife

	Points Available	Points Awarded
Section III: Benefits to Fish & Wildlife	**50**	**45**

Evaluation Team Comments:

Field work: Bankfull width, longitudinal profile, restoration plan
Bankfull width, method, & confidence: 13
Bankfull width method: Multiple Field Average, upstream only (higher than models)
Longitudinal profile of stream beyond culvert influence completed? Yes

1.2 x BFW or Tidal analysis sizing, considerations performed Yes

Natural Bottom information: Yes, Open Bottom
Banks within structure? Yes
Type of bottom - Pebble Count
New Structure considerations: Bankfull width, longitudinal profile, restoration plan
Removal of downstream material may require permitting considerations due to distance downstream and temporary access road impacts. Please check with DEP and Army Corps staff
Additional Comments: good measurements and design. Restoration plan and all info included. Good profile, some concerns about impacts beyond crossing site in regards to permitting, but will likely improve function of crossing structure. Good water management plan - thoughtful
2018-concrete arch installed nearby Watson Stream
Barrier status, source: Barrier
Maine Stream Habitat Viewer ID: 15724
Benefits to Fish & Wildlife: Brook trout habitat, ATS CH, ATS DPS, ATS modelled habitat class 1 & 2 25 units
Brook trout habitat, ATS CH, ATS DPS, ATS modelled habitat class 1 & 2 25 units
Water quality improvements: large scour pool, stream sim design, long lived structure design
Support letters, other notable benefits: support from IFW (Liz Thorndike), brook trout known directly downstream. Support from DMR-important salmon priority watershed
DMR Resource/Habitat Comments: Modeled ATS rearing habitat downstream; Tributary to Lemon Stream
IFW Resource/Habitat Comments: BKT documented downstream and crossing directly downstream was recently replaced with fish passage
Sandy River Watershed, brook trout present, priority for IFW, DMR (Salmon), almost 6 miles opened. Downstream, crossing already replaced

Habitat Opened/Improved: upstream habitat- 5.86 miles
Brook trout habitat, ATS CH, ATS DPS, ATS modelled habitat class 1 & 2 25 units
Fish present, source of info: wild brook trout, IFW confirmed, salmon present in watershed

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EVALUATION OF SECTION IV
Cost Efficiency and Effectiveness

	Points Available	Points Awarded
Section IV: Cost Efficiency and Effectiveness	**25**	**14**

Evaluation Team Comments:

Requested funding: $125,000
Total Project Cost: $198675
Total Match: $73675
% Match proposed 37%

Engineering
To be stamped?: Yes
Level of plan included: Preliminary Design

Army Corp Permit info: Contact

Costs over previous 10 years: $25-30k "minimum"
Construction year: 2022

Feasibility for success: reasonable costs, funding-town meeting approval 2022

Design concerns or clarification required: Removal of downstream material may require permitting considerations due to distance downstream and temporary access road impacts. Please check with DEP and Army Corps staff

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

APPLICATION COVER PAGE

Handwritten Applications Will Not Be Accepted

Applicant Information			
Applicant Organization Name Town of Starks			
Applicant Mailing Address 57 Anson Rd.	City Starks	State ME	Zip 04911
Applicant Contact Ernest W. Hilton, Selectman	Applicant Contact Phone # 207.696.3800	Contact Email Address ewhilton@myfairpoint.net	

Agent/Consultant/Engineer Information ☐ *Check if not applicable*			
Agent is: X☐ Agent for Application only ☐ Project Engineer only ☐ Agent and Project Engineer			
Agent Name Ernest W. Hilton, P.E.			
Agent Mailing Address 4 Heald St., P.O. Box 162	City Madison	State ME	Zip 04950
Agent Phone # 207.696.3800	Agent Email Address ewhilton@myfairpoint.net		

- No personnel currently employed by the Department or any other State agency participated, either directly or indirectly, in any activities relating to the preparation of the Applicant's application.
- No attempt has been made, or will be made, by the Applicant to induce any other person or firm to submit or not to submit an application.
- The above-named organization is the legal entity entering into the resulting agreement with the Department should they be awarded a contract.
- The undersigned is authorized to enter contractual obligations on behalf of the above-named organization.

To the best of my knowledge, all information provided in the enclosed application, both programmatic and financial, is complete and accurate at the time of submission.

Name (Print): Ernest W. Hilton	**Title:** Selectman
Authorized Signature:	**Date:** November 15, 2021

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

APPLICATION

Please complete all fields in this application to the best of your ability and include all applicable supplemental attachments listed (see "Key Process Events" Part D) with the proposal package.

For additional information and resources for your application, please see "Stream Crossing Resources" on Page 9 of this RFA and utilize resources from the Department's Stream Crossing Resources Page and 2021 Scoring Guidance Document.

I. Project Identification	
Name of Proposed Project *(Town Name- Road Name)*	**Locke Hill Road Crossing #15724**

II. Applicability

Please indicate the ability to demonstrate the following:

X☐ The proposed structure to be upgraded is located on a municipal road, is not owned by a private or state entity, and is not located on a road segment classified as a "State-Aid" road.

X☐ The proposed project includes matching funds from local or other sources.

X☐ The proposed project is for the upgrade of a culvert, not currently a bridge as defined by the RFA.

III. Stream Crossing Location

1. Municipality or Unorganized Territory where project will take place:	Starks, Somerset County	
2. GPS Location of crossing - Decimal degrees preferred. - *Available on Google Maps by clicking the location on the map*	North	West
	44.7299339 N	-69.9665725 W
3. Culvert/crossing location Name of the road on which the culvert/crossing is located and the nearest intersection.	Locke Hill Road - 200 yds from Starks Village	
4. Stream name at project location:	Duley Brook	
5. "Project Stream" drains to *(stream/river name):*	250 yards to Lemon Stream, then one mile to the Sandy River	

IV. Failure Risk, Location, and Reduction in Flooding

1. Has the crossing caused flooding or overtopping of the road in the last 10 years?	X☐ Yes	☐ No
If yes, How many times? (indicate if approximate)	Once per year	
2. Does this crossing regularly become obstructed by debris or require cleaning?	X☐ Yes	☐ No
How often?	Once every year or two	
3. Has the crossing been damaged by flooding in the last 10 years?	X☐ Yes	☐ No
4. Do you have any photos of the flooding or damage? Please provide if available.	X☐ Yes	☐ No
5. Has the crossing ever partially or fully washed-out or become unsafe for traffic in the last 10 years?	X☐ Yes	☐ No
6. Is the current crossing undersized?	X☐ Yes	☐ No
If yes, how was this determined and what was the metric used?	There have been many washouts of the culverts over the years. It is clear a much larger structure is required, but beyond the financial capacity of the Town.	
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.	See attached photo from December 25, 2020 Very extensive washing of material into the stream. The road had to be closed for a couple of days. A number of elderly people were put in real jeopardy. 	

	
8. Describe any other problems or issues with the current condition of the crossing. Include photos if available.	The current culvert lies over a water line which must be moved to allow for a better, larger crossing structure. The water line being under the culvert at all means it is in a precarious position as regards washouts and risk of damage during emergency repairs..

9. In how many years from now do you estimate the culvert/crossing would have a complete failure, a complete collapse, or total washout?	<1 year	1-3 years	3-5 years	5-10 years	10+ years
	☐	X☐	☐	☐	☐

10. How was the estimated time to failure determined?

It could happen at any time. Any of the washouts over the years, including the flooding from last December, 2020 were complete failures.

11. Discuss any future flooding concerns regarding the existing culvert/crossing

This crossing has been an ongoing issue for decades. A number of large (36 inch) culverts have been tried.. To install any infrastructure larger than that was going to require engineering, design and cost of construction beyond the capacity of the town. The principal water supply for the Starks Water District (6 inch ductile iron) runs under the culvert which represents another element of the issue. Every major washout and emergency repair represents a risk of severe damage to the line.

A significant element of this project will be to move a segment of the water line out from beneath this crossing to well below the structure being built here.

Another significant cost element to this project is the need to build (and remove) a narrow bypass downstream to allow vehicular passage while this structure is built.

V. Safety & Impact to Community

1. Would any homes, businesses, or critical infrastructure be <u>completely cut-off from access</u> if the crossing were to completely fail? X☐ Yes ☐ No

2. **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 this RFA)*	Homes		Businesses		Critical Infrastructure*	
	Detour	Cut-off	Detour	Cut-off	Detour	Cut-off
	0	15	0	10	0	4

3. 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) or *details on critical infrastructure noted above that would be cutoff or required to detour?

As a dead-end road, the 15 homes on it have been completely cut off in past flood events, and continue to be every time the culvert fails. Any and all access to these homes by emergency services are cut off, including fire, ambulance and police, and no deliveries to these homes are possible, including oxygen for elderly residents who require it.

4. **Approximately how many vehicles per day travel this road (if known)?** Maine DOT Public Map Viewer (see "Factored AADT" by clicking on road segment)	80 per day
5. 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?	There is no alternate route. Dead end road.

6. Are there any other safety concerns or community impacts regarding the existing culvert crossing?

There is a town water line (6 inch ductile iron pipe) serving a few of the residents of this road, and the entire village (The Starks Water District), and if the failure were bad enough the source of clean drinking water for all of them would be shut off.
Also the current crossing has no guard rails for safety; a new crossing as proposed would include these.

VI. Improvement to Fish & Wildlife Habitat

2021 Municipal Stream Crossing Grants Guidance Video #2: Stream Smart Basics & Project Design

NOTE: For information and potential guidance on local fisheries information, it is highly recommended that you contact your regional Inland Fisheries and Wildlife Office Fisheries Biologist, and Department of Marine Resources.

1. Has this crossing been surveyed and identified on the Maine Stream Habitat Viewer? *If "No" see "Alternate Maine Stream Habitat Viewer Information" worksheet at the end of application*	X☐ Yes	☐ No
2. What is the Maine Stream Habitat Viewer ID#?	No. 15724	
3. Have you contacted MDMR regarding this stream and crossing?	X☐ Yes	☐ No
If yes, please include any relevant information they provided or attach letter of support.	Attached letter from Jennifer Noll of DMR	
4. Have you contacted MDIFW regarding this stream and crossing?	X☐ Yes	☐ No
If yes, please include any relevant information they provided or attach letter of support.	Attached letter of support from Elizabeth Thorndike of DIFW Also attached is a letter/email from Joseph Dembeck, Ex Dir. of the Somerset Soil & Water Cons District with photos	

5. 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:

This crossing is just above the confluence of Duley Brook with Lemon Stream, a historic Atlantic Salmon stream, and so provides seasonal habitat for juvenile salmon, as well as for wild Eastern Brook Trout. According to Jennifer Noll of DMR, "Lemon Stream is a tributary to the Sandy River, which is the major focus area for Atlantic Salmon restoration and recovery within the Kennebec River basin… Adequately sized and appropriately functioning road stream crossings are vital to stream ecology, sediment transport, preventing erosion and maintaining cool thermal regimes in cold water tributaries. Replacing this road stream crossing with an appropriately sized culvert will likely positively affect the quality of Atlantic Salmon habitat in Lemon Stream.

6. Are fish present in the stream?	X☐ Yes	☐ No

7. Have any of the following species been identified within this stream by MDMR, MDIFW, USFWS, NOAA, or another reputable resource? *(Presence, not modelled habitat)*

X☐ Wild brook trout	☐ Alewives (sea run)	☐ other diadromous (sea-run) species (list):
☐ Sea-run brook trout	☐ Blueback herring	
☐ Atlantic salmon (sea-run)	☐ American eels	
☐ Atlantic salmon (landlocked)	☐ Sea-run rainbow smelt	

8. List the source(s) of above fish information:

Maine Stream Habitat Viewer & MDIFW

9. Select any habitats below that have been identified by MDIFW, MDMR, Maine Stream Habitat Viewer, Beginning with Habitat Map Viewer, or other resources near or at the crossing location. ☐ N/A

☒ Atlantic Salmon Critical Habitat ☒ Atlantic Salmon DPS ☒ Atlantic salmon modelled habitat *Type:* Class 1 & 2 *# units*: ≈ 25 ☒ Brook trout habitat ☐ Within the drainage of a state "heritage" water ☐ Within the drainage of an alewife pond ☐ Significant Vernal pools within 1 mile ☐ Other Significant Wildlife Habitats (Tidal/Inland waterfowl, etc.) List:	☐ State Endangered, Threatened, or Special Concern species (aquatic or terrestrial) within 1 mile. List: ☒ Federal Endangered, Threatened species (aquatic or terrestrial) within 1 mile. List: Atlantic Salmon ☐ Other priority habitats such as spawning areas, etc., List:

10. 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? ☐ Yes X☐ No

If yes, describe any additional biological, ecological, or cost-saving benefits that could result from the current project:	In 2018 a concrete arch was installed on Watson Stream which also runs into Lemon Stream two miles further upstream, and a concrete box culvert was installed in 2020 on Smith Brook which runs into the Sandy River immediately downstream from the Lemon Stream confluence.

11. 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:

The proposed replacement structure design results from a Stream Simulation Design process of assessment and analysis, and provides significantly greater ecological connectivity while ensuring stability of the road for far longer than the existing undersized crossing structure. The new structure will be built of concrete, and estimated to last between 75 and 100 years, has a cross-sectional area of over 10 times the current crossing, providing free headspace for passing debris even during expected "100-year" storm events. The crossing will have an open bottom, and durable, well-built banks for armoring abutments, providing appropriate stream form, focusing low flows, and allowing for terrestrial passage by being connected at floodplain elevation at all four corners. The installation of this new structure will also entail restoring the downstream area which has been subjected to the accumulation of road washout debris numerous times.

VII. Stream Measurements and Field Work

For fieldwork techniques, see: Stream Smart Field Work Video and Maine Stream Smart Road Crossing Pocket Guide

Proper field work and measurements are crucial to project success and must be completed prior to construction. Projects that have completed the fieldwork prior to applying will score higher in several areas.

1. Measured Bankfull Width *(field measured beyond culvert influence, min. of 3 upstream and downstream measurements)*	Upstream Widths (US)	1. **12.1**	2. **13.0**	3. **14.2**	4.	5.	**Average US** **13.1**	**Average of US & DS** **13.1**
	Downstream Widths (DS)	1.	2.	3.	4.	5.	**Average DS** **NA**	

2. Estimated/Modelled Bankfull width *(NOTE: measured average bankfull width values are the most accurate method)*	Maine Stream Habitat Viewer http://webapps2.cgis-solutions.com/MaineStreamViewer/	**9.5**
	StreamStats https://streamstats.usgs.gov/ss/	**8.8**
	Other Hydraulic & Hydrologic Analysis (if performed)	**11.8**
3. Bankfull width used for structure sizing		**13.0**

4. If Bankfull width is other than average of field measurements, explain rationale:

Selected upstream reference cross-section is only 0.1' off from average, and was taken in the vicinity of the other measurements, so will be used for design based on the more complete cross-sectional data taken there.

5. Does this structure experience any tidal effects? Is it expected to experience tidal action in the future? Explain.

No

6. Have you surveyed a longitudinal profile of the stream? (recommend 20-30 x BFW up- and downstream of crossing)	☒ Yes	☐ No
7. Based on stream longitudinal profile measurements, what is the stream's slope (%)?	**0.9**	
8. Has a Stream Bed Substrate analysis been performed?	☒ Yes	☐ No
9. Type of analysis performed or to be performed?	Generalized assessment due to dominance of fine substrates, particularly sand. Additional analysis of sheer stress for stable rock taken from USACOE stable rock sizing formula.	
10. Type of stream bed material to be installed:	Mostly fine gravel and sand, with some 3"- 6" rock	

11. Size of DS scour pool	Width	Length	Max Depth
☐ N/A, No scour pool present	20'	50'	5'

12. Is the crossing back-watered or impounding water upstream?	☐ Yes	X☐ No
13. Is another downstream crossing potentially causing impounded water to occur at this crossing location?	☐ Yes	X☐ No
14. Is the upstream or downstream habitat degraded due to this crossing's orientation, slope, or sizing that will be corrected by the new crossing? (e.g. large scour pool, instability or stream bank erosion, significant downstream sedimentation, etc.)	X☐ Yes	☐ No

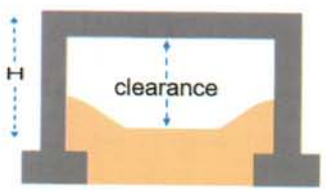
Explain:

DOT installed an 8 foot diameter concrete culvert for this stream passing under Rt 43 only 150 yards downstream from the Locke Hill Road crossing. Yet, there is a beaver dam just upstream of that crossing, and the beaver dam is backing water up almost to this crossing. The new crossing installation will entail filling of the scour pool, regrading of the tailwater composed of old road washout debris, and the new crossing structure will relieve future scour concerns in that area due to its ample capacity and properly designed elevation, stream bed and banks.

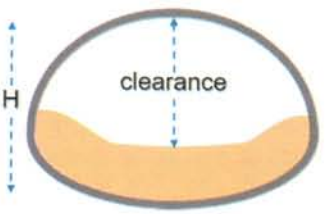
VIII. Existing Culvert Crossing Information

Structure Dimensions as Intended by MSCG Application:

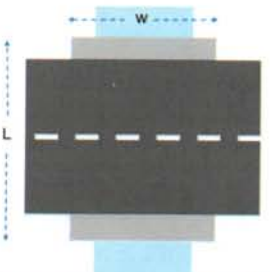
Open Bottom Structures



Closed Bottom Structures



"Plan" View



Culvert/Crossing Shape	Culvert Material	Stream Bed Material in Culvert
☐ Closed bottom Box	☐ Corrugated Metal Pipe	☒ none
☐ Open bottom box	☐ Smooth Metal Pipe	☐ Partial
☒ Circular	☐ Concrete	☐ Continuous
☐ Open bottom arch	☒ Plastic	
☐ Closed bottom arch (pipe arch)	☐ Stone	
☐ Oval	☐ Other: _____	
☐ Bridge or span		

How many culverts are there at this crossing? If more than 3, list 3 primary structures below				
Culvert	Crossing Width ("W") *diameter if round*	Culvert Clearance *(from stream bed/pipe bottom to highest inside point)*	Culvert Length ("L") under Road	Approximate Culvert Age
#1	3'	3'	60'	1 year
(#2)				
(#3)				

IIX. Proposed Crossing Structure Information

NOTE: Pursuant to 32 MRSA §1254, a licensed professional engineer is required when the completed project cost estimates exceed $100,000 and does not create an undue risk to public safety or welfare.

1. Has an engineer been retained to assist with the project's design?	☒ Yes ☐ No
2. Do you have engineered design plans and construction specifications for the replacement culvert/crossing?	☐ Yes ☒ No
If yes, identify who designed the plans, and when the plans were completed; or who has been retained to complete engineering plans.	
3. Indicate the level of plans attached and submitted with this application	☐ Final, stamped engineering plans & specifications ☐ Site-specific plans at 90%+ Completion ☒ Preliminary Design Plans ☐ Conceptual Plan ☐ Plan View Sketch & Cross Section ☐ Plan View Sketch ☐ None
4. Will final plans be stamped by a Maine Licensed Engineer prior to construction?	☒ Yes ☐ No

IX. Proposed Crossing Structure Design

NOTE: Be sure to watch the 2021 Stream Crossing Grant Workshop Videos and other resources found in Section II:B

Culvert/Crossing Shape		**Culvert Material**	
☐ Closed bottom Box	☐ Open bottom arch	☐ Corrugated Metal Pipe	☐ Smooth Metal Pipe
☒ Open bottom Box	☐ Pipe arch (closed bottom arch)	☒ Concrete	☐ Plastic
☐ Circular	☐ Bridge or span	☐ Stone	
☐ Oval			
☐ Other (describe: _____		☐ Other (describe): _____	

Proposed Crossing Width "W"	Proposed Crossing Clearance	Proposed crossing Height "H" (or to top of footing)	Crossing Length "L" under Road	*If proposing a bridge/span, what is the* Clear Span (measured abutment to abutment)
17.8'	5.5'	8'	40	

Open Bottom Crossings		**Closed Bottom Crossings**	
Includes footings below scour potential?	☒ Yes ☐ No	Embedded?	☐ Yes ☐ No
		Depth of embedment *(from inside of culvert/invert)*	

Performance Criteria & Commitments in project design/installation
The project will:

☒ Meet Maine DOT 100-year flood criteria (*for crossings with clearance <6', include DOT worksheet* with this application)
☒ Be sized at least 1.2 time bankfull width of the stream as determined by field measurements (or modelling, if justified)
☒ Be aligned (skewed) to match the stream
☒ Include a longitudinal profile survey to determine the stream and structure's slope
  ☒ Longitudinal profile is compete
  ☐ Longitudinal profile will be completed prior to design

☒ Contain stream material within structure closely matching native stream bed as:
  ☒ Open, natural stream bottom *OR*
  ☐ Embedded closed bottom with backfilled stream material
☒ Include constructed stream banks through the structure
☒ Have properly-designed and engineered footings and/or structure bottom elevation accounting for potential scour

X. Maine Department of Transportation Notification & Inspections

See MaineDOT's Bridge Upgrade Fact Sheet and
Guidance Video #4: Maine DOT Responsibilities & Requirements

For Crossings with a clear span 10 feet or greater

☐ *This section is not applicable the proposed structure is less than 10 feet in width measured along the road centerline between both abutment faces underneath, or spring lines of arches, or has an opening of less than 80 square feet in area.*

NOTE: Maine DOT defines culverts and bridges differently than in the context of this RFA.

1. In determining the proposed structure's width, was all necessary field work, including stream profile survey and multiple averaged field bankfull width measurements completed?	☒ Yes ☐ No
2. Have you made initial contact with MaineDOT Bridge Maintenance Division (207-624-3600) to discuss the structure's potential requirements and inform them of the town's intention to replace the crossing with a span 10 feet or greater?	☐ Yes ☒ No
If No, please indicate when you intend to contact Maine DOT Bridge Maintenance Division?	Upon award

For Crossings with a clear span 20 feet or greater

X☐ *This section is not applicable, the proposed structure is not more than 20 feet in width, measured between both abutment faces underneath, or spring lines of arches or the extreme ends of openings for multiple boxes.*

NOTE: Examples of design elements not recommended by MaineDOT are aluminum box culverts, precast block abutments, metal bin abutments, bridge foundations that are scour critical, bridges that do not have designed or crash tested bridge rail. See MaineDOT's Bridge Upgrade Fact Sheet for more information. MaineDOT recommends that bridge designs be completed by design firms found on the department's prequalification website: Consultant Prequalification | MaineDOT

3. If the new crossing will be 20 feet or over in width, are you planning to request that the MaineDOT take responsibility for the structure?	☐ Yes ☐ No
If Yes, please indicate you are aware that for MaineDOT to accept responsibility for a structure, there are additional design, safety, and other review criteria that may affect the final design of the structure. Meeting these criteria are the responsibility of the applicant.	☐ Yes, this is understood
4. Have you had the design reviewed by MaineDOT's Bridge Maintenance Division?	☐ Yes ☐ No

Important Note: For all crossings proposed to be 20 feet or greater, please refer to Maine DOT's Bridge Design Guide and contact MaineDOT Bridge Division for requirements and limitations.

XI. Project Efficiency and Avoided Costs

1. Size of previous year's municipal road maintenance budget:	$216,500 for summer roads, winter roads and all equipment maintenance
2. Amount of annual maintenance budget dedicated to non-winter maintenance:	$72,500 for summer roads only
3. How much money has been spent on physical repairs within the last 10 years on this culvert crossing?	In the last 10 years, this culvert has washed out at least 7 times- twice in one year. 150 to 200 yards of gravel each time- $25,000 to $30,000 minimum total over 10 years.
4. How much money has been spent on road closures or other costs associated with the culvert crossing?	- Minimal- wasn't much that could be done.

5. Describe the types of expenditures made on repairs or other costs listed above.

See No. 3 above – The washouts have occurred at all times of the day and night. On occasion washouts have occurred in the middle of the night requiring immediate attention (access to local gravel pits) so as to avoid delay of emergency services to elderly residents on the road. The Town has upgraded culverts and generally hauled in a lot of gravel to stabilize the situation.

6. This project will likely require a permit from the Army Corps of Engineers. Have you contacted Army Corps regarding this project? (see Guidance Video #3)		☒ Yes ☐ No
7. Have you submitted an application to Army Corps of Engineers?		☐ Yes ☒ No
8. Do you already have a permit in-hand from Army Corps of Engineers?		☐ Yes ☒ No
9. What is the anticipated construction duration?	2 weeks	
10. If awarded, when is construction anticipated to begin (month/year)? *(Keep in mind that the typical window for in-water work is July 15-October*	Start Date: 7/15/2022	Completion Date: 7/31/2022

1)		

11. Provide any additional information regarding the efficiency and cost-effectiveness of the project:

This project is an extremely high priority for the Town. It is critical to public safety for the residents. Loss of this crossing will result in the disruption of access for residents and emergency services and commercial access for which there is no other option.

12. Provide any additional information as to why this project should be funded by a public infrastructure grant:

Starks has very limited resources due to not having a commercial tax base. We have a fairly high tax rate and a significant elderly population. It is always difficult to get taxpayer approval for large capital projects like this one, so state help is extremely helpful.

XII. Alternate Maine Stream Habitat Viewer Information

Complete this section if the crossing location for this proposal is not mapped on the Maine Stream Habitat Viewer

X☐ *This section is not applicable (the Maine Stream Habitat Viewer ID for this site is available and listed in Application Section VI)*

If the existing culvert/crossing is NOT surveyed on Maine Stream Habitat Viewer, what is the closest Crossing ID# to the structure on this stream *(same stream preferred, or stream system if not available*			
Describe the proximity of this reference crossing to the proposal location?			
4. If they exist, what is the Maine Stream Habitat Viewer Crossing ID# for the crossings upstream and downstream of the proposed upgrade?	**Upstream Crossing ID#** ☐ N/A	**Downstream Crossing ID#** ☐ N/A	
Are these considered to be a barrier to fish passage?	☐ Barrier ☐ Partial/Potential Barrier ☐ Not a Barrier	☐ Barrier ☐ Partial/Potential Barrier ☐ Not a Barrier	
5. Approximate distance to the next barrier identified by the Maine Stream Habitat Viewer? *(in miles, along stream)* Use a map measure tool to approximate the distance along the stream to the next crossing on a road.	Upstream None	Downstream None	
Does this crossing appear to be able to pass fish in its current state?	☐ Yes	X☐ No	☐ Maybe

Has this crossing been confirmed by a fisheries biologist or DEP staff as a barrier to fish passage? Explain.	
Explain reasoning for fish passage assessment (be sure to include good photos with the application)	

From the stream viewer map of the area:

- Use the layers to determine if the area falls within a mapped habitat. List any habitat indicated in the Fish & Wildlife Section of the Application:
- Use the Beginning with Habitat Maps to determine if there are any nearby endangered species or other habitats
- Barrier status: Discuss the project with a fisheries biologist or with DEP staff to see if the crossing would likely impede fish passage. Look for clear features such as outlet drops or perched culverts and other features that would prevent a fish from moving through the culvert. List any indications or additional information about the culvert's ability to allow fish movement. Take good photos of the crossing for your application, be sure to clearly show the inlet and outlet and inside the structure.
- Make sure to contact fisheries agencies to find out what information they might have about the resource, fisheries, and habitats.

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

COST & BUDGET INFORMATION

Applicant Organization's Name:	**Town of Starks**

The requested funds may not exceed $125,000. The Department cannot fund 100% of any project; local matching funds must be included

1. Total Amount of Funds being Requested	**$ 125,000**
2. Total Matching Funds Committed to Project	**$ 73,675**
Source of Project Cost Estimate	Starks Board of Selectmen, Alex Abbott (Stream Restoration Specialist), Dirigo Bridge Co.
Source(s) and types of Local Matching Funds proposed	Taxation

What is the status of any proposed matching funds (e.g. approved, planned, committed, uncertain, etc.)	Planned. The money will be raised during town meeting in March, 2022

Selected Budget Items	
5. Total Engineering Costs	**$10,000**
6. Permitting and Bidding	**$2,500**
7. Erosion & sediment controls (including de-watering, stream bypass, cofferdams, temporary and permanent stabilization measures)	**$6,000**
8. All other items	**$180,175**

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

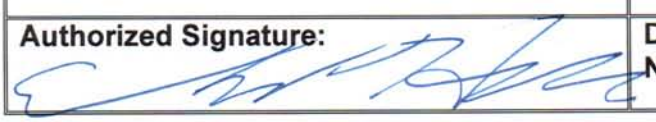
DEBARMENT, PERFORMANCE and NON-COLLUSION CERTIFICATION

Applicant's Organization Name:	Town of Starks

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.*
c. *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.*
d. *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.*
e. *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 Applicant's application, at the discretion of the Department.

Name (Print): Ernest W. Hilton	**Title:** Selectman
Authorized Signature: 	**Date:** Click or tap here to enter text. **November 15, 2021**

Restoration Plan Summary — Town of Starks Crossing #15724 - Duley Brook at Locke Hill Road

Document prepared by Alex Abbot, US Fish and Wildlife Service w/structure drawings by Hunter Allen, Dirigo Bridge Co.
November 10, 2021

Narrative:

Crossing #15724 consists of one 3' round corrugated plasatic culvert providing insufficient capacity and presenting a barrier to aquatic organism passage on this tributary to Lemon Stream. To restore the ability of this crossing to pass expected flood discharges and debris while also improving aquatic organism passage, the crossing needs a substantially larger capacity structure. The new structure should have a natural bottom, be set at an appropriate stream bed elevation, and be sized to handle 1% probability peak flows. A bottomless structure of sufficient width will allow the stream bed to adjust to accommodate movement of sediment and natural materials. An appropriate structure for the site is a 3-sided concrete box-bridge, requiring little or no maintenance. Removing this barrier to aquatic organism passage will allow access to 5.8 miles of potential Atlantic salmon and brook trout habitat.

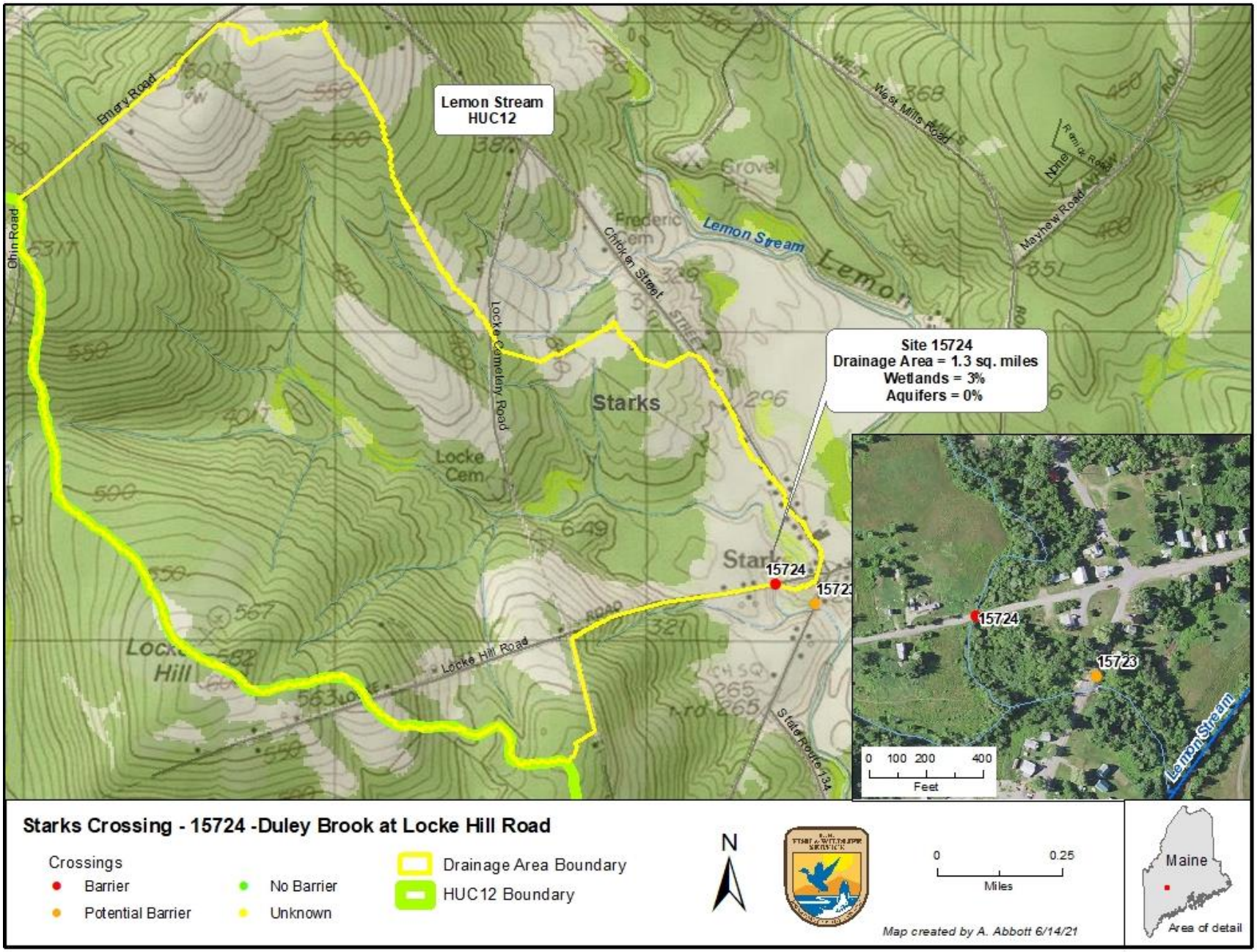
Based on its 1.3 square mile drainage area, the crossing was initially estimated to require a width of approximately 11.8 feet which was not confirmed by the upstream reference cross section, where bankfull width was greater than this estimate at 13', while the downstream was unmeasured, due to backwater from a downstream beaver dam. The average of upstream bankfull measured widths is 13.1', which gives a 1.2 times bankfull width value of 15.7'. The overall slope of the stream in this area is 0.9 %, in the 207' upstream reference reach, and 0.2% in the 330' crossing reach. The upstream reach is split due to extremely dense alders. The downstream reach is subject to backwater effects from the downstream beaver dam, which potentially limits velocities from high flows, while also raising flood elevations. The town of Starks has a plan for removal of the beaver dam as possible. In general, the substrate is composed of sand and fine gravel, though there is a small mount of bedrock evident upstream of the reference reach surveyed.

The proposed structure is an open-bottom, 3-sided concrete box-bridge set on concrete block abutments on spread footings with a clear span between abutments of 17.8', a rise above the stream bed of 5.5', a deck length of 35', and an abutment length of 40'. The elevation of the stream bed at the inlet will be set at ≈99.3', and the stream bed at the outlet will be set at ≈99' to provide the appropriate 0.9% slope. The structure will have a cross-sectional area of approximately 95 square feet, or well over13 times the existing crossing capacity of 7.1 square feet. Analysis of estimated peak flows in this watershed using HY-8 hydraulic analysis software indicates the proposed crossing will successfully pass more than the expected 1% probability peak flow of 261 cfs with plenty of room to pass debris that often accompanies such large floods (Headwater Ratio = 0.75). The bottom of the proposed spread footings are to be set at 96' in elevation (bottom of excavation at 95.5' with 6" of crushed stone for footing bedding), below the level of potential scour, and relatively large rock will be used to armor the abutment blocks to protect them from scour during large flow events, and acting as foundations for stream banks inside for providing appropriate stream form and terrestrial animal passage.

This project involves two features which make it more complex than some crossing replacements. It will require a temporary bypass road to allow road access for the duration of construction. Additional water control measures will be needed for constructing this road, with the road bed then acting as a downstream cofferdam for the crossing replacement work. The project also involves the moving of a water line currently running under the existing culvert pipe to a location deeper and farther from the road to separate it from the crossing to allow future maintenace to either the crossing or water line separately. This water line work may be completed as a separate project in advance of the crossing replacement based on advice from consulting engineers.

Note: This document is meant to provide both general and specific guidance in the design and installation of a replacement crossing structure, but does not address all issues related to engineering, permitting and construction. All elevations are accurate relative to each other, but not tied to an established benchmark with high accuracy.

Site Map - Drainage Area



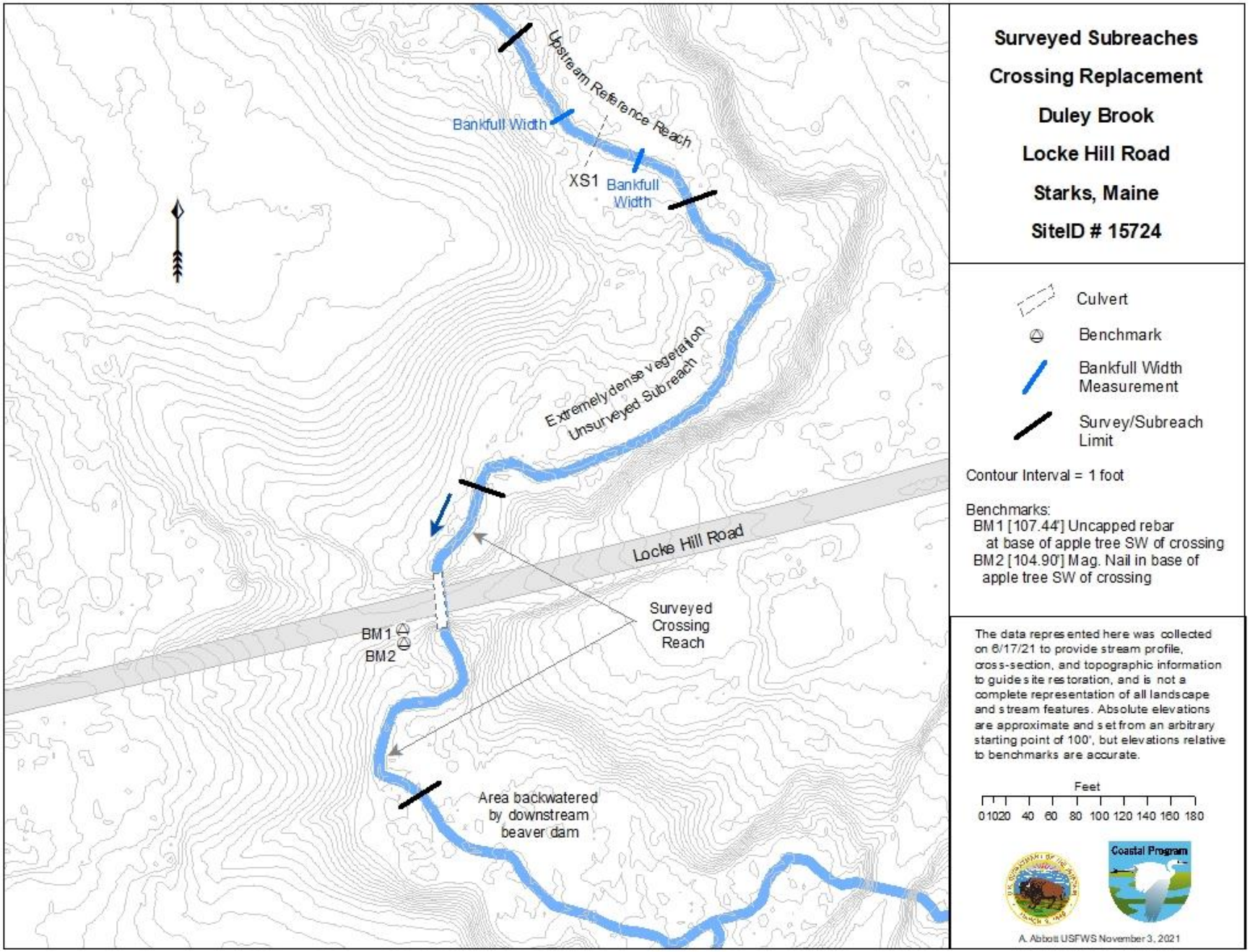
Inlet Photo

Outlet Photo

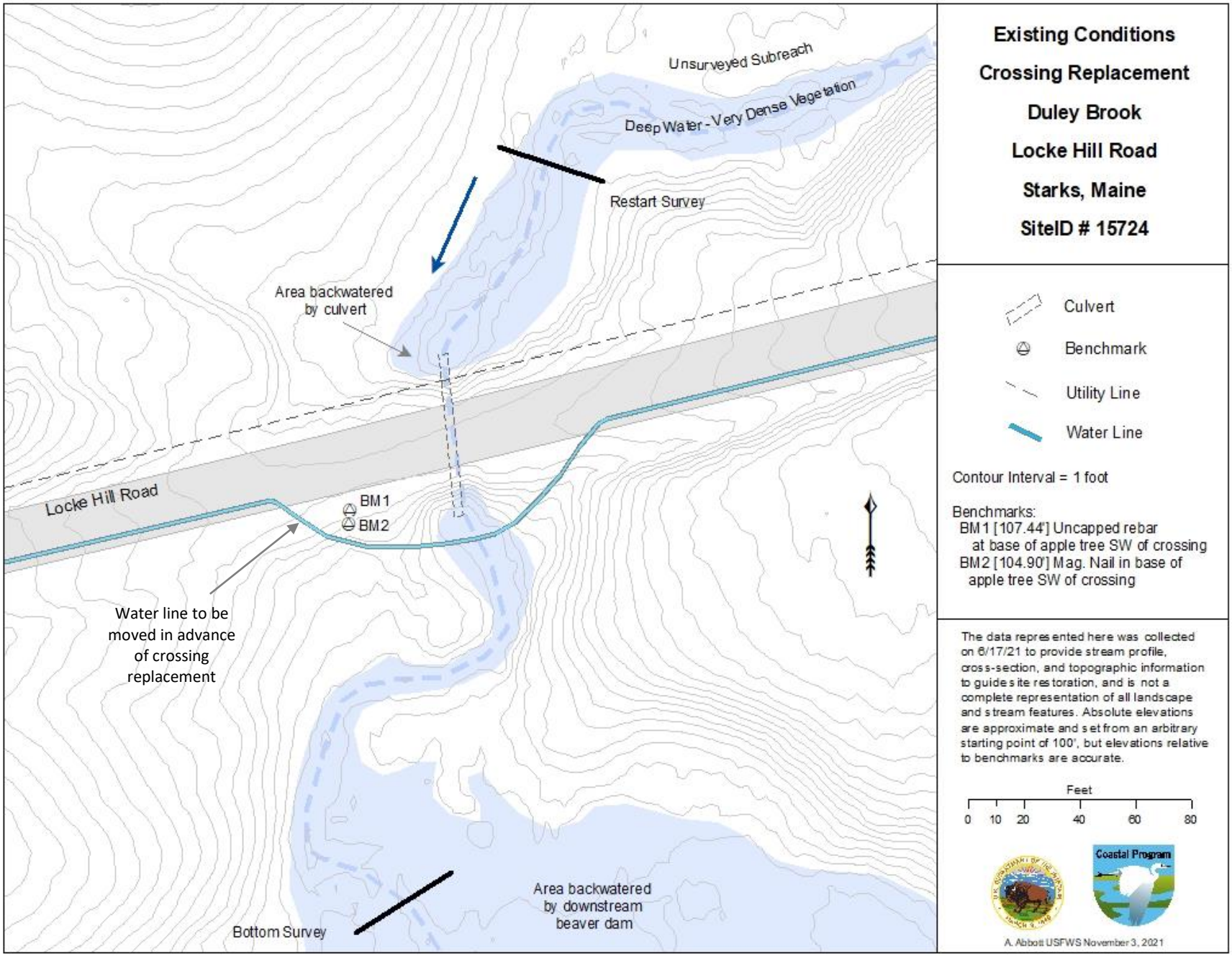
Upstream Photo

Downstream Photo

Site Survey Locations

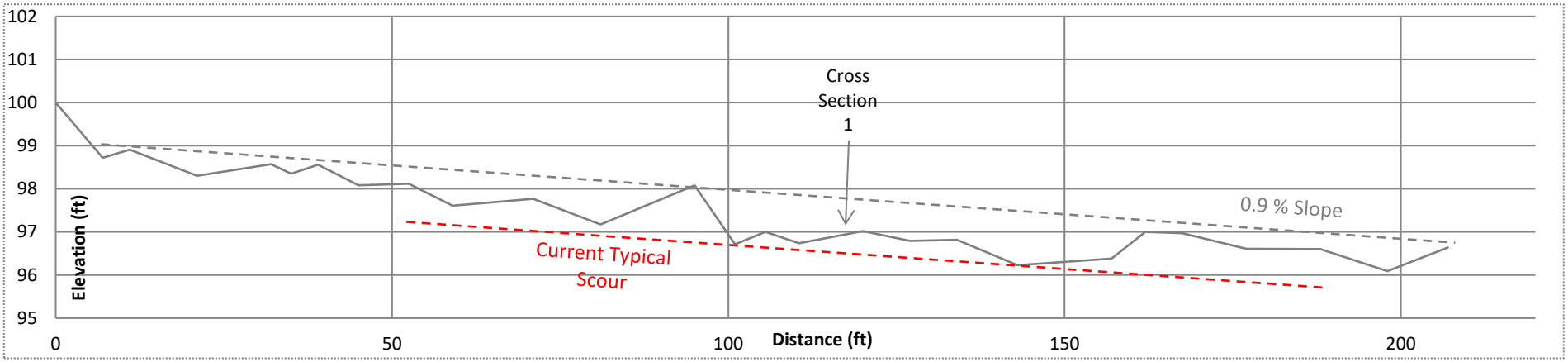


Site Topography - Existing Conditions

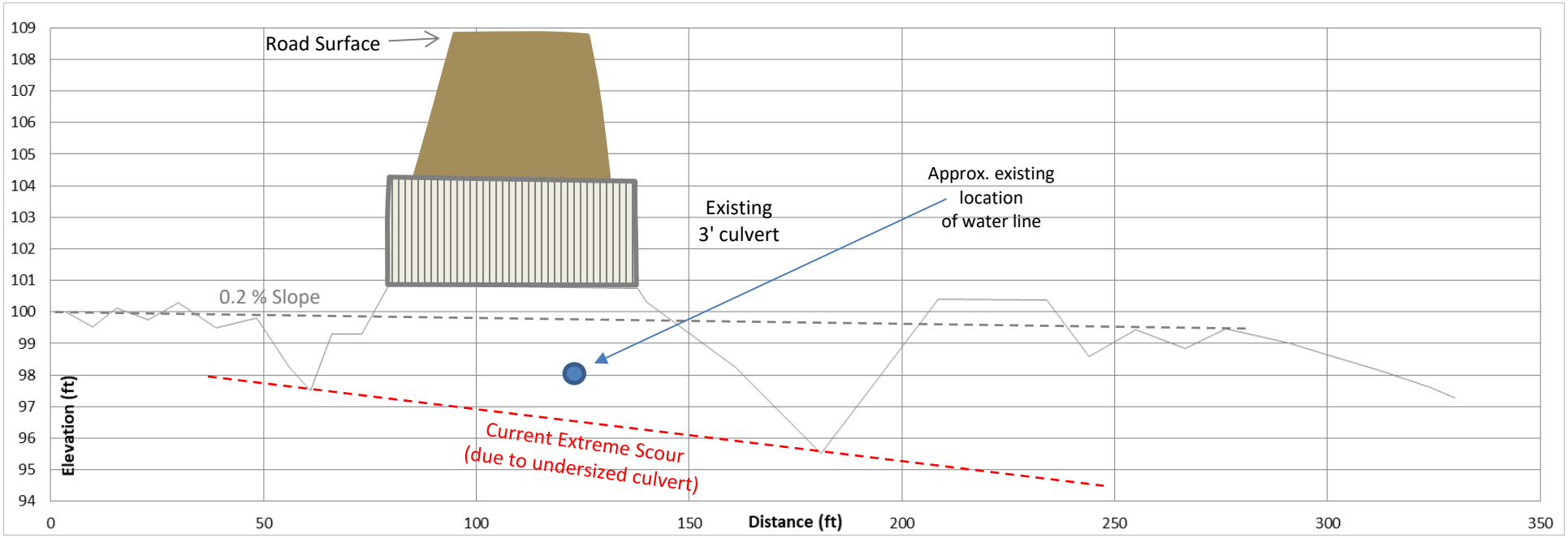


Stream Profile - Existing Conditions

Reference Reach - Upstream



Crossing Reach



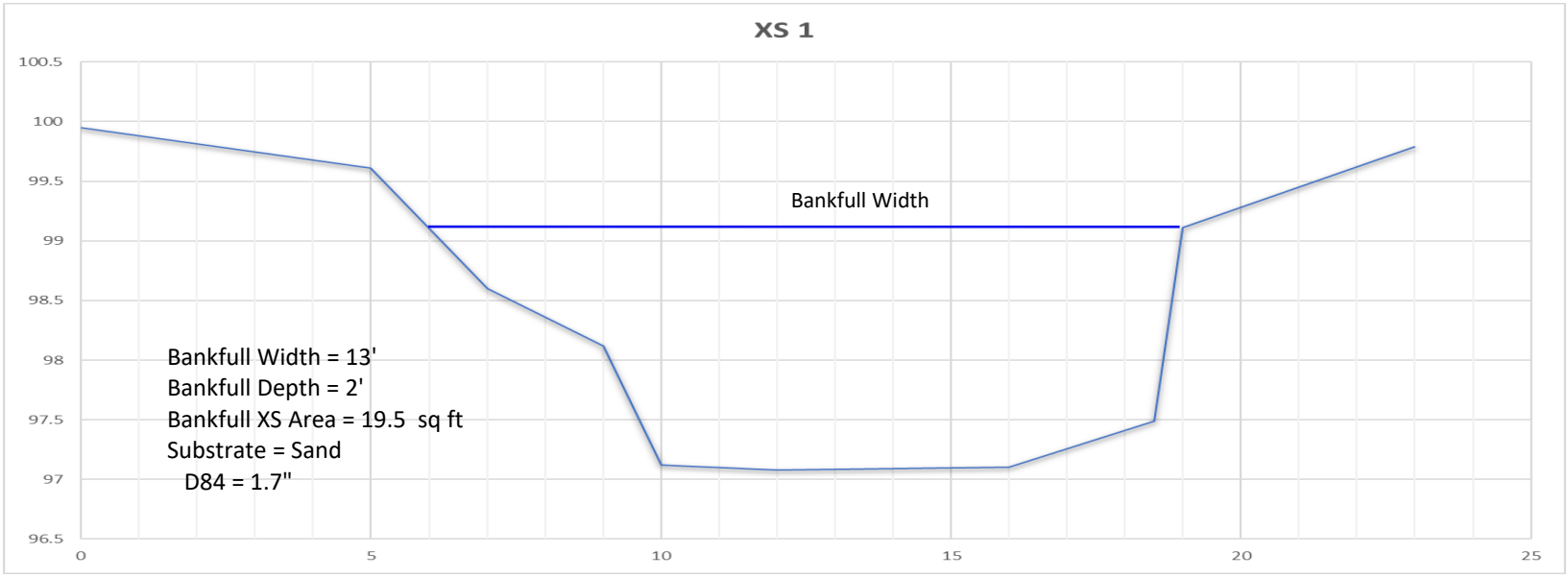
Notes:

These views above are vertically exaggerated, reflecting the different scales of units for elevation and distance.

Cross-Section 1 - Reference Reach Upstream of Crossing

Upstream from Cross-Section

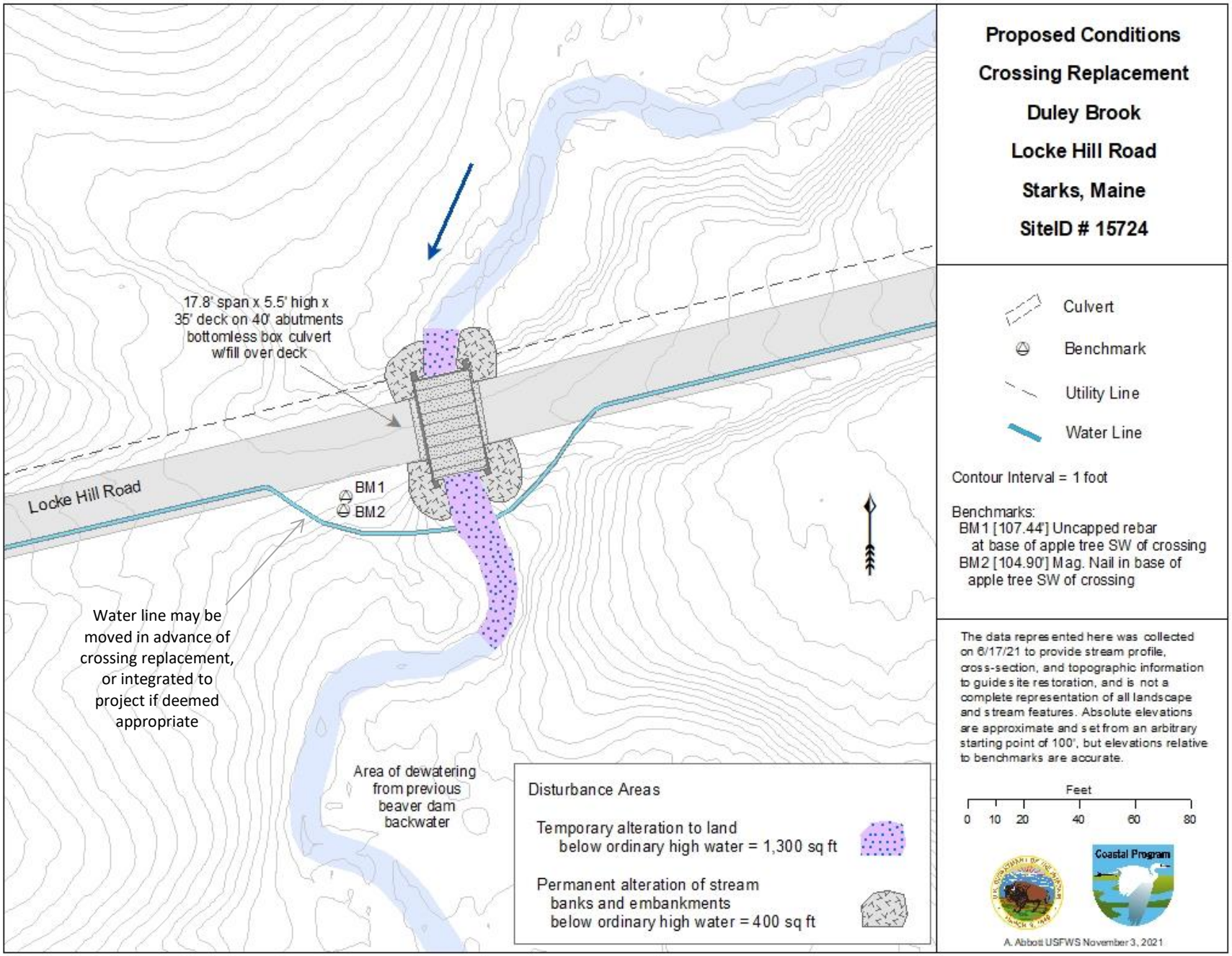
Downstream from Cross-Section



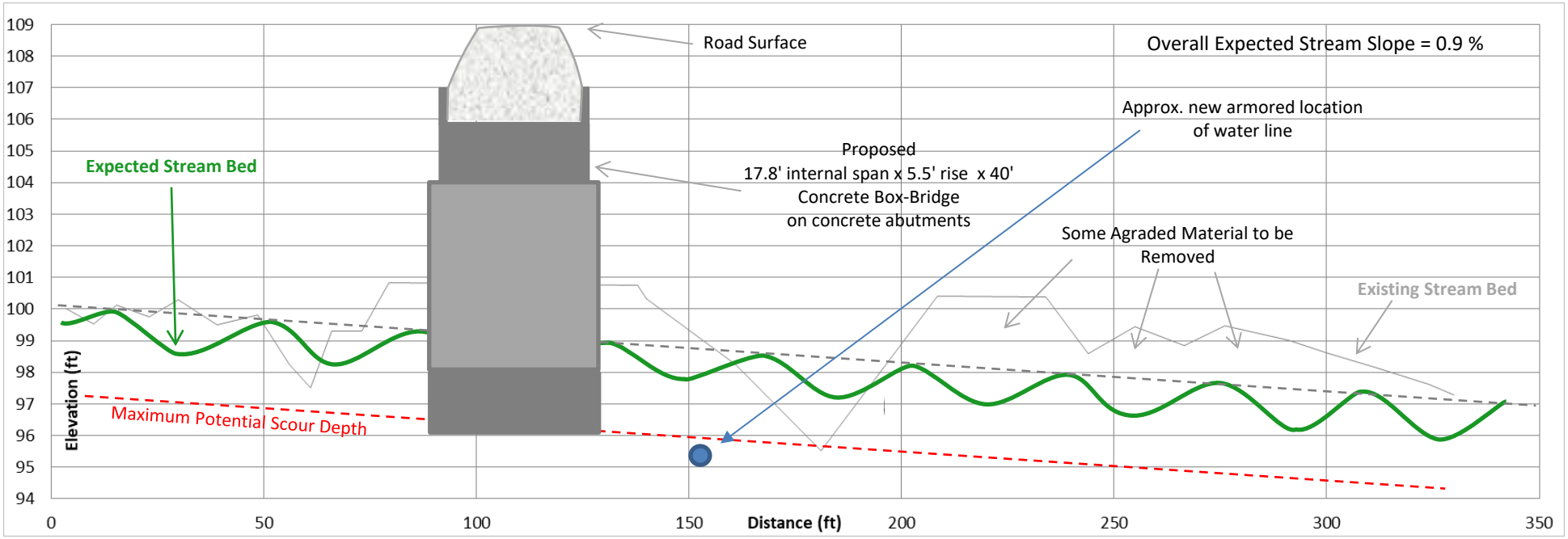
Substrate Composition

No distribution as reach dominated by fine sediment.

Site Topography - Proposed Crossing

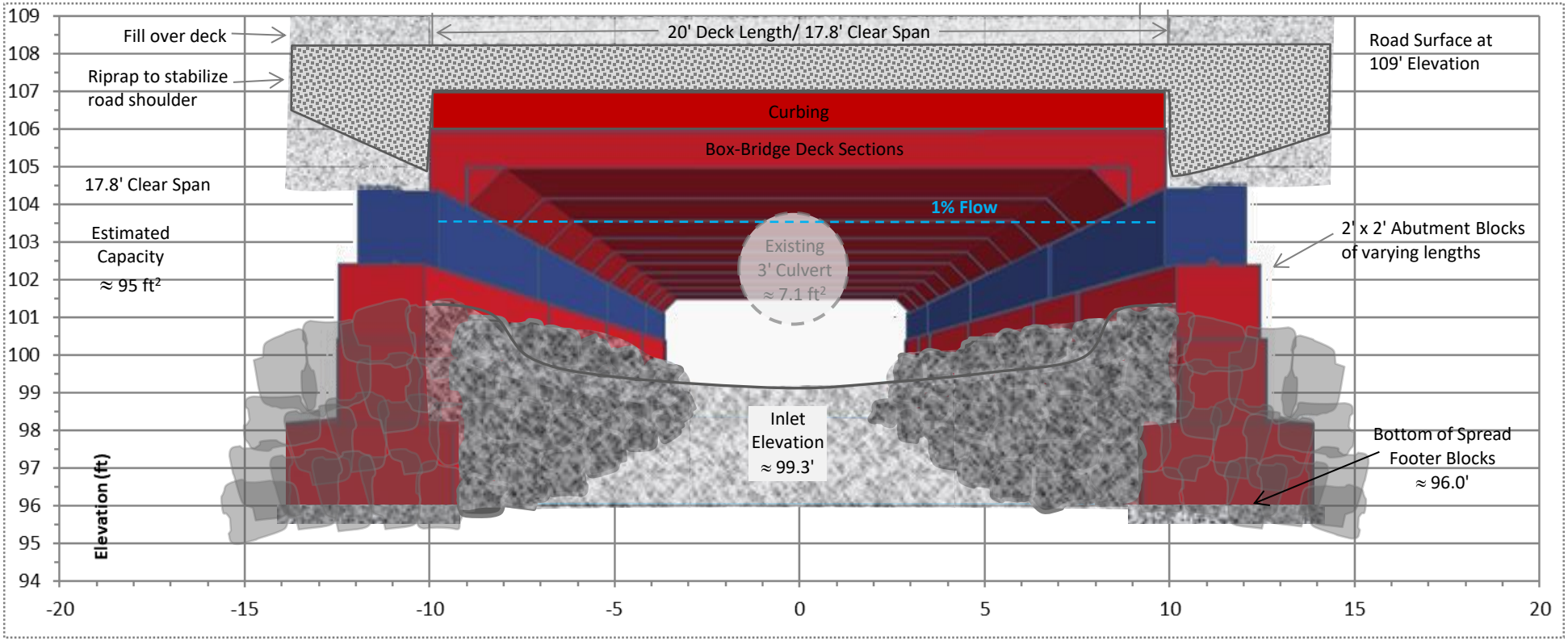


Proposed Profile View

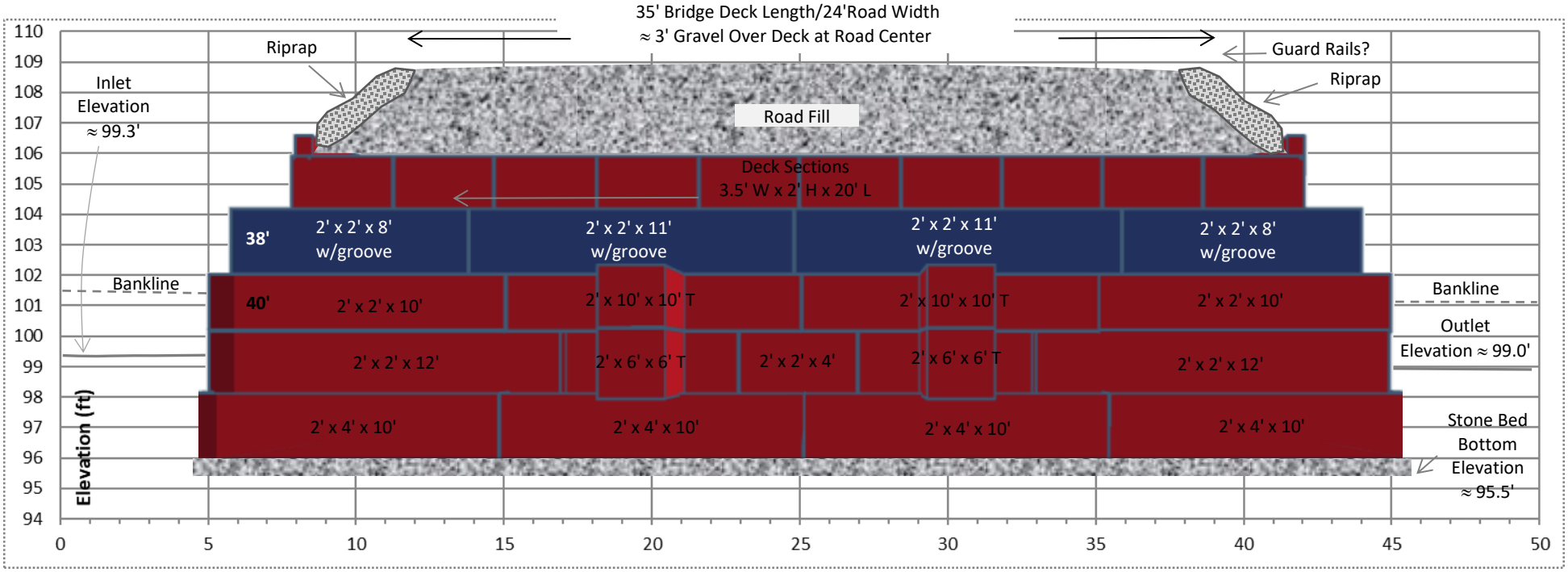


Note: This view is vertically exaggerated, reflecting the different scales of units for elevation and distance.

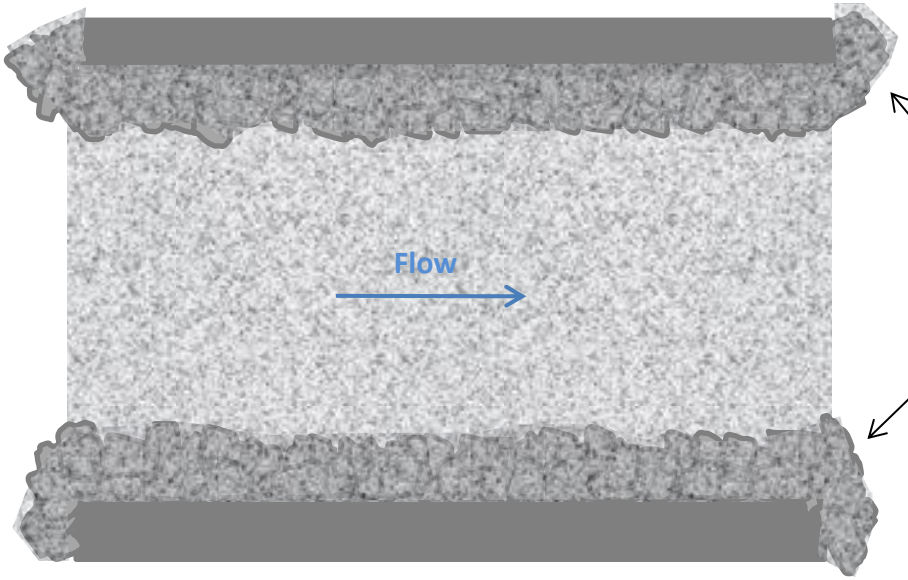
Proposed Crossing - Inlet Elevation



Proposed Crossing - Profile



Proposed Crossing - Plan View - Bed & Banks



Banklines are composed of 12-18 inch (average intermediate dimension – not longest or shortest measure) competent, angular to sub-angular foundation rock.

Banklines must connect to the natural stream banks on both sides upstream and downstream to improve scour protection and terrestrial organism passage. Additional fines and smaller rock (6" minus) are also necessary for filling voids in the larger material to provde more stable banklines.

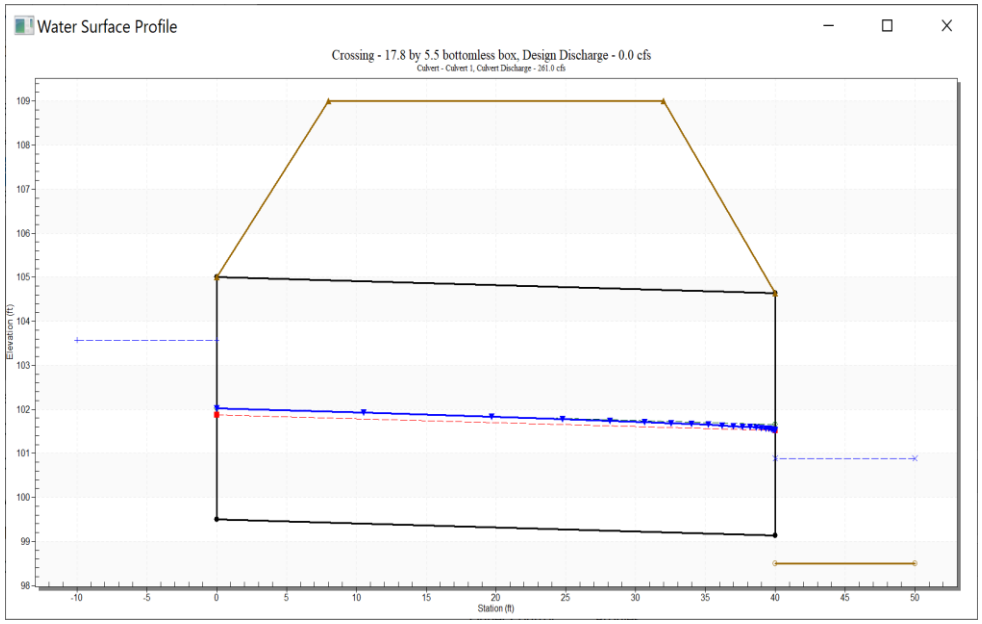
Hydrology & Hydraulic Analysis

Atrribute	Value	Units	Definition	Return Probability (%)	Peak Flow Estimate Q_T (ft^3/s)
Drainage Area	1.3	mi^2	Area that drains to crossing	99	21.1
Wetland	3	%	Percentage of NWI storage	50	71.4
Elevation	446	feet	Mean basin elevation	20	114
Precipitation	42.5	inches	Mean annual precipitation	10	145
Aquifer	0	%	Percentage of land underlain by sand and gravel aquifers	4	189
				2	223
X-Coordinate	422121	UTM	Basin centroid E/W location	1	261
Y-Coordinate	4953944	UTM	Basin centroid N/S location	0.2	356

References:

[1] Lombard, P. & Hodgkins, G., 2015. Peak Flow Regression Equations for Small, Ungaged Streams in Maine: Comparing Map-Based to Field-Based Variables. Water-Resources Investigations Report 2015-5049. US Geological Survey, Augusta, Maine.

HY-8 Hydraulic Analysis Program of the U.S. Federal Highway Administration provides results for the above peak flow estimates for the proposed design, and indicates that the crossing as proposed will successfully pass the expected 1% probability storm event with significant free headspace to pass debris.



Discharge Names	Total Discharge (cfs)	Headwater Elevation (ft)	Flow Type	Outlet Depth (ft)	Outlet Velocity (ft/s)
99	21.20	100.51	2-M2c	0.63	3.78
50	71.40	101.47	2-M2c	1.19	5.41
20	114.00	102.03	2-M2c	1.58	5.91
10	145.00	102.39	2-M2c	1.77	6.40
4	189.00	102.86	2-M2c	2.01	6.99
2	223.00	103.20	2-M2c	2.19	7.39
1	261.00	103.57	2-M2c	2.38	7.79
0.2	356.00	104.41	2-M2c	2.81	8.64

Note that prediction errors are quite large when using regression equations to estimate flows and bankfull widths based on drainage area. It is best to account for potentially larger flows at these return intervals.

Water Control:

It is critical that water be controlled during construction, both allowing free flow of the stream at the site, and eliminating potential sedimentation and erosion. Any fish must thoroughly and carefully be removed and excluded from the work site before in-stream work begins (including properly screening pump intakes). All Maine Department of Environmental Protection Best Management Practices for Sediment and Erosion Control should be followed.

The existing culvert cannot be left in place for bypass due to its elevation, so sandbag or other cofferdams must be placed to control stream flow to isolate the work area and maintain water quality during construction. Pumping of stream flow will be needed throughout construction, with excavation and installation of abutments isolated from stream flow. Dirty water must be removed from the work site and filtered in nearby floodplain to avoid contamination of the stream. Sufficient pump capacity and discharge hose lengths are essential to maintain water control, with backup pumps and hoses on hand or readily available.

Cofferdam and pump intake during construction

Removal of existing culvert

Dirty water pumped from work site

Dirty water filtered in floodplain

Material Specifications: (not a complete list)

Dirigo Timberlands 20' Box Bridge or similar:

Deck Structure composed of
- 8 @ 20' x 3.5' sections
- 2 @ 20' x 3.5' sections with curb

Abutment Blocks:

Straight:
- 4 @ 2' H x 2' W x 8' L w/ 10" x 1" groove
- 4 @ 2' H x 2' W x 11' L w/ 10" x 1" groove
- 8 @ 2' x 4 'x 10' spread footer blocks

Additional blocks may be needed to stabilize abutments and road embankment

- 2 @ 2' H x 2' W x 4' L
- 4 @ 2' H x 2' W x 10' L
- 4 @ 2' H x 2' W x 12' L
- 4 @ 2' H x 6' W x 6' L T-Block
- 4@ 2' H x 10' W x 10' L T-Block

Crushed Stone Abutment Bedding: ≈ 10 yds 3/4" stone

Rock for bank scour protection and bed features: ≈40 yds @ 12-18" & 10 yds @ 6" minus

Gravel for construction of bypass road and additional road fill: ≈ 500 yds

Riprap for road embankment stabilization: ≈ 70 yds

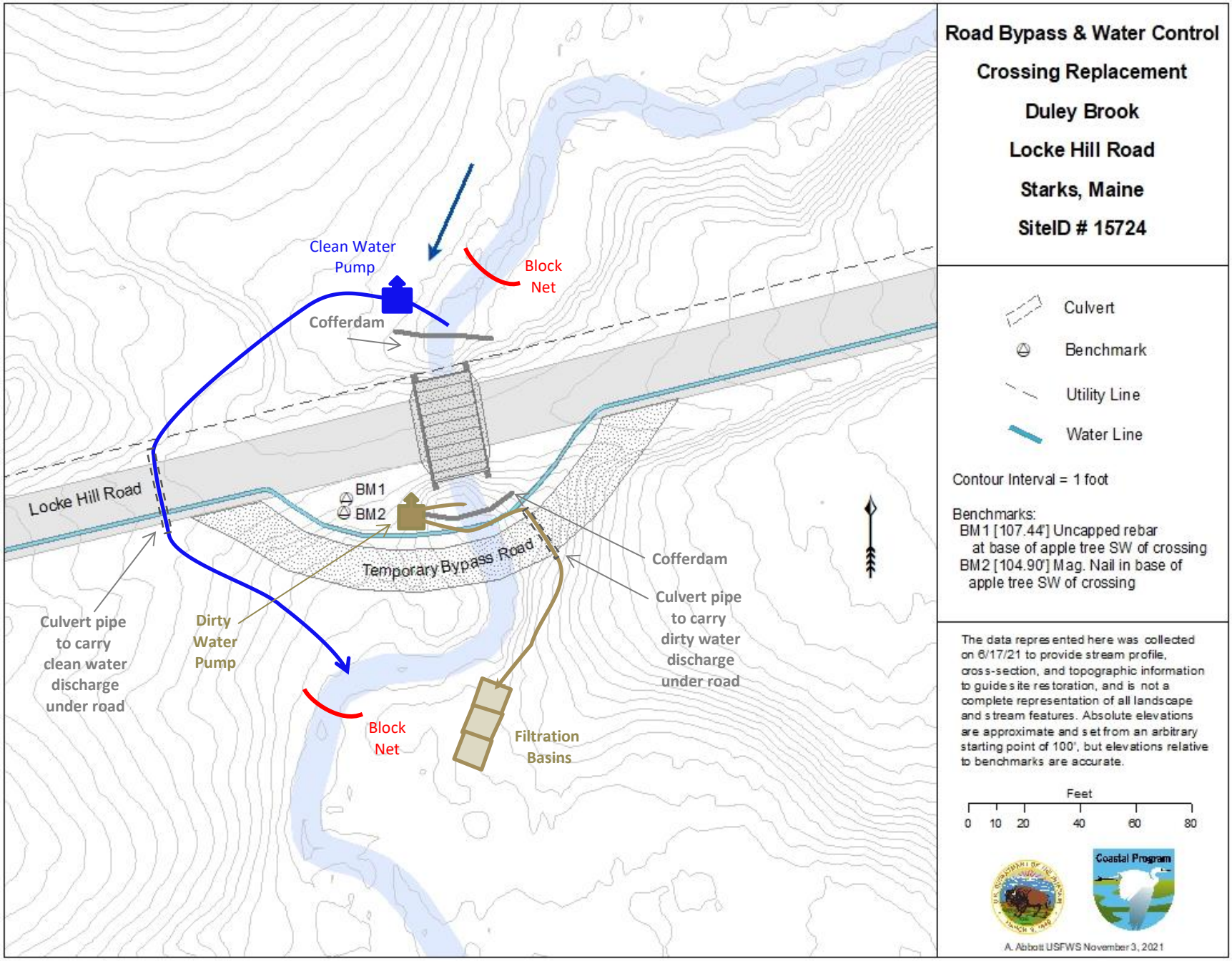
Sandbags for Cofferdams: ≈ 6 1-ton and 40 small poly (60 lb.) - recommend non-mesh/6-mil poly bags for "self-sealing" without additional poly sheeting

or 24' cofferdam of steel sheet-piles for upstream water control

Polyethylene Sheeting 100' x 20' (6 mil) if needed for sealing cofferdams

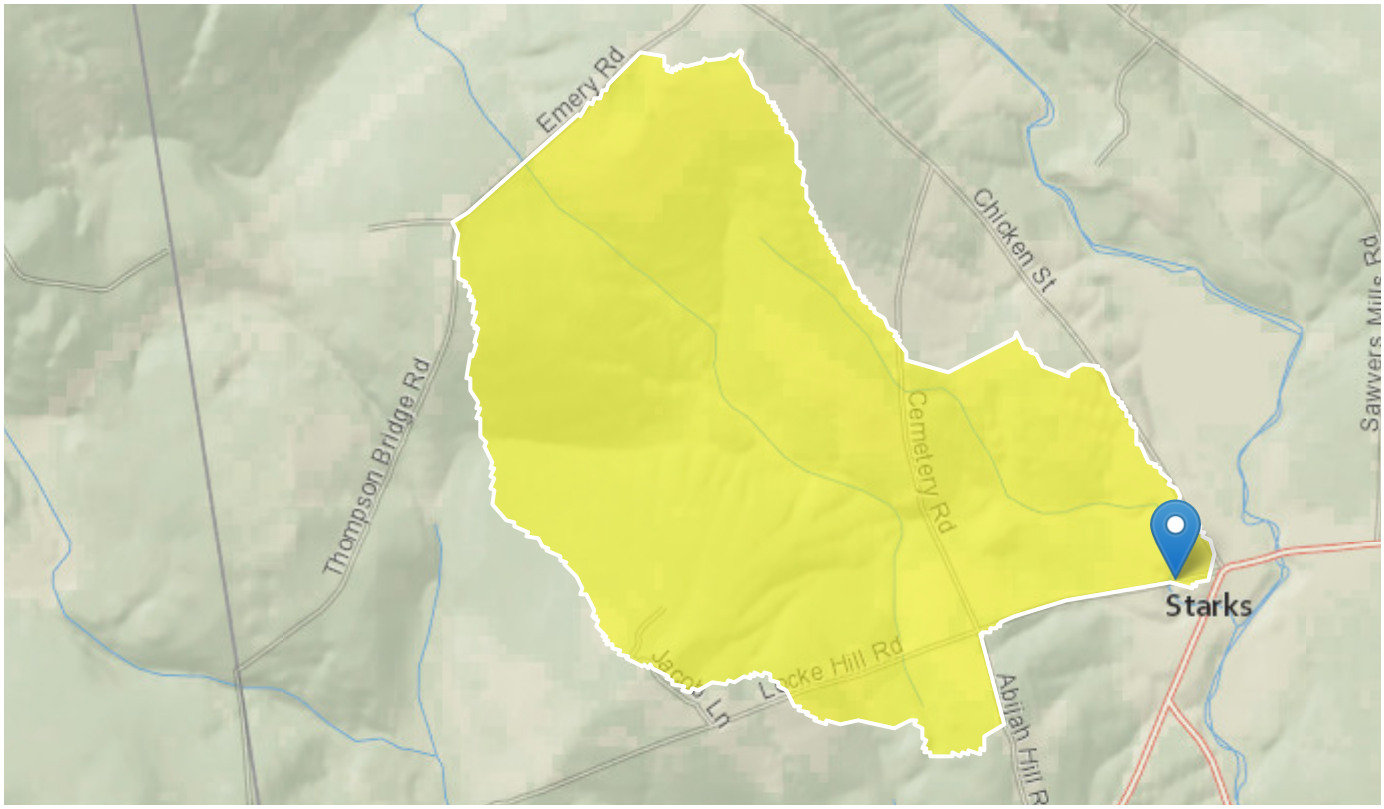
Waterproof membrane and sealant for covering bridge deck to protect from salt

Water Control: Cofferdam, Pump & Filtration Placement



15724 StreamStats Report

Region ID: ME
Workspace ID: ME20210505184530204000
Clicked Point (Latitude, Longitude): 44.72994, -69.96662
Time: 2021-05-05 14:46:59 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.3	square miles
STORNWI	Percentage of strorage (combined water bodies and wetlands) from the Nationa Wetlands Inventory	2.99	percent
BSLDEM10M	Mean basin slope computed from 10 m DEM	8.37	percent
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	422121.39	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	4953943.98	meters

Parameter Code	Parameter Description	Value	Unit
COASTDIST	Shortest distance from the coastline to the basin centroid	91	miles
ELEV	Mean Basin Elevation	445.9	feet
ELEVMAX	Maximum basin elevation	634.7	feet
LC06WATER	Percent of open water, class 11, from NLCD 2006	0	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	2.82	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	0.45	percent
PRDECFEB90	Basin average mean precipitation for December to February from PRISM 1961-1990	10	inches
PRECIP	Mean Annual Precipitation	42.5	inches
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0	dimensionless
SANDGRAVAP	Percentage of land surface underlain by sand and gravel aquifers	0	percent
STATSGOA	Percentage of area of Hydrologic Soil Type A from STATSGO	1.83	percent

General Disclaimers

This watershed has been edited, computed flows and basin characteristics may not apply. For more information, submit a support request from the 'Help' button in the upper-right of the screen, attach a pdf of this report and request assistance from your local streamstats regional representative.

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	1.3	square miles	0.31	12

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
STORNWI	Percentage of Storage from NWI	2.99	percent	0	22.2

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

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

Statistic	Value	Unit	SEp
99-percent AEP flood	21.1	ft^3/s	38
50-percent AEP flood	71.4	ft^3/s	34
20-percent AEP flood	114	ft^3/s	35
10-percent AEP flood	145	ft^3/s	37
4-percent AEP flood	189	ft^3/s	39
2-percent AEP flood	223	ft^3/s	41
1-percent AEP flood	261	ft^3/s	42
0.4-percent AEP flood	299	ft^3/s	44
0.2-percent AEP flood	356	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	1.3	square miles	2.92	298

Bankfull Statistics Disclaimers [Central and Coastal Bankfull 2004 5042]

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

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

Statistic	Value	Unit

Statistic	Value	Unit
Bankfull Streamflow	6.84	ft^3/s
Bankfull Width	8.79	ft
Bankfull Depth	0.649	ft
Bankfull Area	5.7	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)

Application Version: 4.5.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.1

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

June 29, 2021

Selectmen, Town of Starks
Ernest Hilton

RE: Duley Brook in Starks

Dear Ernie,

I am writing to voice the Maine Department of Inland Fisheries and Wildlife's (MDIFW) support for the town of Starks replacement of a dysfunctional culvert on so called Duley Brook, officially an unnamed stream in Starks. The location is the Duley Brook crossing on the Locke Hill Road and the brook flows into Lemon Stream shortly downstream.

The culvert is currently undersized and fragmenting stream habitat. This combination of conditions alters stream function during high intensity runoff events, holding back water and resulting in flooded roads and stream degradation.

The Department has not surveyed Duley Brook however Lemon Stream, directly downstream has been documented to sustain all life stages of Brook Trout. Upstream of the Duley Brook crossing at Locke Hill Road crossing the Department identified potential Brook Trout habitat. Brook Trout likely use the lower reaches of Duley Brook seasonally and as passage to and from Lemon Stream.

Replacement of the culvert would result in a positive outcome from an ecological perspective and allow fish and aquatic organisms access to habitat upstream of the pipe. Stream processes such as movements of materials and retention of discharge within the natural streambed would be restored. Chronic road maintenance issues such as road closures to flooding and subsequent site repairs would be minimized.

If our Regional Headquarters can be of additional assistance with this project, please don't hesitate to contact us.

Sincerely,

Liz Thorndike
Fisheries Resource Supervisor
Maine Department of Inland Fisheries & Wildlife
Rangeley Lakes Region

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

July 14, 2021

Ernest Hilton
Selectman
Town of Starks, ME

RE: Duley Brook in Starks

Dear Mr. Hilton,

The Department of Marine Resources (DMR) is writing to express support for efforts by the Town of Starks to replace the culvert on Duley Brook, or unnamed stream, located on Locke Hill Road in the Lemon Stream drainage. The road crossing is located at 44.72992, -69.96664.

As you may be aware, The DMR has responsibility to restore and maintain diadromous fish in the State of Maine. As part of that responsibility, staff identify projects and sites that are essential for our important species. With respect to the project site, the crossing is located in the vicinity of Atlantic salmon juvenile rearing and spawning habitat. Atlantic salmon are currently federally endangered and the habitat in Lemon Stream is federally designated Critical Habitat. Lemon Stream is a tributary to the Sandy River, which is the major focus area for Atlantic salmon restoration and recovery within the Kennebec River basin. The Maine Stream Habitat Viewer suggests that there is 1,665 units of modeled Atlantic salmon rearing habitat in the Lemon Stream drainage. Adequately sized and appropriately functioning road stream crossings are vital to stream ecology, sediment transport, preventing erosion and maintaining cool thermal regimes in cold water tributaries. Replacing this road stream crossing with an appropriately sized culvert will likely positively effect the quality of Atlantic salmon habitat in Lemon Stream.

We support the Town of Starks efforts to improve the crossing site because it will result improved stream ecology and function of Atlantic salmon habitat in the Lemon Stream watershed.

Please feel free to reach out if there are any questions.

Sincerely,

Jennifer B. Noll
Marine Scientist
Maine Department of Marine Resources
32 Blossom Lane
Augusta, Maine 04333

From: Dembeck, Joseph - NRCS, Skowhegan, ME
Sent: Friday, August 20, 2021 10:22 AM
To: Thorndike, Elizabeth
Cc: Ernie Hilton
Subject: Unnamed Brook (Duley Brook) in Starks

Hi Liz,

Hope your summer is going well and you are out in the field more than the office!

Recently you talked with Ernie Hilton, Selectman, Town of Starks, about an unnamed brook (locally called Duley Brook) in Starks that the town was looking for fisheries information on as they are planning to submit an application for the replacement of a culvert on the brook when the next State Culvert Bond funding cycle is announced. Apparently there was no data on this brook in your files. I made a quick image to locate the brook and areas looked at. Ernie mentioned to me and probably to you that locals have fished the brook for brook trout through the years with success.

I performed a site visit yesterday of the brook to look at an upstream section as well as the culvert in question on Locke Hill Road. The upstream site I visited was at the end of Cemetery Road where a snowmobile/atv trail crosses the brook. I have attached pictures of the upstream and downstream views of this section. There were a number of fish present in the stream at this location and appeared to me to be several year classes of creek chubs. Nice looking substrate and habitat.

The brook at the Locke Hill Road crossing was turbid, so any viewing of fish was not possible. Culvert is definitely undersized for the brook and drainage area.

In developing any future culvert funding application information on the current fish assemblage in the brook would be very helpful. I am not certain if your field schedule would allow for a e-fishing outing to the brook at the end of Cemetery Road in the coming weeks. I would be happy to volunteer as a netter if you were able to sample the brook. Great access and a short 250ft walk on a trail from where a truck would park to the brook.

Thanks for your consideration.

Joe

Joseph Dembeck

Executive Director
Somersert County Soil & Water Conservation District
70 East Madison Road
Skowhegan, ME 04976
207-474-8323 (office)
Joseph.Dembeck@me.nacdnet.net
www.somersetswcd.org

information it contains may violate the law and subject the violator to civil or criminal penalties. If you believe you have received this message in error, please notify the sender and delete the email immediately.

Dembeck – Duley Brook Photo locations

Dembeck - Looking Upstream

Dembeck – Looking Downstream

DIRIGO ENGINEERING
2 Dirigo Drive Fairfield, Maine 04937 (207) 453-2401 Fax: (207) 453-2405

November 16, 2021
#45404

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

RE: 202106082 Grant Application for Alna, Maine Stream Crossing Replacement

Dear Mr. Maclaine:

Dirigo Engineering, on behalf of the Town of Alna, Maine and The Nature Conservancy (see attached Letter of Support), is pleased to submit this grant application for the replacement upgrading of a stream crossing on Egypt Road at Ben Brook. The Town's goal is to replace the existing crossing with a new precast concrete bridge with natural substrate bottom and sufficient width and size to accommodate more than peak 100-year flood levels. This size is intended to better allow for aquatic life and amphibian species passage, as well as debris passage during peak wet weather.

The existing crossing is a 10' diameter corrugated metal culvert. Issues at the site include:

- Culvert is perched, limiting aquatic and amphibian life passage.
- Crossing is defined as a Barrier by the Maine Stream Connectivity Work Group on the Maine Stream Habitat Viewer.
- The stacked stone headwall on the downstream side is shifting. MDOT has requested that the town take action soon to prevent collapse.
- The slope in and below the culvert is relatively steep. High flow velocities at the outlet have formed a 6' deep plunge pool in solid ledge and caused additional breakup of the ledge below this.

The proposed project will significantly improve the public infrastructure as well as restore connectivity for fisheries and wildlife habitats. More specifically the project will accomplish the following goals:

- Benefit water quality by eliminating ongoing erosion and sedimentation.
- Improve habitat for wildlife, fish & aquatic life, and amphibian life. This project will provide passage for riparian wildlife.
- Improve public safety by stabilizing side slopes.
- Eliminate stream barrier.
- Address flooding and climate change issues by sizing the new culvert much larger than needed to pass the 100-year storm peak flows. This additional size will increase capacity for increasing storm intensity, provide for better debris passage, and provide for improved wildlife and aquatic life passage.

Please find enclosed with this letter the Grant Application, Plans, Photos, and other supporting documentation, including a letter of support from The Nature Conservancy. Also attached is a helpful narrative from Midcoast Conservancy's application for a National Fish Passage Program grant; this narrative provides additional detail on the importance of the crossing.

Attachments include the following:

- Grant Application Forms
- Site Photos
- Site Location Map
- Plans (including Aerial Plan)
- Streamstats Report
- Letter of Support from The Nature Conservancy
- Narrative from grant application for a National Fish Passage Program

If you have any questions, please do not hesitate to contact us.

Sincerely,
Dirigo Engineering

Randy J. Butler, P.E.
Senior Project Engineer

cc: Christian Fox, The Nature Conservancy
Linda Kristan, Ed Pentaleri, Town of Alna

Enclosures

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

RFP #: 202106082
RFP TITLE: 2021 Grants for Stream Crossing Infrastructure Improvements
BIDDER: 2021R-01 Alna, Egypt Road
DATE: 11/16/22, 1/4/22, 1/5/22, 1/6/22, 1/7/22, 1/28/22

SUMMARY PAGE

Department Name: Environmental Protection
Name of RFP Coordinator: John Maclaine
Names of Evaluators: Jon Cullen, David Waddell, James Stahlnecker, John Maclaine

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Pass/Fail Criteria	Pass	Fail
Section I. Applicability		
• The proposed structure to be upgraded is located on a municipal road, is not owned by a private or state entity, and is not located on a road segment classified as a "State-Aid" road.	**X**	
• The proposed project includes matching funds from local or other sources.	**X**	
• The proposed project is for the upgrade of a culvert, not currently a bridge as defined by the RFA.	**X**	
Scoring Sections	Points Available	Points Awarded
Section II: Public Infrastructure Information/Public Safety	**25**	**14**
Section III: Benefits to Fish & Wildlife	**50**	**45**
Section IV: Cost Efficiency and Effectiveness	**25**	**17**
Total Points	**100**	**76**

STATE OF MAINE
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OVERVIEW OF SECTION I
Applicability

Section I. Applicability

Evaluation Team Comments:

Project qualifies for scoring under RFP#202106082.

Contact information:
Town of Alna
Charles Culbertson

Consultant/Agent Info:
Randy Butler, Dirigo Engineering

STATE OF MAINE
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EVALUATION OF SECTION II
Public Infrastructure Information/Public Safety

	Points Available	Points Awarded
Section II: Public Infrastructure Information/Public Safety	**25**	**14**

Evaluation Team Comments:

Town Name: Alna
Road name: Egypt Road
Stream Name: Ben Brook

Existing Culvert Size & Material: 10'Rx55'L, CMP

Crossing Age: 26 years

Bankfull width and method: 21.3. Multiple Field Average

New Structure size & type: 26'Sx16'Hx28'L, Bridge
Contacted DOT Bridge Program if 10' or greater?: Yes, design reviewed

Estimated time to failure: 1-3 years

Previous flooding or failure events, documentation, culvert condition, age: No overtopping, crossing undersized-high velocities. MDOT inspected the downstream headwall and determined it to be deficient and in need of repair.
Change in culvert width: 2.6
not imminent failure, slip lined?

Design meets DOT 100-year flood standard: Yes

Regularly obstruction or maintenance required?: every year or two

Impact
Cut Offs: 0
Detours: 10.7 miles -25 Residences, 1 Business
Affected residents, business, affected critical infrastructure, other safety issues, traffic: AADT:91; homes, 1000-acre Hidden Valley Nature Center
In 2013, and again in 2021, the Town of Alna received a "bad bridge letter" from the MDOT
not a heavily used road, no cut offs long detour

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

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EVALUATION OF SECTION III
Benefits to Fish & Wildlife

	Points Available	Points Awarded
Section III: Benefits to Fish & Wildlife	**50**	**45**

Evaluation Team Comments:

Field work: Stream Smart Longitudinal profile survey
Bankfull width, method, & confidence: 21.3
Bankfull width method: Multiple Field Average
Longitudinal profile of stream beyond culvert influence completed? Yes

1.2 x BFW or Tidal analysis sizing, considerations performed Yes

Natural Bottom information: Yes, Open bottom
Banks within structure? Yes
Type of bottom - Pebble count

New Structure considerations: Stream Smart Longitudinal profile survey
Additional Comments: ledge may be issue but is being addressed with rock weirs, blasting of ledge, good field work and prep/design, open bottom
$105k in engineering

Barrier status, source: Barrier
Maine Stream Habitat Viewer ID: 3747

Benefits to Fish & Wildlife: ATS CH, ATS DPS, 77.4 Units ATS Class 1 & 3 modelled habitat
ATS CH, ATS DPS, 77.4 Units ATS Class 1 & 3 modelled habitat

Water quality improvements: large DS scour pool

Support letters, other notable benefits: High priority habitat area, support from Sean Ledwin (DMR), Jason Seiders (IFW)
DMR Resource/Habitat Comments: Surveyed ATS spawning and rearing habitat immediately downstream
IFW Resource/Habitat Comments: No water when surveyed in 1999.
lots of habitat above, good improvements and good habitats available

Habitat Opened/Improved: upstream habitat- 7.6 miles
ATS CH, ATS DPS, 77.4 Units ATS Class 1 & 3 modelled habitat

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

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DATE: 11/16/22, 1/4/22, 1/5/22, 1/6/22, 1/7/22, 1/28/22

Fish present, source of info: sampling data, which indicate the presence of Atlantic salmon, and American eels as well as the following minnow species during 2006 and 1999 surveys: white sucker, black nosed dais, creek chub, and common shiner

EVALUATION OF SECTION IV
Cost Efficiency and Effectiveness

	Points Available	Points Awarded
Section IV: Cost Efficiency and Effectiveness	**25**	**17**

Evaluation Team Comments:

Requested funding: $ $125,000
Total Project Cost: $570000
Total Match: $445000
% Match proposed: 78.07%

Engineering
To be stamped?: Yes
Level of plan included: Preliminary Design

Army Corp Permit info: Contact

Costs over previous 10 years: 60000
Construction year: 2022, 6 weeks

Feasibility for success: other funding not yet secured, but good overall project. Higher engineering costs

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

APPLICATION COVER PAGE

Handwritten Applications Will Not Be Accepted

Applicant Information			
Applicant Organization Name Town of Alna			
Applicant Mailing Address 1574 Alna Road	City Alna	State ME	Zip 04535
Applicant Contact Charles Culbertson	Applicant Contact Phone # 650-521-4795	Contact Email Address edpentaleri@gmail.com	

Agent/Consultant/Engineer Information ☐ *Check if not applicable*

Agent is: ☒ Agent for Application only ☐ Project Engineer only ☐ Agent and Project Engineer

Agent Name Randy Butler, Dirigo Engineering			
Agent Mailing Address 2 Dirigo Drive	City Fairfield	State ME	Zip 04937
Agent Phone # 207-453-2401	Agent Email Address rbutler@dirigoengineering.com		

- No personnel currently employed by the Department or any other State agency participated, either directly or indirectly, in any activities relating to the preparation of the Applicant's application.
- No attempt has been made, or will be made, by the Applicant to induce any other person or firm to submit or not to submit an application.
- The above-named organization is the legal entity entering into the resulting agreement with the Department should they be awarded a contract.
- The undersigned is authorized to enter contractual obligations on behalf of the above-named organization.

To the best of my knowledge, all information provided in the enclosed application, both programmatic and financial, is complete and accurate at the time of submission.

Name (Print): Charles Culbertson	**Title:** Selectperson
Authorized Signature: 	**Date:** Click or tap here to enter text. 11-17-2021

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

APPLICATION

Please complete all fields in this application to the best of your ability and include all applicable supplemental attachments listed (see "Key Process Events" Part D) with the proposal package.

For additional information and resources for your application, please see "Stream Crossing Resources" on Page 9 of this RFA and utilize resources from the Department's Stream Crossing Resources Page and 2021 Scoring Guidance Document.

I. Project Identification	
Name of Proposed Project *(Town Name- Road Name)*	**Alna – Egypt Road**

II. Applicability

Please indicate the ability to demonstrate the following:

- ■ The proposed structure to be upgraded is located on a municipal road, is not owned by a private or state entity, and is not located on a road segment classified as a "State-Aid" road.
- ■ The proposed project includes matching funds from local or other sources.
- ■ The proposed project is for the upgrade of a culvert, not currently a bridge as defined by the RFA.

III. Stream Crossing Location

1. Municipality or Unorganized Territory where project will take place:	Alna	
2. GPS Location of crossing - Decimal degrees preferred. *Available on Google Maps by clicking the location on the map*	North 44.11472	West -69.58838
3. Culvert/crossing location Name of the road on which the culvert/crossing is located and the nearest intersection.	Egypt Road; 0.9 miles north of Route 194	
4. Stream name at project location:	Ben Brook	
5. "Project Stream" drains to *(stream/river name):*	Sheepscot River	

IV. Failure Risk, Location, and Reduction in Flooding

1. Has the crossing caused flooding or overtopping of the road in the last 10 years?	☐ Yes	☒ No
If yes, How many times? (indicate if approximate)		
2. Does this crossing regularly become obstructed by debris or require cleaning?	☒ Yes	☐ No
How often?	Every year or two.	
3. Has the crossing been damaged by flooding in the last 10 years?	☐ Yes	☒ No
4. Do you have any photos of the flooding or damage? Please provide if available.	☐ Yes	☒ No
5. Has the crossing ever partially or fully washed-out or become unsafe for traffic in the last 10 years?	☐ Yes	☒ No
6. Is the current crossing undersized?	☒ Yes	☐ No
If yes, how was this determined and what was the metric used?	Though it passes flows without overtopping, outlet velocities are excessive, and the culvert does not provide adequate width for aquatic organism passage.	
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.	N/A	
8. Describe any other problems or issues with the current condition of the crossing. Include photos if available.	MDOT inspected the downstream headwall and determined it to be deficient and in need of repair.	

9. In how many years from now do you estimate the culvert/crossing would have a complete failure, a complete collapse, or total washout?	<1 year	1-3 years	3-5 years	5-10 years	10+ years
	☐	☒	☐	☐	☒

10. How was the estimated time to failure determined?

Failure of headwall is likely within a few years, based on movement over past few years. This would not likely cause complete failure of crossing, but would result in significant environmental impact and high cost of repair.

11. Discuss any future flooding concerns regarding the existing culvert/crossing

None.

V. Safety & Impact to Community

1. Would any homes, businesses, or critical infrastructure be <u>completely cut-off from access</u> if the crossing were to completely fail?	☐ Yes ☒ No

2. **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 this RFA)*	Homes		Businesses		Critical Infrastructure*	
	Detour	Cut-off	Detour	Cut-off	Detour	Cut-off
	25	0	1	0	0	0

3. 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) or *details on critical infrastructure noted above that would be cutoff or required to detour?

This crossing is on a road that provides access to 25 homes, as well as two open space reserves, one of which, the 1000-acre Hidden Valley Nature Center, is regionally significant and heavily used for a variety of recreation and educational activities. Failure of the crossing would force a detour of up to 10.7 miles for emergency vehicles, some of which would be on a narrow, poor-quality road.

4. **Approximately how many vehicles per day travel this road (if known)?** Maine DOT Public Map Viewer (see "Factored AADT" by clicking on road segment)	91
5. 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?	10.7 miles

6. Are there any other safety concerns or community impacts regarding the existing culvert crossing?

In 2013, and again in 2021, the Town of Alna received a "bad bridge letter" from the MDOT regarding the failing headwall, advising on repairs that should be "addressed as soon as practical to ensure continued safe use of the bridge. Neglect of these deficiencies may result in a diminished function of the bridge through load posting or even closure."

VI. Improvement to Fish & Wildlife Habitat

2021 Municipal Stream Crossing Grants Guidance Video #2: Stream Smart Basics & Project Design

NOTE: For information and potential guidance on local fisheries information, it is highly recommended that you contact your regional Inland Fisheries and Wildlife Office Fisheries Biologist, and Department of Marine Resources.

1. Has this crossing been surveyed and identified on the Maine Stream Habitat Viewer? *If "No" see "Alternate Maine Stream Habitat Viewer Information" worksheet at the end of application*	☒ Yes ☐ No
2. What is the Maine Stream Habitat Viewer ID#?	3747
3. Have you contacted MDMR regarding this stream and crossing?	☒ Yes ☐ No
If yes, please include any relevant information they provided or attach letter of support.	Midcoast Conservancy contacted Sean Ledwin on Sept. 30th. He expressed support for this project.
4. Have you contacted MDIFW regarding this stream and crossing?	☒ Yes ☐ No
If yes, please include any relevant information they provided or attach letter of support.	Midcoast Conservancy contacted Jason Seiders on Oct 1, 2021 who shared sampling data, which indicate the presence of Atlantic salmon, and American eels as well as the following minnow species during 2006 and 1999 surveys: white sucker, black nosed dais, creek chub, and common shiner.

5. 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:

This crossing has been identified as an important Fish Passage Restoration project by the Maine Aquatic Barrier Prioritization Tool and is located in a watershed identified by as very high priority for restoration and protection.

6. Are fish present in the stream? ☒ Yes ☐ No

7. Have any of the following species been identified within this stream by MDMR, MDIFW, USFWS, NOAA, or another reputable resource? *(Presence, not modelled habitat)*

☐ Wild brook trout	☐ Alewives (sea run)	☐ other diadromous (sea-run) species (list):
☐ Sea-run brook trout	☐ Blueback herring	
☒ Atlantic salmon (sea-run)	☒ American eels	
☐ Atlantic salmon (landlocked)	☐ Sea-run rainbow smelt	

8. List the source(s) of above fish information:

DIFW

9. Select any habitats below that have been identified by MDIFW, MDMR, Maine Stream Habitat Viewer, Beginning with Habitat Map Viewer, or other resources near or at the crossing location.

☐ N/A

☒ Atlantic Salmon Critical Habitat

☒ Atlantic Salmon DPS

☒ Atlantic salmon modelled habitat

Type: Class 1 & 3

 # units: 77.4

☐ Brook trout habitat

☐ Within the drainage of a state "heritage" water

☐ Within the drainage of an alewife pond

☐ Significant Vernal pools within 1 mile

☐ Other Significant Wildlife Habitats (Tidal/Inland waterfowl, etc.) List:

☐ State Endangered, Threatened, or Special Concern species (aquatic or terrestrial) within 1 mile. List:

☐ Federal Endangered, Threatened species (aquatic or terrestrial) within 1 mile. List:

☐ Other priority habitats such as spawning areas, etc., List:

10. 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?

☐ Yes ☒ No

If yes, describe any additional biological, ecological, or cost-saving benefits that could result from the current project:	See attached FIS-FONS grant application narrative.

11. 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:

Current crossing is only10' wide for a stream that averages over 21' BFW. There is no terrestrial organism passage. New crossing will be meet stream simulation design standards, including 1.2 times bankfull width, stabilized streambank inside culvert and "wildlife shelf" for terrestrial organism passage. The stream segment is relatively steep, so the crossing will be designed with a series of interlocking rock weirs to facilitate fish migration.

VII. Stream Measurements and Field Work

For fieldwork techniques, see: Stream Smart Field Work Video and Maine Stream Smart Road Crossing Pocket Guide

.

Proper field work and measurements are crucial to project success and must be completed prior to construction. Projects that have completed the fieldwork prior to applying will score higher in several areas.

1. Measured Bankfull Width *(field measured beyond culvert influence, min. of 3 upstream and downstream measurements)*	Upstream Widths (US)	1. 18.3	2. 18.2	3. 17.8	4. 24	5.	**Average US** **19.6**	**Average of US & DS** **21.3**
	Downstream Widths (DS)	1. 19.6	2. 23.3	3. 24.1	4.	5.	**Average DS** **23.0**	

2. Estimated/Modelled Bankfull width *(NOTE: measured average bankfull width values are the most accurate method)*	Maine Stream Habitat Viewer http://webapps2.cgis-solutions.com/MaineStreamViewer/	**17.1**
	StreamStats https://streamstats.usgs.gov/ss/	**17.2**
	Other Hydraulic & Hydrologic Analysis (Regression equation: 10.58 x DA^0.43)	**20.6**
3. Bankfull width used for structure sizing		**21.3 x 1.2 = 25.6**

4. If Bankfull width is other than average of field measurements, explain rationale:

BFW's for downstream shown above are adjusted from actual BFW to account for impacts of an overflow swale and tributary stream. See Sheet 1 of drawings for raw data and calculations.

5. Does this structure experience any tidal effects? Is it expected to experience tidal action in the future? Explain.

No

6. Have you surveyed a longitudinal profile of the stream? (recommend 20-30 x BFW up- and downstream of crossing)	☒ Yes	☐ No
7. Based on stream longitudinal profile measurements, what is the stream's slope (%)?	**2.8**	
8. Has a Stream Bed Substrate analysis been performed?	☒ Yes	☐ No
9. Type of analysis performed or to be performed?	**Pebble count**	
10. Type of stream bed material to be installed:	**Cobbles and Boulders**	

11. Size of DS scour pool	Width	Length	Max Depth
☐ N/A, No scour pool present	**10**	**20**	**6**

12. Is the crossing back-watered or impounding water upstream?	☐ Yes	☒ No
13. Is another downstream crossing potentially causing impounded water to occur at this crossing location?	☐ Yes	☒ No
14. Is the upstream or downstream habitat degraded due to this crossing's orientation, slope, or sizing that will be corrected by the new crossing? (e.g. large scour pool, instability or stream bank erosion, significant downstream sedimentation, etc.)	☒ Yes	☐ No

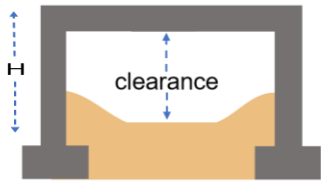
Explain:

Undersized culvert has caused erosive forces large enough to create plunge pool in ledge and wash boulders downstream. Fish passage is currently impossible. New crossing will blast and remove ledge as required to reduce flow velocity and allow for fish passage.

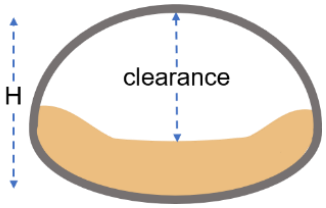
VIII. Existing Culvert Crossing Information

Structure Dimensions as Intended by MSCG Application:

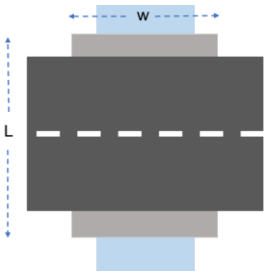
Open Bottom Structures



Closed Bottom Structures



"Plan" View



Culvert/Crossing Shape	Culvert Material	Stream Bed Material in Culvert
☐ Closed bottom Box ☐ Open bottom box ☒ Circular ☐ Open bottom arch ☐ Closed bottom arch (pipe arch) ☐ Oval ☐ Bridge or span	☒ Corrugated Metal Pipe ☐ Smooth Metal Pipe ☐ Concrete ☐ Plastic ☐ Stone ☐ Other: _____	☒ none ☐ Partial ☐ Continuous

How many culverts are there at this crossing? If more than 3, list 3 primary structures below	1

Culvert	Crossing Width ("W") *diameter if round*	Culvert Clearance *(from stream bed/pipe bottom to highest inside point)*	Culvert Length ("L") under Road	Approximate Culvert Age
#1	10'	10'	55'	26 years
(#2)				
(#3)				

IIX. Proposed Crossing Structure Information

NOTE: Pursuant to 32 MRSA §1254, a licensed professional engineer is required when the completed project cost estimates exceed $100,000 and does not create an undue risk to public safety or welfare.

1. Has an engineer been retained to assist with the project's design?	☒ Yes ☐ No
2. Do you have engineered design plans and construction specifications for the replacement culvert/crossing?	☐ Yes ☒ No
If yes, identify who designed the plans, and when the plans were completed; or who has been retained to complete engineering plans.	
3. Indicate the level of plans attached and submitted with this application	☐ Final, stamped engineering plans & specifications ☐ Site-specific plans at 90%+ Completion ☒ Preliminary Design Plans ☐ Conceptual Plan ☐ Plan View Sketch & Cross Section ☐ Plan View Sketch ☐ None
4. Will final plans be stamped by a Maine Licensed Engineer prior to construction?	☒ Yes ☐ No

IX. Proposed Crossing Structure Design

NOTE: Be sure to watch the 2021 Stream Crossing Grant Workshop Videos and other resources found in Section II:B

Culvert/Crossing Shape		**Culvert Material**	
☐ Closed bottom Box	☐ Open bottom arch	☐ Corrugated Metal Pipe	☐ Smooth Metal Pipe
☐ Open bottom Box	☐ Pipe arch (closed bottom arch)	☒ Concrete	☐ Plastic
☐ Circular	☒ Bridge or span	☐ Stone	
☐ Oval			
☐ Other (describe: _____		☐ Other (describe): _____	

Proposed Crossing Width "W"	Proposed Crossing Clearance	Proposed crossing Height "H" (or to top of footing)	Crossing Length "L" under Road	*If proposing a bridge/span, what is the* Clear Span (measured abutment to abutment)
30'	**16'**	**22'**	**28'**	**26'**

Open Bottom Crossings		**Closed Bottom Crossings**	
Includes footings below scour potential?	☒ Yes ☐ No	Embedded?	☐ Yes ☐ No
		Depth of embedment *(from inside of culvert/invert)*	

Performance Criteria & Commitments in project design/installation The project will:	
■ Meet Maine DOT 100-year flood criteria (*for crossings with clearance <6', include DOT worksheet* with this application) ■ Be sized at least 1.2 time bankfull width of the stream as determined by field measurements (or modelling, if justified) ■ Be aligned (skewed) to match the stream ■ Include a longitudinal profile survey to determine the stream and structure's slope ■ Longitudinal profile is complete ☐ Longitudinal profile will be completed prior to design	■ Contain stream material within structure closely matching native stream bed as: ■ Open, natural stream bottom *OR* ☐ Embedded closed bottom with backfilled stream material ■ Include constructed stream banks through the structure ■ Have properly-designed and engineered footings and/or structure bottom elevation accounting for potential scour

X. Maine Department of Transportation Notification & Inspections

See MaineDOT's Bridge Upgrade Fact Sheet and Guidance Video #4: Maine DOT Responsibilities & Requirements

For Crossings with a clear span 10 feet or greater

☐ *This section is not applicable the proposed structure is less than 10 feet in width measured along the road centerline between both abutment faces underneath, or spring lines of arches, or has an opening of less than 80 square feet in area.*

NOTE: Maine DOT defines culverts and bridges differently than in the context of this RFA.

1. In determining the proposed structure's width, was all necessary field work, including stream profile survey and multiple averaged field bankfull width measurements completed?	☒ Yes ☐ No
2. Have you made initial contact with MaineDOT Bridge Maintenance Division (207-624-3600) to discuss the structure's potential requirements and inform them of the town's intention to replace the crossing with a span 10 feet or greater?	☒ Yes ☐ No
If No, please indicate when you intend to contact Maine DOT Bridge Maintenance Division?	

For Crossings with a clear span 20 feet or greater

☐ *This section is not applicable, the proposed structure is not more than 20 feet in width, measured between both abutment faces underneath, or spring lines of arches or the extreme ends of openings for multiple boxes.*

NOTE: Examples of design elements not recommended by MaineDOT are aluminum box culverts, precast block abutments, metal bin abutments, bridge foundations that are scour critical, bridges that do not have designed or crash tested bridge rail. See MaineDOT's Bridge Upgrade Fact Sheet for more information. MaineDOT recommends that bridge designs be completed by design firms found on the department's prequalification website: Consultant Prequalification \| MaineDOT

3. If the new crossing will be 20 feet or over in width, are you planning to request that the MaineDOT take responsibility for the structure?	☒ Yes ☐ No
If Yes, please indicate you are aware that for MaineDOT to accept responsibility for a structure, there are additional design, safety, and other review criteria that may affect the final design of the structure. Meeting these criteria are the responsibility of the applicant.	☒ Yes, this is understood
4. Have you had the design reviewed by MaineDOT's Bridge Maintenance Division?	☒ Yes ☐ No

Important Note: For all crossings proposed to be 20 feet or greater, please refer to Maine DOT's Bridge Design Guide and contact MaineDOT Bridge Division for requirements and limitations.

XI. Project Efficiency and Avoided Costs

1. Size of previous year's municipal road maintenance budget:	2020 total appropriations were for a total of $318,136.09. Total expenditures were $360,582.31.
2. Amount of annual maintenance budget dedicated to non-winter maintenance:	Total appropriations were $63,136.09. Total expenditures were $98,760.45
3. How much money has been spent on physical repairs within the last 10 years on this culvert crossing?	Approximately $60,000
4. How much money has been spent on road closures or other costs associated with the culvert crossing?	We have so-far avoided road closures. Single-lane traffic was preserved during 2014 repairs.

5. Describe the types of expenditures made on repairs or other costs listed above.

$40,000 to repair the headwall; $14,000 on engineering services; guardrail repairs

6. This project will likely require a permit from the Army Corps of Engineers. Have you contacted Army Corps regarding this project? (see Guidance Video #3)	☒ Yes	☐ No
7. Have you submitted an application to Army Corps of Engineers?	☐ Yes	☒ No
8. Do you already have a permit in-hand from Army Corps of Engineers?	☐ Yes	☒ No

9. What is the anticipated construction duration?	6 weeks	
10. If awarded, when is construction anticipated to begin (month/year)? *(Keep in mind that the typical window for in-water work is July 15-October 1)*	Start Date: 7/15/2022	Completion Date: 9/1/2022

11. Provide any additional information regarding the efficiency and cost-effectiveness of the project:

The crossing will be constructed with precast concrete block abutments and wingwalls, which are substantially lower in cost and quicker to install than conventional cast-in-place abutments. This minimizes road closure time and allows contractors to complete more stream crossing projects during a relatively brief construction season.

12. Provide any additional information as to why this project should be funded by a public infrastructure grant:

According to the U.S. census, the population of the town of Alna grew from 709 in 2010 to 710 in 2020. Although the town itself is quite small, the crossing is on the principal access to the Hidden Valley Nature Center, which is a regionally significant nature preserve operated by Midcoast Conservancy that provides a significant four-season recreational opportunities, educational programs, and community events, increasing the significance of this road beyond the access it affords to the homes and business it serves. Despite its small population/tax base, the town has a total of 59.24 lane miles of roads it is responsible for maintaining. Because of the small population of the town, however, repairing or replacing this crossing represents a very heavy financial burden on this small community.

XII. Alternate Maine Stream Habitat Viewer Information

Complete this section if the crossing location for this proposal is not mapped on the Maine Stream Habitat Viewer

☒ *This section is not applicable (the Maine Stream Habitat Viewer ID for this site is available and listed in Application Section VI)*

If the existing culvert/crossing is NOT surveyed on Maine Stream Habitat Viewer, what is the closest Crossing ID# to the structure on this stream *(same stream preferred, or stream system if not available*		
Describe the proximity of this reference crossing to the proposal location?		
4. If they exist, what is the Maine Stream Habitat Viewer Crossing ID# for the crossings upstream and downstream of the proposed upgrade?	**Upstream Crossing ID#** ☐ N/A	**Downstream Crossing ID#** ☐ N/A
Are these considered to be a barrier to fish passage?	☐ Barrier ☐ Partial/Potential Barrier ☐ Not a Barrier	☐ Barrier ☐ Partial/Potential Barrier ☐ Not a Barrier
5. Approximate distance to the next barrier identified by the Maine Stream Habitat Viewer? *(in miles, along stream***)** Use a map measure tool to approximate the distance along the stream to the next crossing on a road.	Upstream	Downstream
Does this crossing appear to be able to pass fish in its current state?	☐ Yes ☐ No ☐ Maybe	
Has this crossing been confirmed by a fisheries biologist or DEP staff as a barrier to fish passage? Explain.		
Explain reasoning for fish passage assessment (be sure to include good photos with the application)		

From the stream viewer map of the area:

- Use the layers to determine if the area falls within a mapped habitat. List any habitat indicated in the Fish & Wildlife Section of the Application:
- Use the Beginning with Habitat Maps to determine if there are any nearby endangered species or other habitats
- Barrier status: Discuss the project with a fisheries biologist or with DEP staff to see if the crossing would likely impede fish passage. Look for clear features such as outlet drops or perched culverts and other features that would prevent a fish from moving through the culvert. List any indications or additional information about the culvert's ability to allow fish movement. Take good photos of the crossing for your application, be sure to clearly show the inlet and outlet and inside the structure.
- Make sure to contact fisheries agencies to find out what information they might have about the resource, fisheries, and habitats.

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

COST & BUDGET INFORMATION

Applicant Organization's Name:	**Town of Alna**

The requested funds may not exceed $125,000. The Department cannot fund 100% of any project; local matching funds must be included

1. Total Amount of Funds being Requested	**$125,000**
2. Total Matching Funds Committed to Project	**$445,000**
Source of Project Cost Estimate	**Calderwood Engineering estimate**
Source(s) and types of Local Matching Funds proposed	**Town budget: $210,000** **National Fish Passage Program Grant: $85,000** **Applying for NFWF Grant: $150,000**
What is the status of any proposed matching funds (e.g. approved, planned, committed, uncertain, etc.)	**NFPP Grant application is under review. NFWF Grant app. yet to be submitted. Town funds are pending grants and town vote.**

Selected Budget Items	
5. Total Engineering Costs	**$105,000**
6. Permitting and Bidding	**Included in above.**
7. Erosion & sediment controls (including de-watering, stream bypass, cofferdams, temporary and permanent stabilization measures)	**$20,000**
8. All other items	**$445,000**

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

DEBARMENT, PERFORMANCE and NON-COLLUSION CERTIFICATION

Applicant's Organization Name:	Town of Alna

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.*
c. *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.*
d. *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.*
e. *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 Applicant's application, at the discretion of the Department.

Name (Print): Charles Culbertson	**Title:** Selectperson
Authorized Signature: 	**Date:** Click or tap here to enter text. 11-17-2021

True Road Culvert Inlet/Outlet Photos
by R. Butler: 8/26/2021

Inlet (6" water depth)

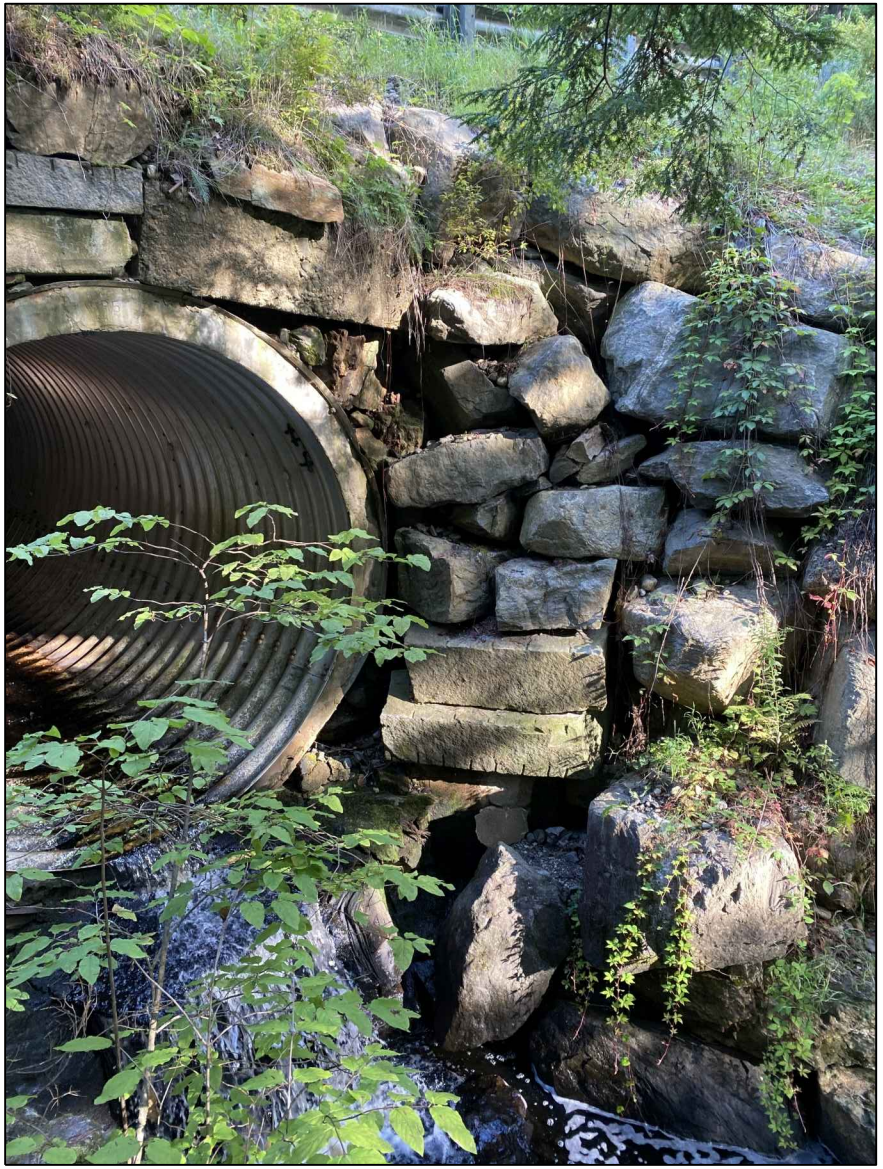
Upstream from 10' above inlet.

Outlet

Downstream

True Road Culvert Photos
by R. Butler: 8/26/2021

Outlet showing failing headwall.



Outlet showing failing headwall.

Inlet showing base of headwall shifted.

Inlet showing base of headwall shifted forward.

Inside culvert looking downstream.

True Road Culvert Photos
by R. Butler: 8/26/2021

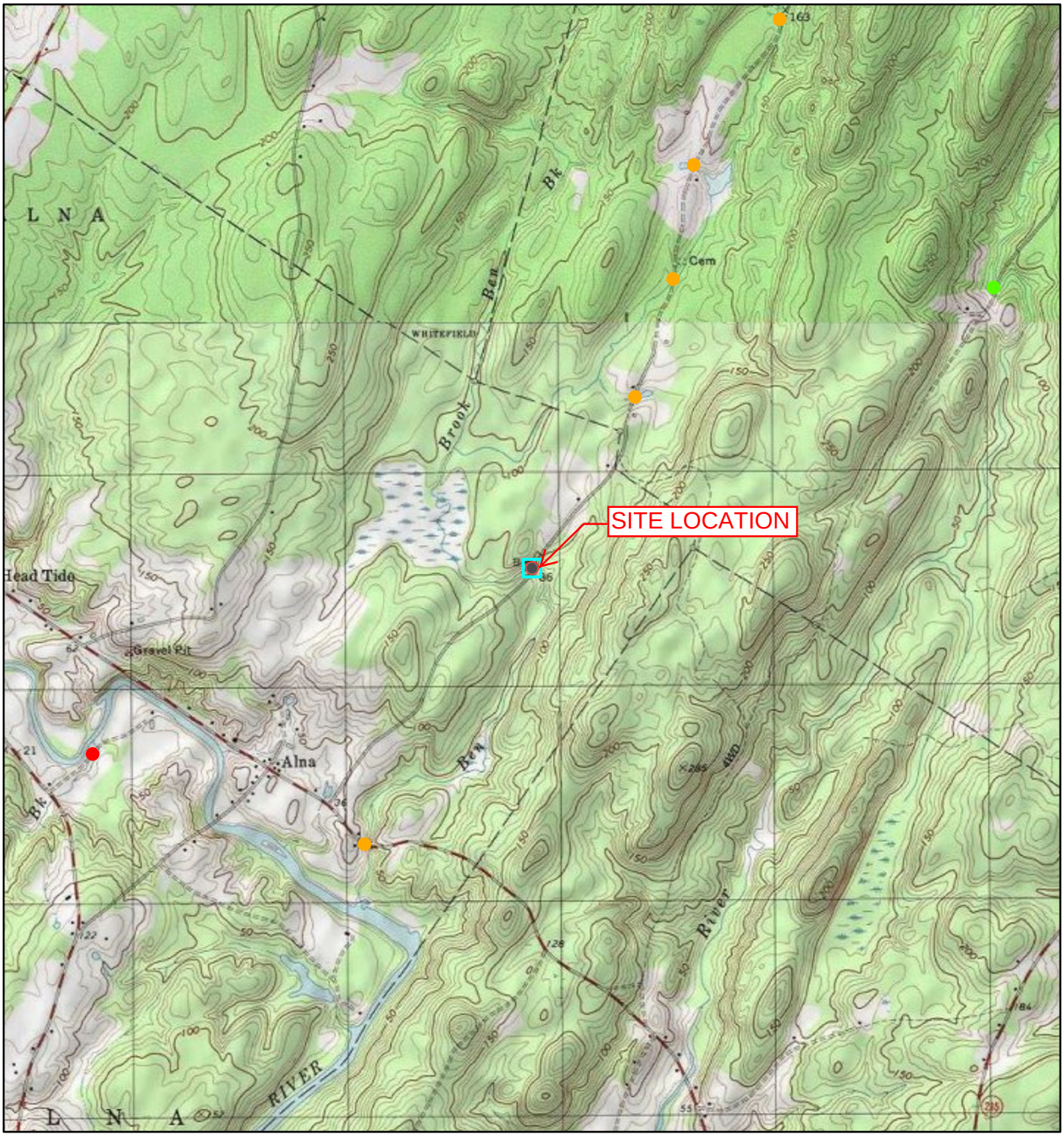
Downstream showing ledge outcrop on left..

Downstream wide angle.

Tributary at Sta. 7+85 left; approx. 6' BFW.

Near Sta. 9+00 looking downstream.

Alna Stream Crossing 3747



October 21, 2021

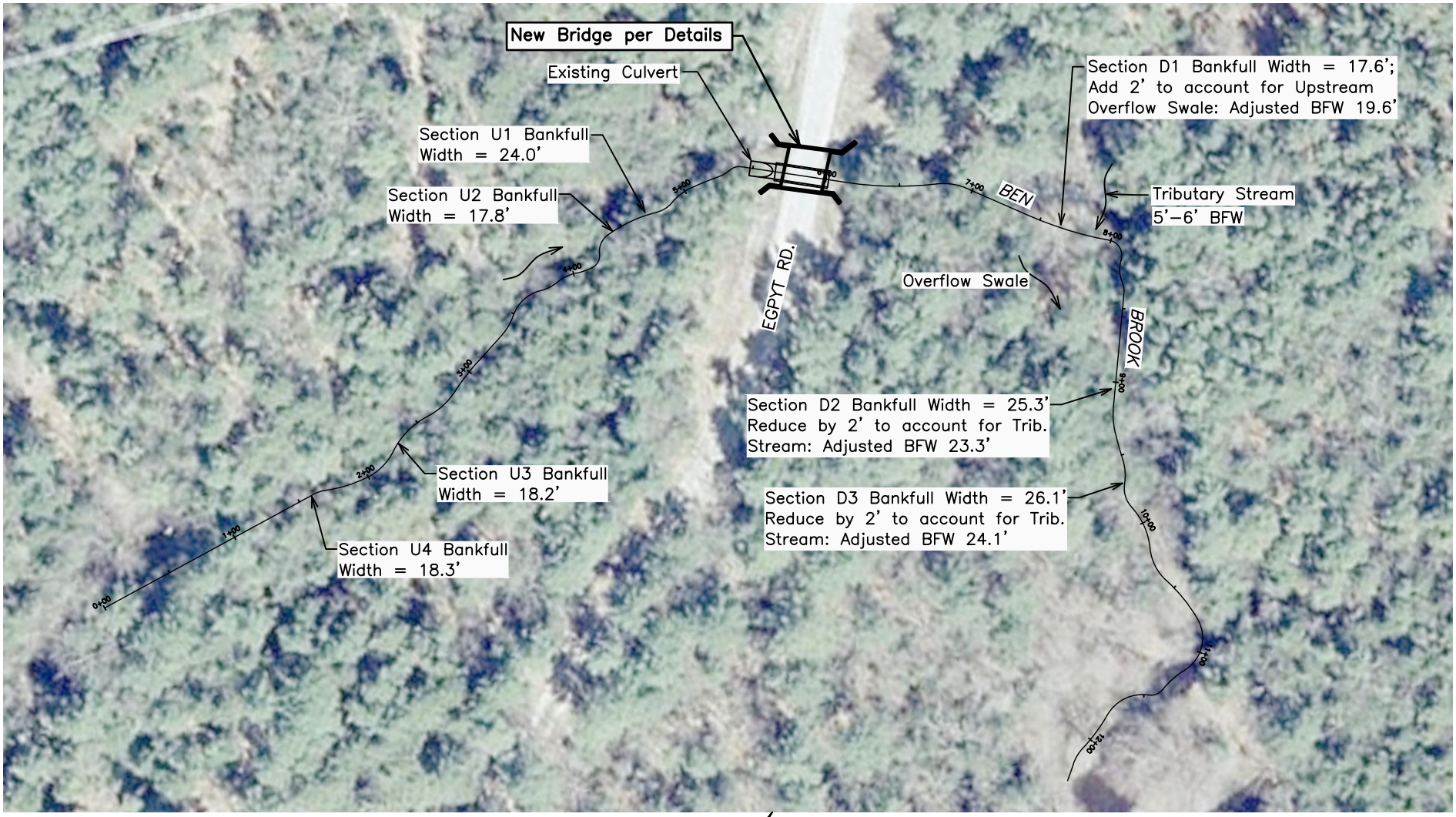
1:36,112

0 0.23 0.45 0.9 mi

0 0.35 0.7 1.4 km

crossingsbarrierscr

- Barrier
- Potential Barrier
- No Barrier



0' 100' 200' 300'

Scale

TRUE NORTH

FOR GRANT PURPOSES ONLY
- NOT FOR CONSTRUCTION -

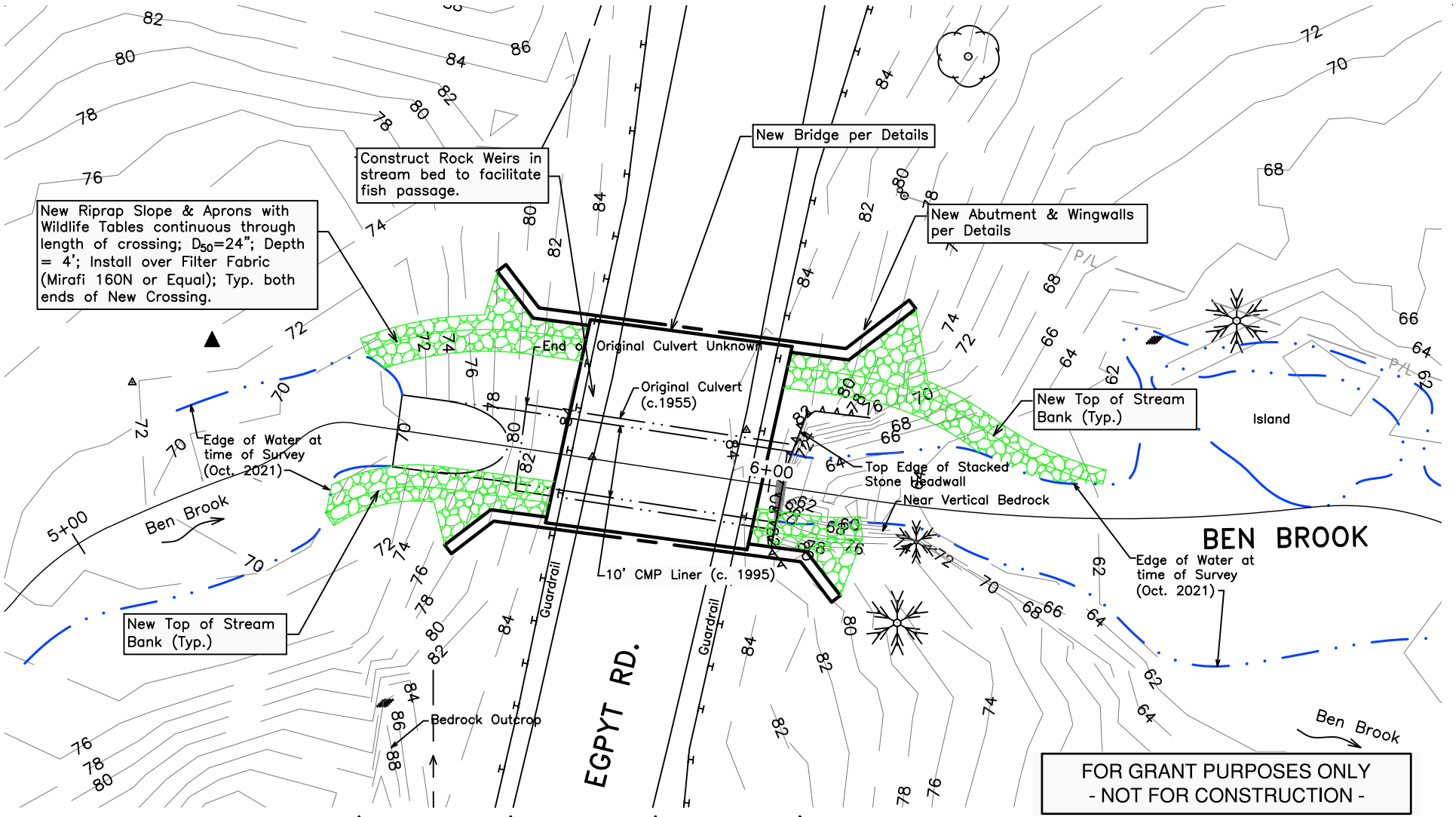
TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

AERIAL PLAN

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING 1 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1



FOR GRANT PURPOSES ONLY
- NOT FOR CONSTRUCTION -

Notes:
1. Existing Contours are based on LiDAR, with adjustments per topographic survey by Dirigo Engineering.
2. Ledge is prevalant at the site. Based on reports from nearby landowners, ledge was blasted in order to install the original culverts. Final design of footings and streambed shall be based on geotechnical test results/analysis.

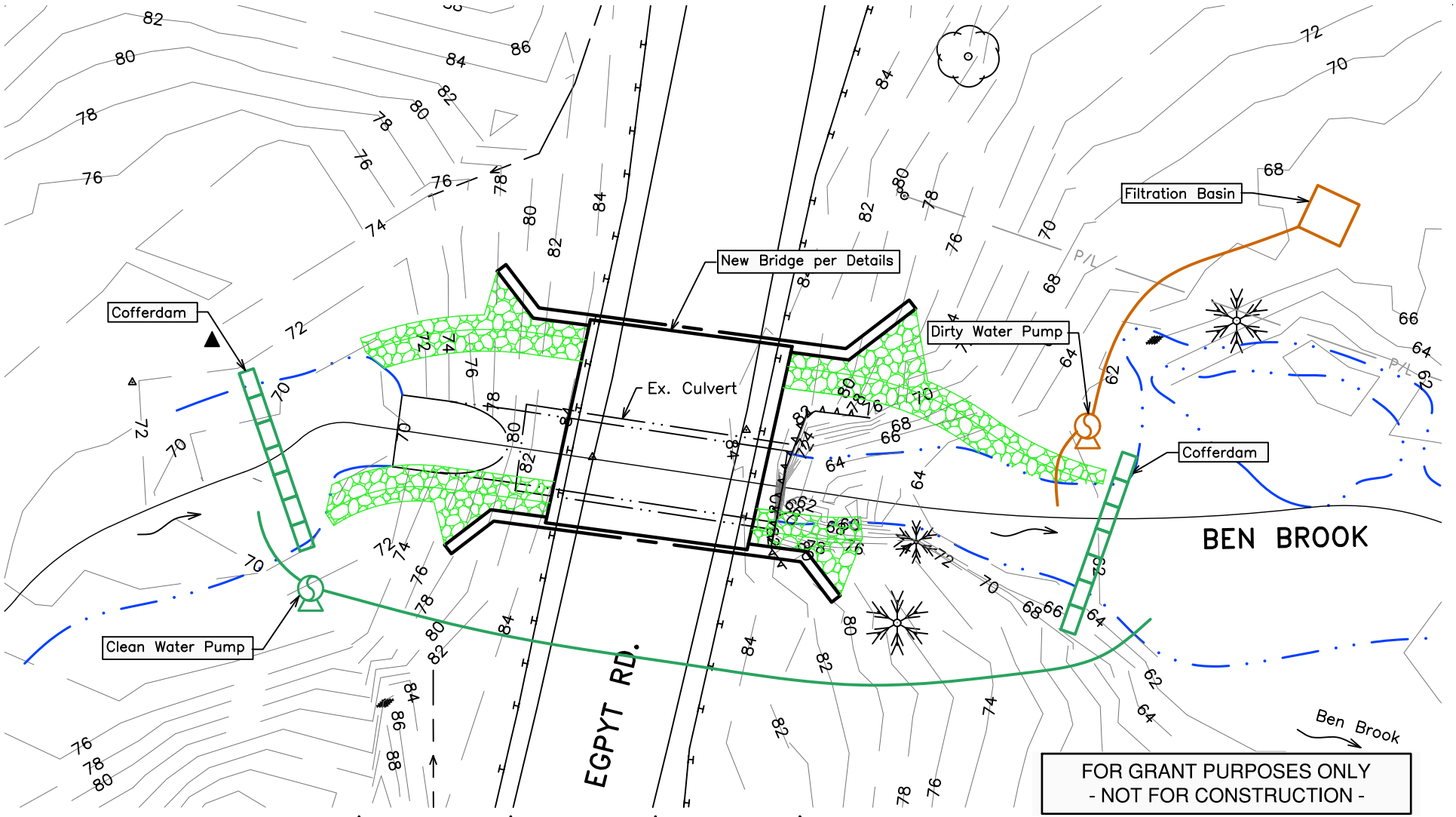
TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

STREAM CROSSING PLAN

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING 2 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1



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Notes:
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2. Ledge is prevalant at the site. Based on reports from nearby landowners, ledge was blasted in order to install the original culverts. Final design of footings and streambed shall be based on geotechnical test results/analysis.

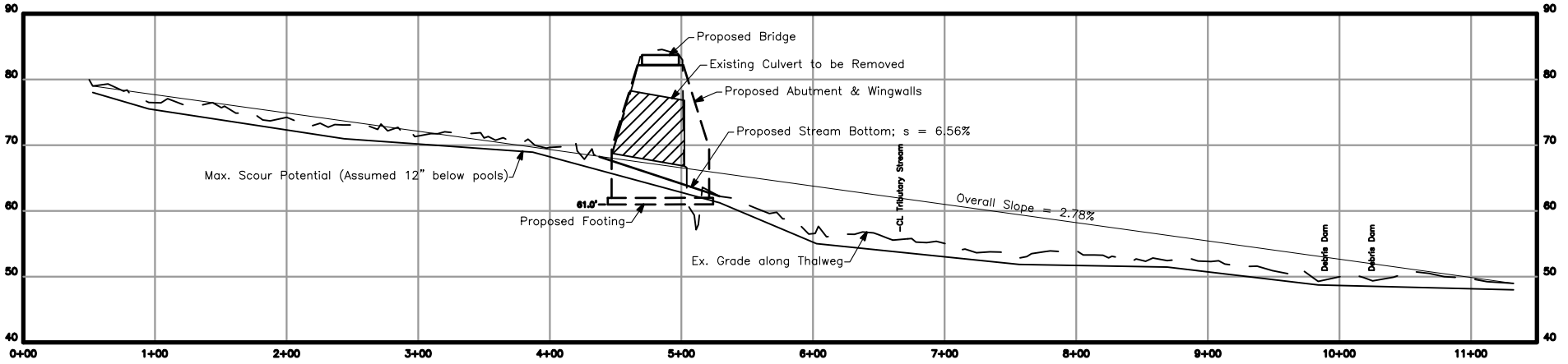
TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

STREAM CROSSING PLAN

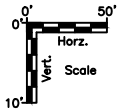
DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING 3 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1



LONGITUDINAL PROFILE



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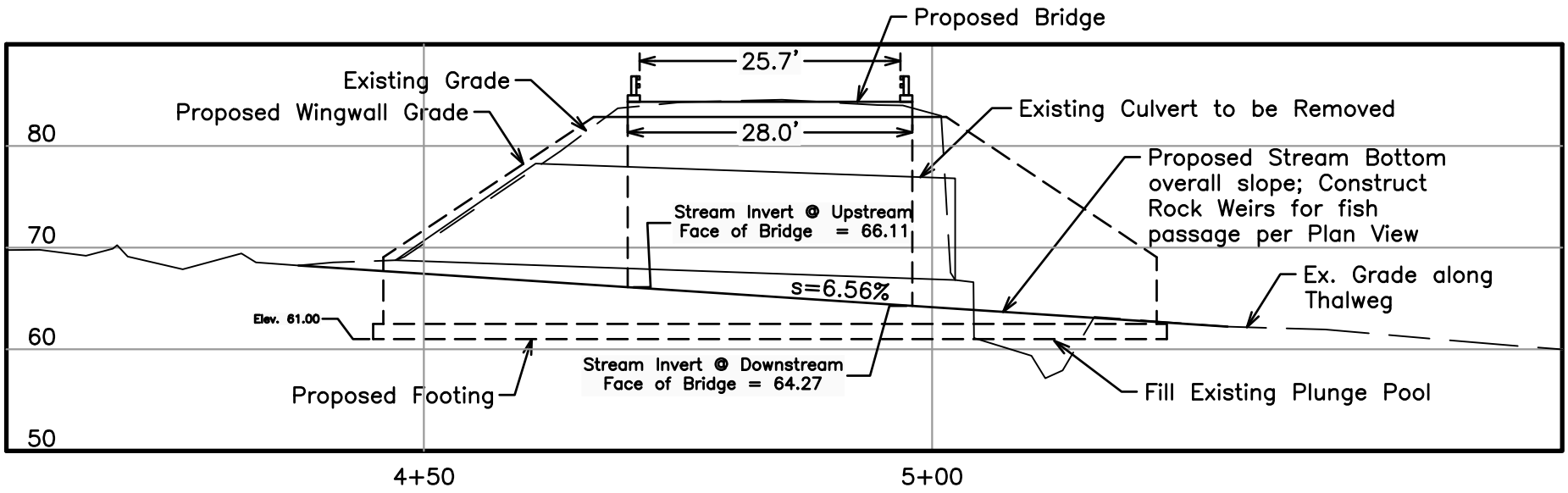
TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

LONGITUDINAL PROFILE

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING 4 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1



BRIDGE PROFILE

FOR GRANT PURPOSES ONLY
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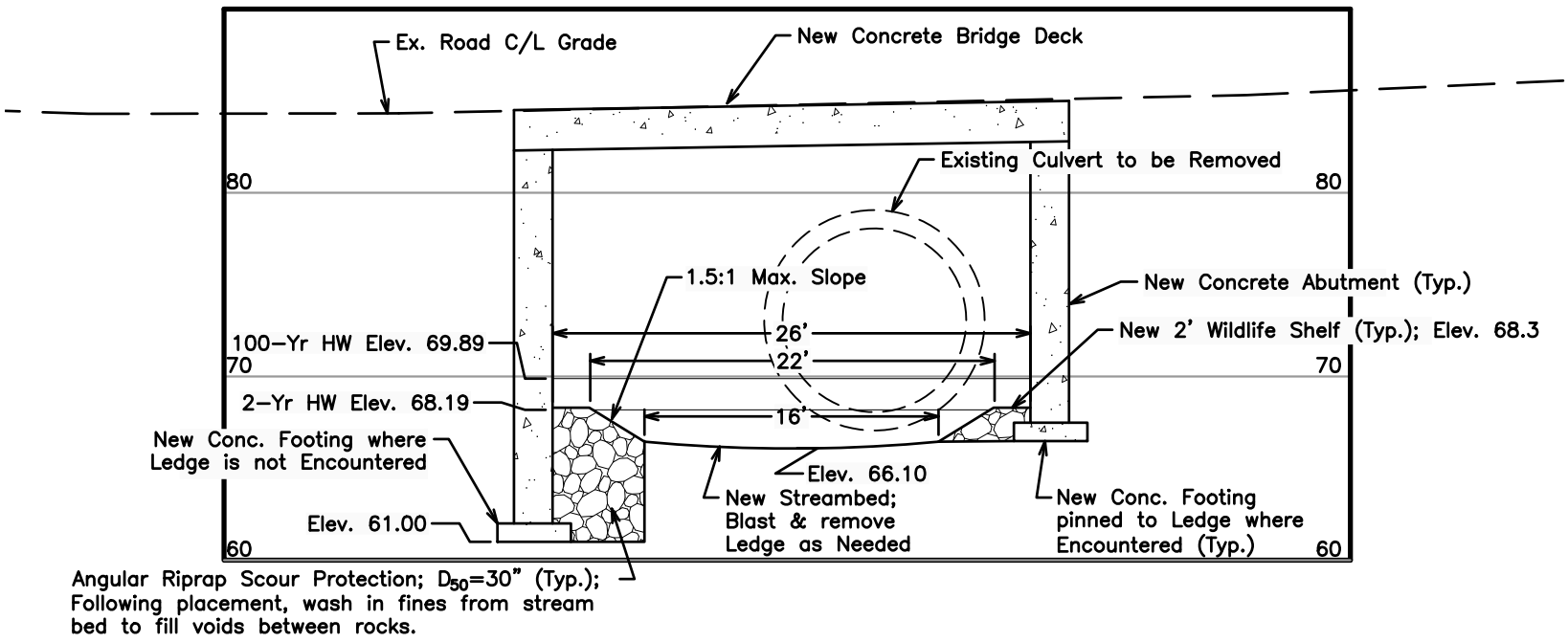
TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

LONGITUDINAL PROFILE – DETAIL

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING 5 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1



CROSS SECTION AT BRIDGE INLET

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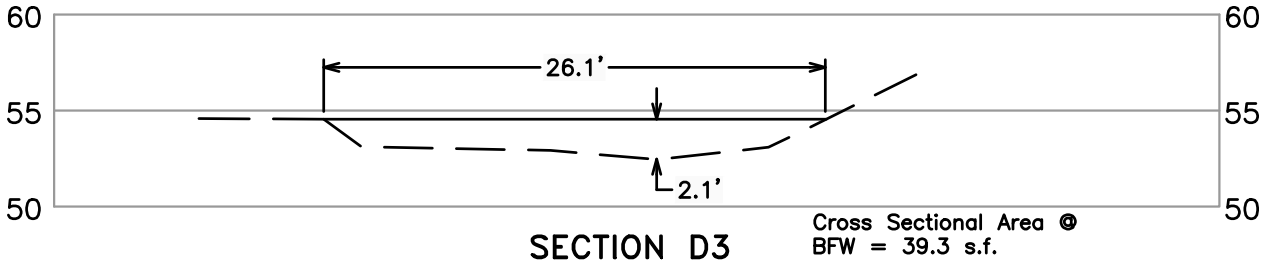
TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

INLET ELEVATION

DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

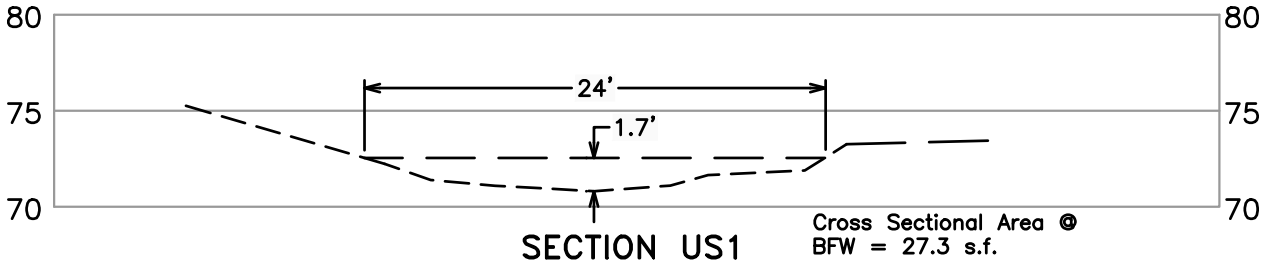
DRAWING 6 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1



SECTION D3

Cross Sectional Area @
BFW = 39.3 s.f.



SECTION US1

Cross Sectional Area @
BFW = 27.3 s.f.

REFERENCE REACH CROSS SECTIONS

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- NOT FOR CONSTRUCTION -

TOWN OF ALNA, MAINE
EGYPT ROAD
CULVERT REPLACEMENT PROJECT

STREAM SECTIONS

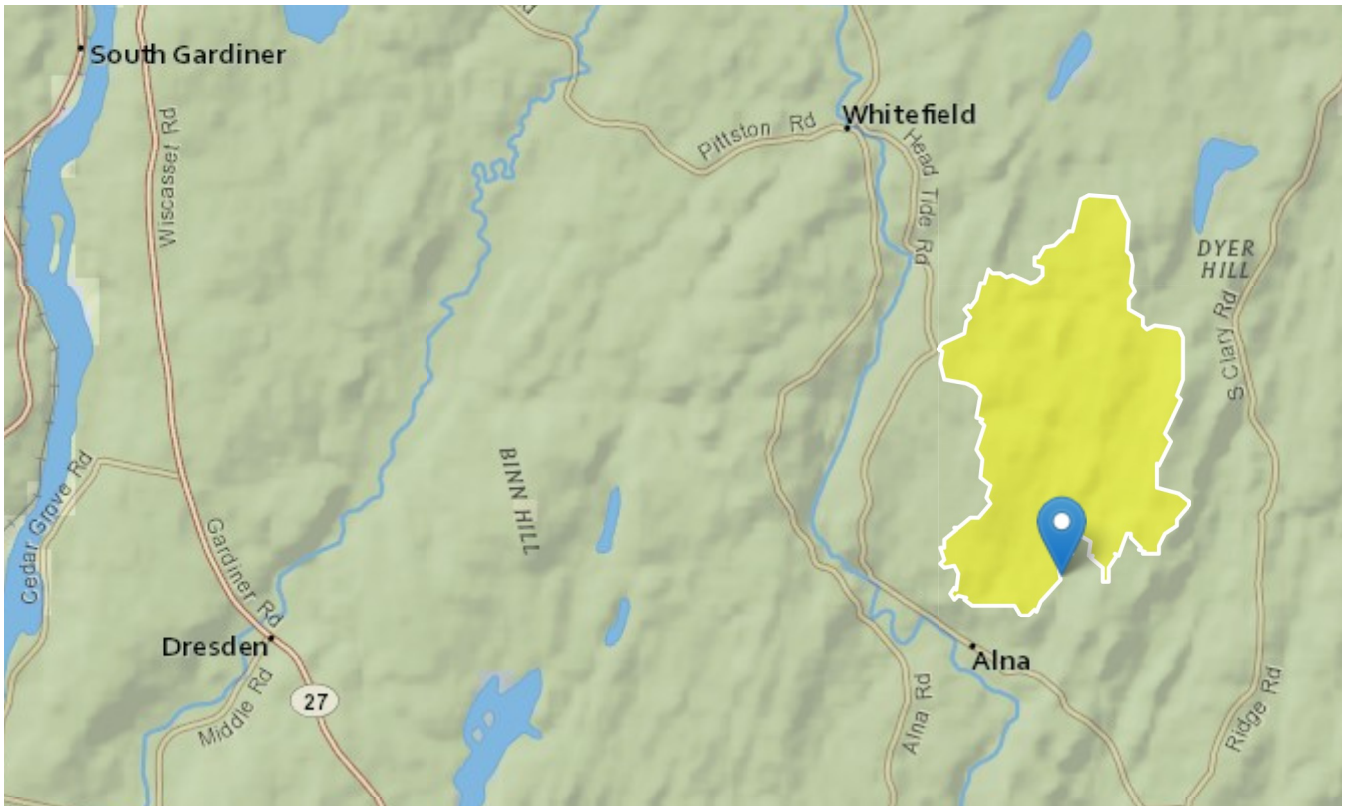
DIRIGO ENGINEERING
2 DIRIGO DRIVE FAIRFIELD, ME 04937

DRAWING 7 OF 7

FILE: 00 Egypt Road Permit Plan | DATE: 11/12/21 | #45401.1

StreamStats Report - Alna Egypt Road

Region ID: ME
Workspace ID: ME20211028094837399000
Clicked Point (Latitude, Longitude): 44.11469, -69.58835
Time: 2021-10-28 05:40:39 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	4.71	square miles
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	3.17	inches
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	16.434	percent
I24H5Y	Maximum 24-hour precipitation that occurs on average once in 5 years	3.99	inches

Parameter Code	Parameter Description	Value	Unit
I24H10Y	Maximum 24-hour precipitation that occurs on average once in 10 years	4.69	inches
I24H25Y	Maximum 24-hour precipitation that occurs on average once in 25 years	5.64	inches
I24H50Y	Maximum 24-hour precipitation that occurs on average once in 50 years	6.35	inches
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	7.1	inches
I24H200Y	Maximum 24-hour precipitation that occurs on average once in 200 years	7.99	inches
I24H500Y	Maximum 24-hour precipitation that occurs on average once in 500 years	9.38	inches
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0	dimensionless

Peak-Flow Statistics Parameters [Statewide multiparameter peakflows SIR 2020 5092]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.71	square miles	0.26	5680
I24H2Y	24 Hour 2 Year Precipitation	3.17	inches	1.92	4.17
STORAGE	Percent Storage	16.434	percent	0	29.4
I24H5Y	24 Hour 5 Year Precipitation	3.99	inches	2.48	5.38
I24H10Y	24 Hour 10 Year Precipitation	4.69	inches	2.84	6.38
I24H25Y	24 Hour 25 Year Precipitation	5.64	inches	3.3	7.75
I24H50Y	24 Hour 50 Year Precipitation	6.35	inches	3.65	8.79
I24H100Y	24 Hour 100 Year Precipitation	7.1	inches	3.99	9.88
I24H200Y	24 Hour 200 YearPrecipitation	7.99	inches	5.26	11.1
I24H500Y	24 Hour 500 Year Precipitation	9.38	inches	5.95	13.1

Peak-Flow Statistics Flow Report [Statewide multiparameter peakflows SIR 2020 5092]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp
50-percent AEP flood	145	ft^3/s	77.7	271	39.1
20-percent AEP flood	224	ft^3/s	122	412	38.1
10-percent AEP flood	283	ft^3/s	152	527	38.9
4-percent AEP flood	363	ft^3/s	192	685	39.9
2-percent AEP flood	426	ft^3/s	222	817	39.7
1-percent AEP flood	492	ft^3/s	258	939	40.7
0.5-percent AEP flood	566	ft^3/s	287	1120	42.8
0.2-percent AEP flood	665	ft^3/s	332	1330	43.8

Peak-Flow Statistics Citations

Lombard, P.J., and Hodgkins, G.A.,2020, Estimating flood magnitude and frequency on gaged and ungaged streams in Maine: U.S. Geological Survey Scientific Investigations Report 2020–5092, 56 p. (https://doi.org/10.3133/sir20205092)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.71	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	0.142	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)

Bankfull Statistics Parameters [Central and Coastal Bankfull 2004 5042]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.71	square miles	2.92	298

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.71	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.71	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.71	square miles	0.07722	59927.7393

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

Statistic	Value	Unit
Bankfull Streamflow	26.4	ft^3/s
Bankfull Width	17.2	ft
Bankfull Depth	1.01	ft
Bankfull Area	17.3	ft^2

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	28.9	ft

Statistic	Value	Unit
Bieger_D_channel_depth	1.75	ft
Bieger_D_channel_cross_sectional_area	51.3	ft^2

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	39	ft
Bieger_P_channel_depth	1.93	ft
Bieger_P_channel_cross_sectional_area	76.3	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	21.4	ft
Bieger_USA_channel_depth	1.68	ft
Bieger_USA_channel_cross_sectional_area	39.5	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Streamflow	26.4	ft^3/s
Bankfull Width	17.2	ft
Bankfull Depth	1.01	ft
Bankfull Area	17.3	ft^2
Bieger_D_channel_width	28.9	ft
Bieger_D_channel_depth	1.75	ft
Bieger_D_channel_cross_sectional_area	51.3	ft^2
Bieger_P_channel_width	39	ft
Bieger_P_channel_depth	1.93	ft
Bieger_P_channel_cross_sectional_area	76.3	ft^2
Bieger_USA_channel_width	21.4	ft
Bieger_USA_channel_depth	1.68	ft
Bieger_USA_channel_cross_sectional_area	39.5	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)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

Application Version: 4.6.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

The Nature Conservancy in Maine
14 Maine Street, Suite 401
Brunswick, ME 04011

tel [207] 729-5181
fax [207] 729-4118
www. nature.org/maine

November 11, 2021

Mr. John Maclaine
Grant for Culvert Upgrades Program
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333
207-615-3279
john.maclaine@maine.gov

Re: Alna Application for Egypt Road Stream Crossing Replacement Project

Dear Mr. Maclaine,

I am writing to express my support and enthusiasm for the Town of Alna's proposal to the Grant for Culvert Upgrades Program to help fund the Egypt Road aquatic organism passage restoration project. The municipality's efforts to restore wildlife passage, improve water quality, and increase the river's ability to absorb heavy rain events with minimal flooding is an important goal and The Nature Conservancy (TNC) looks forward to supporting Alna's efforts. These efforts to restore migratory fish access to the important habitats upstream will ensure the security of the road and stream networks in Alna and the surrounding communities and promote a sustainable future for Maine's freshwater and marine resources.

TNC is dedicated to conserving the lands and waters on which all life depends and has been involved in efforts to restore rivers and streams in Maine for the past 10 years. Maine is remarkable for having so many good fish passage projects, as well as significant fish habitat. Free flowing rivers provide easy access to spawning and rearing habitat to several sea run fish species and allow resident fish species unfettered access to the multiple habitats need to support diverse life history strategies.

This crossing was identified as an important Fish Passage Restoration project by the Maine Aquatic Barrier Prioritization Tool (https://maps.coastalresilience.org/maine) and is located in a watershed identified by as high priority for restoration and protection.

Please join me in supporting the Town of Alna in this proactive effort to both restore fish habitat and reduce threats to critical infrastructure in this innovative project to protect the towns ecological and economic integrity.

Sincerely,

/s/ Christian Fox

Christian Fox
Watershed Restoration Specialist
christian.fox@tnc.org
840.460.4040
The Nature Conservancy in Maine

Title: Sheepscot Tributary Culvert Replacement, Lincoln County. Ben Brook, Alna, Maine NFPP-FY21

Applicant: Town of Alna, Maine; DUNS # 077463594
contact:
1st: Shri A Verrill, Midcoast Conservancy shri@midcoastconservancy.org, (207) 515-0733
2nd: Linda Kristan, Town of Alna Select board lkristan@gmail.com, (207) 586-6867

Figure 1. Photo depicts perched culvert outlet looking upstream. August 18, 2021 4:09 pm

Photo Description: Red flower and large dead coniferous tree in the foreground over boulders in stream with two men on the left in the middle standing behind deciduous tree branches on boulders in the stream, and a pipe culvert approximately 10 feet in diameter in the background, surrounded on the left by large sloping leaning trees rooted into the road embankment and on the right and above by large stones beginning to crumble into the stream and further to the right by vegetated road embankment. A guard rail is visible on the crown of the road, and trees are visible through the culvert upstream. Some water is visibly flowing down an approximate four-foot drop to the stream level.

Link to Maine Stream Habitat Viewer: Site ID 3747 Barrier Class: barrier

Primary Species Benefitted: Atlantic salmon

Secondary Species Benefitted: American eel, Eastern Brook Trout, Sea Lamprey

Project Summary:

This application is submitted with the request to fund around 20% of the estimated total costs to replace the culvert at Ben Brook with a 30 foot span bridge design that exceeds 1.2 bank full width, on the Egypt Road in the town of Alna, Maine.

Project will restore upstream fish access and will maintain long-term ecological function to Ben Brook, a stream in critical Atlantic salmon habitat, which contains Atlantic salmon (ATS) and American eel (personal communication with IFW Biologist Jason Seiders Oct 1, 2021 re: sampling conducted in 1999 and 2006) and will open up 77.40 unites of blocked Atlantic salmon habitat (MSHV Site ID 3747). Project will also fix a chronic sedimentation problem that is detrimental to the health of the stream. The crossing is owned by the Town of Alna and according to the Maine Department of Transportation (MDOT), the stone retaining wall downstream has severe movement and the road could have a serious washout (Wiscasset Newspaper July 27, 2021, 'Trouble at bridge over Alna water'), creating public safety hazard for vehicles, especially larger trucks used for fuel delivery and timber management at the Hidden Valley Nature Center, which has an active Forestry program and is less than three miles up the road.

The structure design is expected to exceed criteria in Maine's Stream Smart program and will span more than 1.2 bank full width in addition to meeting MDOT bridge criteria, easily passing a 100-year storm event, and minimizing maintenance needs in the future. Correctly identified-installed-implemented erosion and sedimentation controls BMPs will streamline other permitting issues. ESA consultation should be covered under the ACOE USFWS programmatic based on the expected 30-foot span bridge.

The price of the replacement is expected to be in the range of $300,000 to $500,000.

The designs are being completed by two local and highly respected engineering firms, one of which, Randy Butler of Dirigo Engineering, has worked extensively with USFWS Cooperator Alex Abbot, who recommended him for this project. Randy will be completing the preliminary engineering drawings as well as will write the application for the Maine water bond culvert replacement grant for the full amount ($125,000) with any needed assistance coming from Lincoln County Regional Planning Commission (LCRPC).

Shri Verrill, Midcoast Conservancy's Senior Watershed Restoration Manger will contribute up to $14,000 of her professional time with project management and fundraising support.

Additional information:

This project is located within SWIM watershed #40 (Sheepscot-St. George), which is listed as a high priority. In 2014 the Town of Alna spent $40,000 to repair the structure. Even if the town were to repeat the 'simple fix' option, supply shortages and increased construction costs would likely be in the range of $60,000 today. Since the preliminary engineering assessment by Eric Calderwood indicated that the structure is at the end of its lifespan, it is very likely that this would necessitate the Town investing more money for a safe structure. The final say for Town expenses will be determined at a town meeting in March 2022. Eric will be making the cost benefit analysis clear to the community that the full replacement option is what will ultimately

cost less in the long run and will provide a structure with a much longer lifespan. Plans to raise funds for the remaining costs are in place. Shri will help the Town by applying for NOAA habitat restoration and/or NFWF New England Forests and Rivers funding so that the project may be completed within 1 year of receipt of funds.

Proposed Outreach Narrative:

Midcoast Conservancy plans to use the location as a site for World Fish Migration Day in 2022, to highlight the benefit of Stream Smart crossings toward restoration of the endangered Atlantic salmon and species of special concern, the American eel. This will serve to inform other local Municipal officials about partnerships and funds available to assist with their fish passage culvert replacement needs.

Project location: 1st Congressional District, Latitude: 44.11472 Longitude: -69.58838

Miles of Stream Habitat above Project: 9.08
Project Type: Fishway construction
Potential Completion date if funded: 30-Sep-22
Proposal request amount and overall budget:

Partner	Description	USFWS Request	Matching	In-kind
Proposal request		$85,000		
Town of Alna, Maine	minimum contribution, likely more		$85,056	
Randy Butler, engineer	DEP application assistance		$5,000	
Midcoast Conservancy	Project management			$5,000
DEP	Maine water bond culvert replacement program		$125,000	
NFWF New England Forests and Rivers	Fish passage construction		$150,000	
Total		$85,000	$365,056	$5,000
Total project cost		**$455,056**		

Have you talked to IFW and DMR Regional Fish Passage Biologists about Project?-

- **IFW**: Yes, Shri spoke with Jason Seiders on Oct 1, 2021 who shared sampling data with me from his files, which indicate the presence of Atlantic salmon, and American eels as well as the following minnow species during 2006 and 1999 surveys: white sucker, black nosed dais, creek chub, and common shiner. Jason gave no indication of opposition to this project.

- **DMR**: Yes, Shri spoke with Sean Ledwin on Sept. 30th. He expressed support for this project. Jen Noll

Will Project be submitted for future NFHAP (EBTJV **or** ACFHP**) or other Proposals by the Applicant or Others?** No

Should a USFWS Fish Passage Engineer be involved? No. Alex Abbott was consulted early on and he recommended that we work with Randy Butler because he was at capacity.

If the project is fully funded (NFPP Request), will the project be "shovel ready"? Yes, pending our ability to raise the remaining funds and a contractor is available to complete construction during the in-stream work window of 2022.

Project Timeline - Ben Brook Bridge # 0610	
Milestone	Anticipated Date
Submit 60% Plans and Preliminary Design Report	10/22/20201
Submit Permit Application	11/19/2021
Submit 99% Plans & Specifications	12/10/2021
Anticipated Permit Obtained*	1/13/2022
Ready to Advertise Project	1/20/2022

* Based on permitting time from Army Corps of Engineers

Appendix A

Ben Brook Atlantic salmon (ATS) presence data from DMR

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

RFP #: 202106082
RFP TITLE: 2021 Grants for Stream Crossing Infrastructure Improvements
BIDDER: 2021R-42 Temple, Mitchell Brook Road
DATE: 11/16/22, 1/4/22, 1/5/22, 1/6/22, 1/7/22, 1/28/22

SUMMARY PAGE

Department Name: Environmental Protection
Name of RFP Coordinator: John Maclaine
Names of Evaluators: Jon Cullen, David Waddell, James Stahlnecker, John Maclaine

---

Pass/Fail Criteria	Pass	Fail
Section I. Applicability		
• The proposed structure to be upgraded is located on a municipal road, is not owned by a private or state entity, and is not located on a road segment classified as a "State-Aid" road.	**X**	
• The proposed project includes matching funds from local or other sources.	**X**	
• The proposed project is for the upgrade of a culvert, not currently a bridge as defined by the RFA.	**X**	
Scoring Sections	Points Available	Points Awarded
Section II: Public Infrastructure Information/Public Safety	**25**	**18**
Section III: Benefits to Fish & Wildlife	**50**	**46**
Section IV: Cost Efficiency and Effectiveness	**25**	**12**
Total Points	**100**	**76**

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

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OVERVIEW OF SECTION I
Applicability

Section I. Applicability

Evaluation Team Comments:

Project qualifies for scoring under RFP#202106082.

Contact information:
Town of Temple
Robert Van Riper

Consultant/Agent Info:
St. Germain

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

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EVALUATION OF SECTION II
Public Infrastructure Information/Public Safety

	Points Available	Points Awarded
Section II: Public Infrastructure Information/Public Safety	**25**	**18**

Evaluation Team Comments:

Town Name: Temple
Road name: Mitchell Brook Road
Stream Name: Henry Mitchell Brook

Existing Culvert Size & Material: 9'Sx6'Hx41'L, CMP

Crossing Age: unknown years

Bankfull width and method: 14.9. Multiple Field Average

New Structure size & type: 19'Sx9'Hx40'6"L, Open bottom metal arch on concrete footers
Contacted DOT Bridge Program if 10' or greater?: Yes

Estimated time to failure: <1 years

Previous flooding or failure events, documentation, culvert condition, age: This elliptical, closed-bottom culvert is undersized and a short distance from a downstream bridge on Intervale Road. Should the culvert fail in an extreme event it could take out the bridge. The road shoulders adjacent to the crossing wash out every year
Change in culvert width: 2
aluminum pipe? Joints are coming undone, deformed, embankment erosion, piping

Design meets DOT 100-year flood standard: Yes

Regularly obstruction or maintenance required?: No

Impact
Cut Offs: 5
Detours: 0
Affected residents, business, affected critical infrastructure, other safety issues, traffic:
AADT:0
5 homes cut off
Every year erosion of the road shoulder is repaired at an approximate cost of $2,500.
multiple homes cut off, likely heavy flow due to steep watershed

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

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EVALUATION OF SECTION III
Benefits to Fish & Wildlife

	Points Available	Points Awarded
Section III: Benefits to Fish & Wildlife	**50**	**46**

Evaluation Team Comments:

Field work: Bankfull width, longitudinal profile
Bankfull width, method, & confidence: 14.9
Bankfull width method: Multiple Field Average
Longitudinal profile of stream beyond culvert influence completed? Yes, TBD

1.2 x BFW or Tidal analysis sizing, considerations performed Yes

Natural Bottom information: Yes, Open Bottom
Banks within structure? Yes
Type of bottom - Pebble Count

New Structure considerations: Bankfull width, longitudinal profile
Make sure to get IFW wildlife review comments due to northern spring salamander
Additional Comments: field average used, good longitudinal profile included, substrate analysis. Cross section doesn't show banks or footers in relation to elevation, if footers exposed it won't be meeting 1.2xBFW- based on the presence of Special concern salamander make sure almost 16" clear span indicated, is that at stream grade?

Barrier status, source: Barrier
Maine Stream Habitat Viewer ID: 15726

Benefits to Fish & Wildlife: Wild brook trout habitat, ATS CH, ATS DPS, 25.22 units ATS modelled habitat, northern spring salamander habitat, existing ATS rearing habitat 1/4 downstream, largely undeveloped high quality habitats
Wild brook trout habitat, ATS CH, ATS DPS, 25.22 units ATS modelled habitat, northern spring salamander habitat, existing ATS rearing habitat 1/4 downstream, largely undeveloped high quality habitats

Water quality improvements: MDMR and USFWS have identified this area of the central Sandy River as a priority restoration area. MDMR
plants Atlantic salmon within Temple Stream and has had tremendous success with juvenile production in the
watershed. USFWS have been monitoring summe

Support letters, other notable benefits: Paul Christman indicated the project is located a ¼ mile from active egg

planting sites and the downstream Walton's Mill Dam will be removed in 2022. This is a high priority project for MDMR and they fully support the funding request. Refer to attached letter of support. Becca Settele of MDIFW indicated that this project area intersects with Northern Spring Salamander habitat, which is considered a state special concern species. Establishing a stream crossing that follows Stream Smart guidelines will benefit this rare species.

DMR Resource/Habitat Comments: Surveyed ATS habitat immediately downstream; Tributary to Temple Stream

IFW Resource/Habitat Comments: Sampled 2016, many YOY BKT and two age classes Sandy River Watershed, brook trout present, priority for IFW, DMR (Salmon), almost 6 miles opened. Downstream, crossing already replaced, almost 2 miles opened, northern spring salamander habitat-cold stream habitats. Dam removal DS happening in 2022

Habitat Opened/Improved: upstream habitat- 1.75 miles
Wild brook trout habitat, ATS CH, ATS DPS, 25.22 units ATS modelled habitat, northern spring salamander habitat, existing ATS rearing habitat 1/4 downstream, largely undeveloped high quality habitats

Fish present, source of info: Wild brook trout, DS salmon rearing habitat

STATE OF MAINE
TEAM CONSENSUS EVALUATION NOTES

RFP #: 202106082
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DATE: 11/16/22, 1/4/22, 1/5/22, 1/6/22, 1/7/22, 1/28/22

EVALUATION OF SECTION IV
Cost Efficiency and Effectiveness

	Points Available	Points Awarded
Section IV: Cost Efficiency and Effectiveness	**25**	**12**

Evaluation Team Comments:

Requested funding: $125,000
Total Project Cost: $170000
Total Match: $45000
% Match proposed: 26.4

Engineering
To be stamped?: Yes
Level of plan included: Site Specific Preliminary design

Army Corp Permit info: Contact

Costs over previous 10 years: $25000, $2500 per year
Construction year: 2023

Feasibility for success: reasonable costs, planned funding, likely need more erosion control $

Design concerns or clarification required: Make sure to get IFW wildlife review comments due to northern spring salamander

TOWN OF TEMPLE

P.O. BOX 549
TEMPLE, MAINE 04984

November 16, 2021

John Maclaine
RFP Coordinator
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333-0017
Transmitted via email

Re: 2021 Grants for Stream Crossing Infrastructure Improvements
RFA# 202106082
Proposed Upgrade of Stream Crossing
Mitchell Brook Road, Temple, Maine

Dear Mr. Maclaine:

This cover letter and proposal are being submitted to the Maine Department of Environmental Protection electronically at proposals@maine.gov per the Request for Application referenced above.

The existing corrugated metal culvert under Mitchell Brook Road has poor channel alignment both vertically and horizontally. The structure is failing, several sections are separating and there has been significant loss of bedding at the downstream end, which is deforming.

Wild brook trout and Atlantic Salmon have been identified above or just below the crossing – which is considered a barrier to fish passage by the Maine Stream Habitat Viewer. Henry Mitchell Brook provides a significant cold-water refuge for the Temple Stream watershed, much of which is not presently accessible due to current velocities and water depths in the pipe.

The Town is proposing to replace the existing pipe with a Stream Smart designed open-bottom aluminum plate arch culvert. The proposed crossing incorporates the US Forest Service Stream Simulation design methodology for Aquatic Organism Passage that will allow diadromous and resident fish species to freely migrate both up and downstream. The constructed stream bed through the crossing will be designed to mimic unimpacted reaches of the stream crossing, and will include materials that match to facilitate crossing of terrestrial animals.

Temple is eager to upgrade this crossing and plans to authorize final design and permitting documents immediately after securing grant funding. Construction is anticipated to begin in the summer of 2023 during the low flow conditions of July 15 through September 30. The estimated time to complete the replacement stream crossing is two weeks.

If you should have any questions during the review of this proposal, please contact me at templetownoffice@yahoo.com or feel free to reach out to Patrick Gere of St.Germain at 207-591-7000, or by email at patrickg@stgermain.com.

Sincerely,

Robert Van Riper
Municipal Clerk\Registrar

Attachments

cc: Patrick Gere, PE, St.Germain
Christian Fox, The Nature Conservancy

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

APPLICATION COVER PAGE

Handwritten Applications Will Not Be Accepted

Applicant Information			
Applicant Organization Name **Town of Temple**			
Applicant Mailing Address **PO Box 549**	City **Temple**	State **ME**	Zip **04984**
Applicant Contact **Robert Van Riper**	Applicant Contact Phone # **207-778-6680**	Contact Email Address **templetownoffice@yahoo.com**	

Agent/Consultant/Engineer Information ☐ *Check if not applicable*

Agent is: ☐ Agent for Application only ☐ Project Engineer only ☒ Agent and Project Engineer

Agent Name **St.Germain**			
Agent Mailing Address **846 Main Street**	City **Westbrook**	State **ME**	Zip **04092**
Agent Phone # **207-591-7000**	Agent Email Address **patrickg@stgermain.com**		

- No personnel currently employed by the Department or any other State agency participated, either directly or indirectly, in any activities relating to the preparation of the Applicant's application.
- No attempt has been made, or will be made, by the Applicant to induce any other person or firm to submit or not to submit an application.
- The above-named organization is the legal entity entering into the resulting agreement with the Department should they be awarded a contract.
- The undersigned is authorized to enter contractual obligations on behalf of the above-named organization.

To the best of my knowledge, all information provided in the enclosed application, both programmatic and financial, is complete and accurate at the time of submission.

Name (Print): Robert Van Riper	**Title:** Municipal Clerk\Registrar
Authorized Signature:	**Date:** November 15, 2021

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

APPLICATION

Please complete all fields in this application to the best of your ability and include all applicable supplemental attachments listed (see "Key Process Events" Part D) with the proposal package.

For additional information and resources for your application, please see "Stream Crossing Resources" on Page 9 of this RFA and utilize resources from the Department's Stream Crossing Resources Page and 2021 Scoring Guidance Document.

I. Project Identification	
Name of Proposed Project *(Town Name- Road Name)*	**Temple – Mitchell Brook Rd**

II. Applicability

Please indicate the ability to demonstrate the following:

☒ The proposed structure to be upgraded is located on a municipal road, is not owned by a private or state entity, and is not located on a road segment classified as a "State-Aid" road.

☒ The proposed project includes matching funds from local or other sources.

☒ The proposed project is for the upgrade of a culvert, not currently a bridge as defined by the RFA.

III. Stream Crossing Location

1. Municipality or Unorganized Territory where project will take place:	**Temple**	
2. GPS Location of crossing - Decimal degrees preferred. *Available on Google Maps by clicking the location on the map*	North **44.68833**	West **-70.23837**
3. Culvert/crossing location Name of the road on which the culvert/crossing is located and the nearest intersection.	**Mitchell Brook Rd** **Nearest intersection – Intervale Rd**	
4. Stream name at project location:	**Henry Mitchell Brook**	
5. "Project Stream" drains to *(stream/river name):*	**Temple Stream to Sandy River**	

IV. Failure Risk, Location, and Reduction in Flooding

1. Has the crossing caused flooding or overtopping of the road in the last 10 years?		☐ Yes	☒ No
If yes, How many times? (indicate if approximate)	N/A		
2. Does this crossing regularly become obstructed by debris or require cleaning?		☐ Yes	☒ No
How often?	N/A		
3. Has the crossing been damaged by flooding in the last 10 years?		☐ Yes	☒ No
4. Do you have any photos of the flooding or damage? Please provide if available.		☐ Yes	☒ No
5. Has the crossing ever partially or fully washed-out or become unsafe for traffic in the last 10 years?		☐ Yes	☒ No
6. Is the current crossing undersized?		☒ Yes	☐ No
If yes, how was this determined and what was the metric used?	The bankfull width was found to be 14.9' on June 2, 2021 by Alex Abbott, Maranda Nemeth, and Bob Van Riper. The current structure is approximately 9' wide.		
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.	This elliptical, closed-bottom culvert is undersized and a short distance from a downstream bridge on Intervale Road. Should the culvert fail in an extreme event it could take out the bridge. The road shoulders adjacent to the crossing wash out every year.		
8. Describe any other problems or issues with the current condition of the crossing. Include photos if available.	The culvert sits perched to the water flow. Water is actively moving beneath the culvert which has resulted in all the fine material below the invert being washed out. Culvert sections were installed with downstream sections set inside of upstream sections. The most downstream section is separating from the rest of the structure and beginning to deform.		

9. In how many years from now do you estimate the culvert/crossing would have a complete failure, a complete collapse, or total washout?	<1 year	1-3 years	3-5 years	5-10 years	10+ years
	☒	☐	☐	☐	☐

10. How was the estimated time to failure determined?

By observation, the culvert structure is no longer functioning as designed and the gravel road directly upstream of the culvert is actively eroding away without proper support.

11. Discuss any future flooding concerns regarding the existing culvert/crossing

Intervale Road is a highly trafficked road with a factored AADT of 435. Should the Mitchell Brook culvert fail it could impact the integrity of the Intervale Bridge, if not destroy it.

V. Safety & Impact to Community

1. Would any homes, businesses, or critical infrastructure be <u>completely cut-off from access</u> if the crossing were to completely fail?	☒ Yes ☐ No

2. **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 this RFA)*	Homes		Businesses		Critical Infrastructure*	
	Detour	Cut-off	Detour	Cut-off	Detour	Cut-off
		5				

3. 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) or *details on critical infrastructure noted above that would be cutoff or required to detour?

The Mitchell Brook Road culvert is approximately 200' upstream of the Intervale Road bridge crossing of Mitchell Brook. The Intervale Road bridge was replaced in 2012 and widened from 12' to 18' but had no vertical adjustment due to sight distance issues. If Mitchell Brook Road culvert were to fail and the residual structure and debris remain in the channel in the area immediately downstream, five dwellings would be completely isolated from critical public services and all town amenities. However, if the structure and/or debris were to move downstream and block or overtop the Intervale Road structure, over 50 dwellings could potentially be isolated. The alternate route to the Farmington Fire Station and Franklin Memorial Hospital adds 16.7 miles along narrow gravel roads. The alternate route adds an approximately 43 minutes of travel time.

4. **Approximately how many vehicles per day travel this road (if known)?** Maine DOT Public Map Viewer (see "Factored AADT" by clicking on road segment)	Maine DOT Factored AADT - 15
5. 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?	No alternate exists.

6. Are there any other safety concerns or community impacts regarding the existing culvert crossing?

The crossing is in disrepair as noted above. The multiple sections of corrugated metal that make up the culvert do not appear to be secured to each other or any abutments. If this culvert were to have a catastrophic failure the residents that live beyond the culvert would not be accessible to rescuers by automotive means on maintained roads, and over 50 residences that live beyond the Intervale Bridge would also be at risk for being cut off from the most direct route to critical infrastructure and emergency services.

VI. Improvement to Fish & Wildlife Habitat

2021 Municipal Stream Crossing Grants Guidance Video #2: Stream Smart Basics & Project Design

NOTE: For information and potential guidance on local fisheries information, it is highly recommended that you contact your regional Inland Fisheries and Wildlife Office Fisheries Biologist, and Department of Marine Resources.

1. Has this crossing been surveyed and identified on the Maine Stream Habitat Viewer? *If "No" see "Alternate Maine Stream Habitat Viewer Information" worksheet at the end of application*	☒ Yes ☐ No
2. What is the Maine Stream Habitat Viewer ID#?	15726
3. Have you contacted MDMR regarding this stream and crossing?	☒ Yes ☐ No
If yes, please include any relevant information they provided or attach letter of support.	Paul Christman indicated the project is located a ¼ mile from active egg planting sites and the downstream Walton's Mill Dam will be removed in 2022. This is a high priority project for MDMR and they fully support the funding request. Refer to attached letter of support.
4. Have you contacted MDIFW regarding this stream and crossing?	☒ Yes ☐ No
If yes, please include any relevant information they provided or attach letter of support.	Becca Settele of MDIFW indicated that this project area intersects with Northern Spring Salamander habitat, which is considered a state special concern species. Establishing a stream crossing that follows Stream Smart guidelines will benefit this rare species.

5. 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:

MDMR and USFWS have identified this area of the central Sandy River as a priority restoration area. MDMR plants Atlantic salmon within Temple Stream and has had tremendous success with juvenile production in the watershed. USFWS have been monitoring summer temperatures of the Temple Stream watershed and Henry Mitchell Brook meets functioning parr habitat standards. Ensuring that this habitat is maintained for fish and terrestrial wildlife alike will benefit the ecosystem and local economy.

6. Are fish present in the stream? ☒ Yes ☐ No

7. Have any of the following species been identified within this stream by MDMR, MDIFW, USFWS, NOAA, or another reputable resource? *(Presence, not modelled habitat)*

☒ Wild brook trout	☐ Alewives (sea run)	☐ other diadromous (sea-run) species (list):
☐ Sea-run brook trout	☐ Blueback herring	
☐ Atlantic salmon (sea-run)	☐ American eels	
☐ Atlantic salmon (landlocked)	☐ Sea-run rainbow smelt	

8. List the source(s) of above fish information:

Maine Stream Habitat Viewer, habitat information provided by Merry Gallagher of Maine Department of Inland Fisheries and Wildlife.

9. Select any habitats below that have been identified by MDIFW, MDMR, Maine Stream Habitat Viewer, Beginning with Habitat Map Viewer, or other resources near or at the crossing location.

☐ N/A

☒ Atlantic Salmon Critical Habitat

☒ Atlantic Salmon DPS

☒ Atlantic salmon modelled habitat

Type: __100 sq miles_____

 # units: _____25.22_____

☒ Brook trout habitat

☐ Within the drainage of a state "heritage" water

☐ Within the drainage of an alewife pond

☐ Significant Vernal pools within 1 mile

☐ Other Significant Wildlife Habitats (Tidal/Inland waterfowl, etc.) List:

☒ State Endangered, Threatened, or Special Concern species (aquatic or terrestrial) within 1 mile. List:

Northern Spring Salamander

☒ Federal Endangered, Threatened species (aquatic or terrestrial) within 1 mile. List:
Northern Long-eared Bat
Atlantic Salmon
Monarch Butterfly

☒ Other priority habitats such as spawning areas, etc., List:
Existing rearing habitat for Eastern brook trout and wild Atlantic salmon. Within ¼ mile of Atlantic salmon spawning downstream on Temple Stream mainstem.

10. 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?

☐ Yes ☒ No

If yes, describe any additional biological, ecological, or cost-saving benefits that could result from the current project:	The removal of the Walton's Mill Dam from lower Temple Stream is scheduled to take place in 2022, the year before replacement of this crossing. This creates a vital opportunity for additional habitat in the Temple Stream watershed. Henry Mitchell Brook is an important tributary in Temple Stream - providing refuge when trout and salmon need habitat for feeding, escaping predators, and cold-water refuge.

11. 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:

The Temple Stream watershed is largely undeveloped and well-forested. The stream and its tributaries are generally moderate to high gradient and at higher elevations with cool water temperatures – extremely high-quality salmon habitat. Temperature modeling using the USGS Interactive Catchment Explorer tools to view likely future temperature changes as high as 2 degrees Celsius by 2050 show that the Temple Stream watershed is likely to maintain sources of cold-water and provide refuge for key fish species such as wild Eastern brook trout and Atlantic salmon.

The design of the proposed crossing provides for long-term ecological connectivity between upper and lower watershed areas, allowing the stream to maintain a dynamic equilibrium in elevation, form, and substrate to pass all aquatic, semi-aquatic, and terrestrial animals, as well as natural sediment and debris that would otherwise move in and along the natural stream. The proposed improvements incorporate stream simulation design criteria – the structure will span greater than 1.2 times the bankfull width of the stream, the slope and substrate will match the natural channel, and stream banks will be established through the crossing to allow for habitat connectivity.

VII. Stream Measurements and Field Work

For fieldwork techniques, see: Stream Smart Field Work Video and Maine Stream Smart Road Crossing Pocket Guide

Proper field work and measurements are crucial to project success and must be completed prior to construction. Projects that have completed the fieldwork prior to applying will score higher in several areas.

1. Measured Bankfull Width *(field measured beyond culvert influence, min. of 3 upstream and downstream measurements)*	Upstream Widths (US)	1.	2.	3.	4.	5.	**Average US**	**Average of US & DS**
		14.9’					14.9’	14.95’
	Downstream Widths (DS)	1.	2.	3.	4.	5.	**Average DS**	
		15’					15.0’	

2. Estimated/Modelled Bankfull width *(NOTE: measured average bankfull width values are the most accurate method)*	Maine Stream Habitat Viewer http://webapps2.cgis-solutions.com/MaineStreamViewer/	8.1’
	StreamStats https://streamstats.usgs.gov/ss/	7.01’
	Other Hydraulic & Hydrologic Analysis (if performed)	14.95’
3. Bankfull width used for structure sizing		14.95’

4. If Bankfull width is other than average of field measurements, explain rationale:

N/A

5. Does this structure experience any tidal effects? Is it expected to experience tidal action in the future? Explain.

No, it does not.

6. Have you surveyed a longitudinal profile of the stream? (recommend 20-30 x BFW up- and downstream of crossing)	☒ Yes	☐ No
7. Based on stream longitudinal profile measurements, what is the stream’s slope (%)?	5.9%	
8. Has a Stream Bed Substrate analysis been performed?	☒ Yes	☐ No
9. Type of analysis performed or to be performed?	Pebble count	
10. Type of stream bed material to be installed:	Sand, gravel, cobble, boulder	

11. Size of DS scour pool	Width	Length	Max Depth
☐ N/A, No scour pool present	~18’	~18’	~1.5’

12. Is the crossing back-watered or impounding water upstream?	☐ Yes	☒ No
13. Is another downstream crossing potentially causing impounded water to occur at this crossing location?	☐ Yes	☒ No
14. Is the upstream or downstream habitat degraded due to this crossing's orientation, slope, or sizing that will be corrected by the new crossing? (e.g. large scour pool, instability or stream bank erosion, significant downstream sedimentation, etc.)	☒ Yes	☐ No

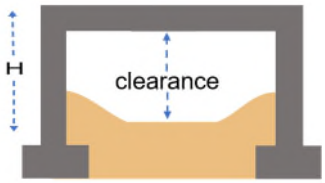
Explain:

The existing culvert outlet is perched. There is not enough water flowing within the culvert to allow fish to pass upstream.

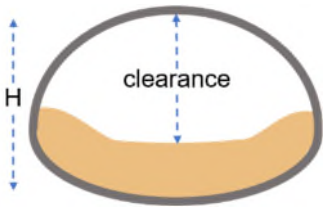
VIII. Existing Culvert Crossing Information

Structure Dimensions as Intended by MSCG Application:

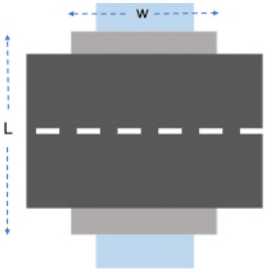
Open Bottom Structures



Closed Bottom Structures



"Plan" View



Culvert/Crossing Shape	Culvert Material	Stream Bed Material in Culvert
☐ Closed bottom Box ☐ Open bottom box ☐ Circular ☐ Open bottom arch ☒ Closed bottom arch (pipe arch) ☐ Oval ☐ Bridge or span	☒ Corrugated Metal Pipe ☐ Smooth Metal Pipe ☐ Concrete ☐ Plastic ☐ Stone ☐ Other: _____	☒ none ☐ Partial ☐ Continuous

How many culverts are there at this crossing? If more than 3, list 3 primary structures below	1

Culvert	Crossing Width ("W") *diameter if round*	Culvert Clearance *(from stream bed/pipe bottom to highest inside point)*	Culvert Length ("L") under Road	Approximate Culvert Age
#1	9'	6'	41'	Unknown
(#2)				
(#3)				

IIX. Proposed Crossing Structure Information

NOTE: Pursuant to 32 MRSA §1254, a licensed professional engineer is required when the completed project cost estimates exceed $100,000 and does not create an undue risk to public safety or welfare.

1. Has an engineer been retained to assist with the project's design?	☒ Yes ☐ No
2. Do you have engineered design plans and construction specifications for the replacement culvert/crossing?	☒ Yes ☐ No
If yes, identify who designed the plans, and when the plans were completed; or who has been retained to complete engineering plans.	St.Germain
3. Indicate the level of plans attached and submitted with this application	☐ Final, stamped engineering plans & specifications ☐ Site-specific plans at 90%+ Completion ☒ Preliminary Design Plans ☐ Conceptual Plan ☐ Plan View Sketch & Cross Section ☐ Plan View Sketch ☐ None
4. Will final plans be stamped by a Maine Licensed Engineer prior to construction?	☒ Yes ☐ No

IX. Proposed Crossing Structure Design

NOTE: Be sure to watch the 2021 Stream Crossing Grant Workshop Videos and other resources found in Section II:B

Culvert/Crossing Shape		**Culvert Material**	
☐ Closed bottom Box	☒ Open bottom arch	☒ Corrugated Metal Pipe	☐ Smooth Metal Pipe
☐ Open bottom Box	☐ Pipe arch (closed bottom arch)	☐ Concrete	☐ Plastic
☐ Circular	☐ Bridge or span	☐ Stone	
☐ Oval			
☐ Other (describe: _____		☐ Other (describe): _____	

Proposed Crossing Width "W"	Proposed Crossing Clearance	Proposed crossing Height "H" (or to top of footing)	Crossing Length "L" under Road	*If proposing a bridge/span, what is the* Clear Span (measured abutment to abutment)
19'	6'-9"	9'	40'-6"	15'-10.5"

Open Bottom Crossings		**Closed Bottom Crossings**	
Includes footings below scour potential?	☒ Yes ☐ No	Embedded?	☐ Yes ☒ No
		Depth of embedment *(from inside of culvert/invert)*	N/A

Performance Criteria & Commitments in project design/installation The project will:	
☒ Meet Maine DOT 100-year flood criteria (*for crossings with clearance <6', include DOT worksheet* with this application) ☒ Be sized at least 1.2 time bankfull width of the stream as determined by field measurements (or modelling, if justified) ☒ Be aligned (skewed) to match the stream ☒ Include a longitudinal profile survey to determine the stream and structure's slope ☒ Longitudinal profile is compete ☐ Longitudinal profile will be completed prior to design	☒ Contain stream material within structure closely matching native stream bed as: ☒ Open, natural stream bottom *OR* ☐ Embedded closed bottom with backfilled stream material ☒ Include constructed stream banks through the structure ☒ Have properly-designed and engineered footings and/or structure bottom elevation accounting for potential scour

X. Maine Department of Transportation Notification & Inspections

See MaineDOT's Bridge Upgrade Fact Sheet and Guidance Video #4: Maine DOT Responsibilities & Requirements

For Crossings with a clear span 10 feet or greater

☐ *This section is not applicable the proposed structure is less than 10 feet in width measured along the road centerline between both abutment faces underneath, or spring lines of arches, or has an opening of less than 80 square feet in area.*

NOTE: Maine DOT defines culverts and bridges differently than in the context of this RFA.

1. In determining the proposed structure's width, was all necessary field work, including stream profile survey and multiple averaged field bankfull width measurements completed?	☒ Yes ☐ No
2. Have you made initial contact with MaineDOT Bridge Maintenance Division (207-624-3600) to discuss the structure's potential requirements and inform them of the town's intention to replace the crossing with a span 10 feet or greater?	☒ Yes ☐ No
If No, please indicate when you intend to contact Maine DOT Bridge Maintenance Division?	

For Crossings with a clear span 20 feet or greater

☒ *This section is not applicable, the proposed structure is not more than 20 feet in width, measured between both abutment faces underneath, or spring lines of arches or the extreme ends of openings for multiple boxes.*

NOTE: Examples of design elements not recommended by MaineDOT are aluminum box culverts, precast block abutments, metal bin abutments, bridge foundations that are scour critical, bridges that do not have designed or crash tested bridge rail. See MaineDOT's Bridge Upgrade Fact Sheet for more information. MaineDOT recommends that bridge designs be completed by design firms found on the department's prequalification website: Consultant Prequalification \| MaineDOT

3. If the new crossing will be 20 feet or over in width, are you planning to request that the MaineDOT take responsibility for the structure?	☐ Yes ☐ No
If Yes, please indicate you are aware that for MaineDOT to accept responsibility for a structure, there are additional design, safety, and other review criteria that may affect the final design of the structure. Meeting these criteria are the responsibility of the applicant.	☐ Yes, this is understood
4. Have you had the design reviewed by MaineDOT's Bridge Maintenance Division?	☐ Yes ☐ No

Important Note: For all crossings proposed to be 20 feet or greater, please refer to Maine DOT's Bridge Design Guide and contact MaineDOT Bridge Division for requirements and limitations.

XI. Project Efficiency and Avoided Costs

1. Size of previous year's municipal road maintenance budget:	$249,002
2. Amount of annual maintenance budget dedicated to non-winter maintenance:	$106,034
3. How much money has been spent on physical repairs within the last 10 years on this culvert crossing?	Unknown
4. How much money has been spent on road closures or other costs associated with the culvert crossing?	Unknown

5. Describe the types of expenditures made on repairs or other costs listed above.

Every year erosion of the road shoulder is repaired at an approximate cost of $2,500.

6. This project will likely require a permit from the Army Corps of Engineers. Have you contacted Army Corps regarding this project? (see Guidance Video #3)	☒ Yes	☐ No
7. Have you submitted an application to Army Corps of Engineers?	☐ Yes	☒ No
8. Do you already have a permit in-hand from Army Corps of Engineers?	☐ Yes	☒ No

9. What is the anticipated construction duration?	2 weeks	
10. If awarded, when is construction anticipated to begin (month/year)? *(Keep in mind that the typical window for in-water work is July 15-October 1)*	Start Date: July 15, 2023	Completion Date: October 1, 2023

11. Provide any additional information regarding the efficiency and cost-effectiveness of the project:

The town plans to use a local vendor for materials. The work site is centrally located in Maine, which reduces travel time and mobilization costs for design engineers, contractors, and regulatory personnel.

12. Provide any additional information as to why this project should be funded by a public infrastructure grant:

This culvert is in very poor condition and is causing significant erosion to the gravel road due to the lack of adequate support. It will need to be replaced soon (less than five years). Grant funding will allow this crossing to be upgraded in a manner that is beneficial to wildlife and avoids potential future flooding.

XII. Alternate Maine Stream Habitat Viewer Information

Complete this section if the crossing location for this proposal is not mapped on the Maine Stream Habitat Viewer

☒ *This section is not applicable (the Maine Stream Habitat Viewer ID for this site is available and listed in Application Section VI)*

If the existing culvert/crossing is NOT surveyed on Maine Stream Habitat Viewer, what is the closest Crossing ID# to the structure on this stream *(same stream preferred, or stream system if not available*		
Describe the proximity of this reference crossing to the proposal location?		
4. If they exist, what is the Maine Stream Habitat Viewer Crossing ID# for the crossings upstream and downstream of the proposed upgrade?	**Upstream Crossing ID#** ☐ N/A	**Downstream Crossing ID#** ☐ N/A
Are these considered to be a barrier to fish passage?	☐ Barrier ☐ Partial/Potential Barrier ☐ Not a Barrier	☐ Barrier ☐ Partial/Potential Barrier ☐ Not a Barrier

5. Approximate distance to the next barrier identified by the Maine Stream Habitat Viewer? *(in miles, along stream***)** Use a map measure tool to approximate the distance along the stream to the next crossing on a road.	Upstream	Downstream

Does this crossing appear to be able to pass fish in its current state?	☐ Yes	☐ No	☐ Maybe
Has this crossing been confirmed by a fisheries biologist or DEP staff as a barrier to fish passage? Explain.			
Explain reasoning for fish passage assessment (be sure to include good photos with the application)			

From the stream viewer map of the area:

- Use the layers to determine if the area falls within a mapped habitat. List any habitat indicated in the Fish & Wildlife Section of the Application:
- Use the Beginning with Habitat Maps to determine if there are any nearby endangered species or other habitats
- Barrier status: Discuss the project with a fisheries biologist or with DEP staff to see if the crossing would likely impede fish passage. Look for clear features such as outlet drops or perched culverts and other features that would prevent a fish from moving through the culvert. List any indications or additional information about the culvert's ability to allow fish movement. Take good photos of the crossing for your application, be sure to clearly show the inlet and outlet and inside the structure.
- Make sure to contact fisheries agencies to find out what information they might have about the resource, fisheries, and habitats.

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

COST & BUDGET INFORMATION

Applicant Organization's Name:	Town of Temple

The requested funds may not exceed $125,000. The Department cannot fund 100% of any project; local matching funds must be included

1. Total Amount of Funds being Requested	**$**125,000
2. Total Matching Funds Committed to Project	**$**45,000
Source of Project Cost Estimate	St.Germain and Contech Engineered Solutions
Source(s) and types of Local Matching Funds proposed	Town of Temple, Atlantic Salmon Federation
What is the status of any proposed matching funds (e.g. approved, planned, committed, uncertain, etc.)	Planned

Selected Budget Items	
5. Total Engineering Costs	$10,000
6. Permitting and Bidding	$12,000
7. Erosion & sediment controls (including de-watering, stream bypass, cofferdams, temporary and permanent stabilization measures)	$5,000
8. All other items	**$**143,000

RFA# 202106082

2021 Grants for Stream Crossing Infrastructure Improvements

DEBARMENT, PERFORMANCE and NON-COLLUSION CERTIFICATION

Applicant's Organization Name:	Town of Temple

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.*
c. *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.*
d. *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.*
e. *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 Applicant's application, at the discretion of the Department.

Name (Print): Robert Van Riper	**Title:** Muncipal Clerk\Registrar
Authorized Signature:	**Date:** November 15, 2021

STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

JANET T. MILLS
GOVERNOR

PATRICK C. KELIHER
COMMISSIONER

November 8, 2021

John Maclaine
Environmental Specialist III
Maine Department of Environmental Protection
28 Tyson Drive
Augusta, Maine 04333-0017

Re: Department of Environmental Protection Culvert Upgrade Grant

Dear Mr. Maclaine:

The Maine Department of Marine Resources (MDMR) strongly supports the town of Temple, Maine work to protect and enhance the aquatic ecosystem of the Henry Mitchell Brook watershed by replacing the inadequate culvert. Henry Mitchell Brook is a tributary to Temple Stream and within the Sandy River drainage, which is one of the highest priority Atlantic salmon restoration rivers in Maine. The MDMR along with federal and state partners began a large Atlantic salmon recovery project in the Sandy River focused on utilizing the high-quality habitat in the drainage to create one of Maine largest naturally reared salmon population. The program has grown over the last 10 years and regularly exceeds expectations in juvenile abundance and adult returns. The MDMR annually releases over 700,000 Atlantic salmon eggs in the Sandy River and tributaries.

While MDMR has not documented any juveniles or natural spawning in this stream, the Henry Mitchell Brook road crossing is one-quarter of a mile from active egg planting sites where we have documented very high survival rates. Additionally, the Walton's Mill Dam downstream of Henry Mitchell Brook will be removed in 2022. The dam removal will reconnect Temple Stream and it's tributaries for wild adults from the ocean (which are currently trucked from Lockwood Dam in Waterville) to naturally spawn. It is likely that both naturally reared and wild juveniles utilize this stream given the cold water temperatures an proximity to active egg planting sites.

This is a high priority project for MDMR, and we fully support the funding request. Please let me know if there is anything that MDMR can do to help.

Sincerely,

Paul Christman
Marine Resource Scientist III
Maine Department of Marine Resources
Bureau of Sea Run Fisheries and Habitat
32 Blossom Ln
Augusta Me. 04333

The Nature Conservancy in Maine
14 Maine Street, Suite 401
Brunswick, ME 04011

tel [207] 729-5181
fax [207] 729-4118
www. nature.org/maine

November 10, 2021

Mr. John Maclaine
Grant for Culvert Upgrades Program
Maine Department of Environmental Protection
17 State House Station
Augusta, Maine 04333
207-615-3279
john.maclaine@maine.gov

Re: Temple Application for Mitchell Brook Road Stream Crossing Replacement Project

Dear Mr. Maclaine,

I am writing to express my support and enthusiasm for the Town of Temple's proposal to the Grant for Culvert Upgrades Program to help fund the Mitchell Brook Road aquatic organism passage restoration project. The municipality's efforts to restore wildlife passage, improve water quality, and increase the river's ability to absorb heavy rain events with minimal flooding is an important goal and The Nature Conservancy (TNC) looks forward to supporting Temple's efforts. These efforts to restore migratory fish access to the important habitats upstream will ensure the security of the road and stream networks in Temple and the surrounding communities and promote a sustainable future for Maine's freshwater and marine resources.

TNC is dedicated to conserving the lands and waters on which all life depends and has been involved in efforts to restore rivers and streams in Maine for the past 10 years. Maine is remarkable for having so many good fish passage projects, as well as significant fish habitat. Free flowing rivers provide easy access to spawning and rearing habitat to several sea run fish species and allow resident fish species unfettered access to the multiple habitats need to support diverse life history strategies.

This crossing was identified as an important Fish Passage Restoration project by the Maine Aquatic Barrier Prioritization Tool (https://maps.coastalresilience.org/maine) and is located in a watershed identified by as high priority for restoration and protection.

Please join me in supporting the Town of Temple in this proactive effort to both restore fish habitat and reduce threats to critical infrastructure in this innovative project to protect the towns ecological and economic integrity.

Sincerely,

/s/ Christian Fox

Christian Fox
Watershed Restoration Specialist
christian.fox@tnc.org
840.460.4040
The Nature Conservancy in Maine

Atlantic Salmon Federation Fédération du Saumon Atlantique

November 10, 2021

State of Maine Division of Procurement Services
Burton M. Cross Office Building
111 Sewall Street - 4th Floor
Augusta, Maine 04333-0009

Dear Grant Review Team:

The Atlantic Salmon Federation (ASF) is writing in strong support of the grant proposal from the Town of Temple for the replacement of the Henry Mitchell Road stream crossing (RFA# 202106082). ASF is partnering with the Town to replace this crossing which is undersized and severely impacts passage of fish and other aquatic organisms, disrupt natural ecological processes, and cause ongoing maintenance and repair problems.

In addition to ASF and the Town of Temple, we have an interdisciplinary team from the U.S. Fish and Wildlife Gulf of Maine Coastal Program, the NOAA Restoration Center, the Maine Department of Marine Resources, and Maine Audubon collaborating on this project. ASF has committed funds for final engineering and construction; these funds will match funding provided by NOAA's Atlantic Salmon Habitat Restoration Partnership Grant.

Temple Stream is a major focus area within the Sandy River watershed and Kennebec River basin for the restoration of endangered wild Atlantic salmon. This area also supports wild Eastern brook trout and at-risk turtle species that will benefit from improved habitat connectivity in the watershed. Replacing the Henry Mitchell Road crossing is a priority project for these and many other species, thus the interest from a variety of organizations.

The three staff in ASF's Brunswick, Maine office have a combined 48 years of experience in habitat restoration project management, and we have the expertise and capacity to complete this project in conjunction with the Town of Temple. Through our Maine Headwaters Project, ASF has completed more than 40 on-the-ground habitat connectivity projects over the last 20 years, including numerous road-stream crossing replacement projects ranging from small waste-block bridges to 50-foot steel span structures. We have restored access to more than 700 river and stream miles and more than 25,000 acres of lake habitat.

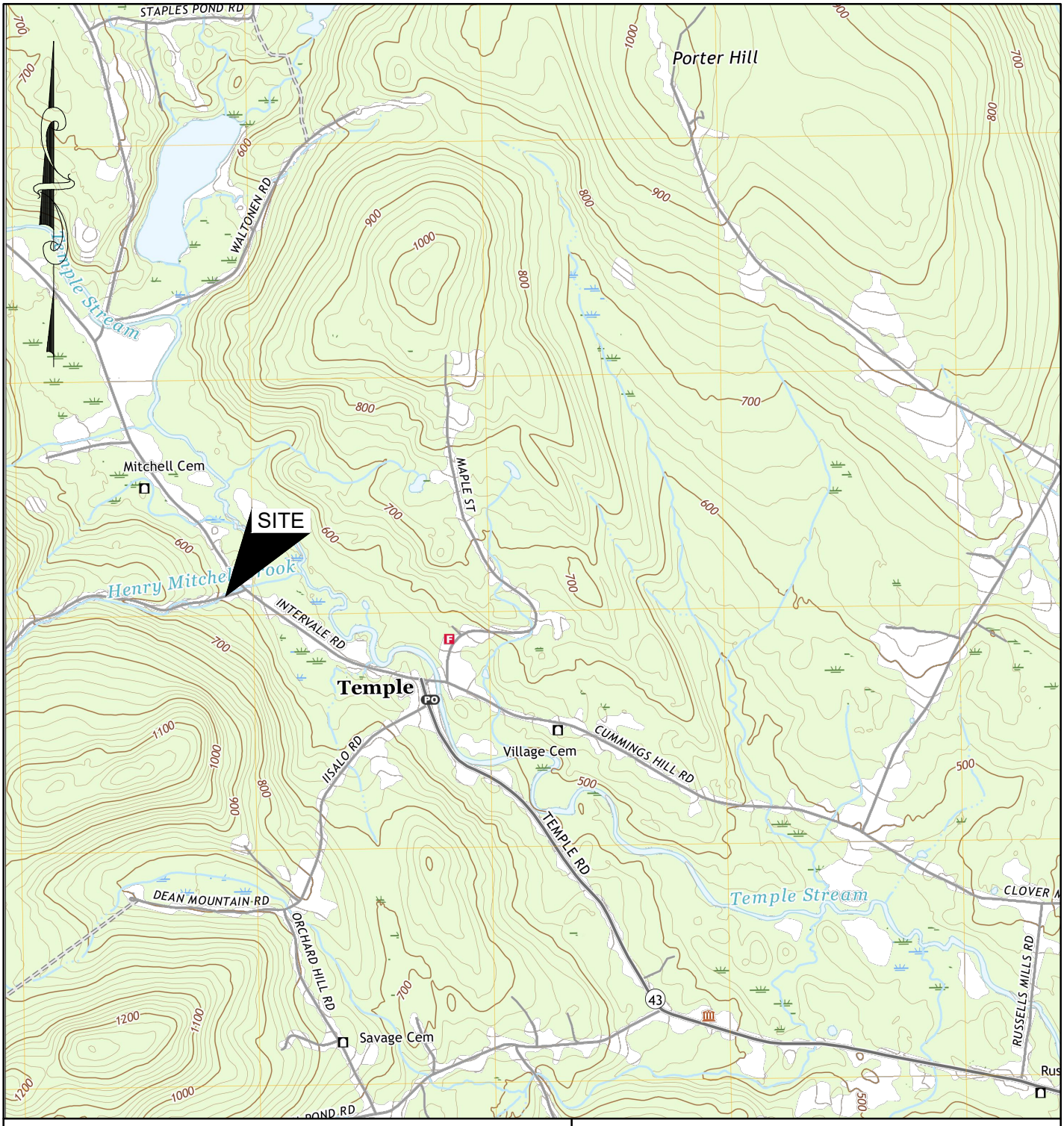
We hope that you will fully fund the request from the Town of Temple for this priority project. Thank you for your time and consideration.

Sincerely,

John Burrows

John R.J. Burrows
Executive Director of U.S. Operations

Fort Andross, Suite 202 14 Maine Street Brunswick, ME 04011-2030
Tel 207 725 2833 | Fax 207 725 2967 | www.asf.ca



REFERENCE:
USGS SERIES 7.5 TOPOGRAPHIC MAP, FARMINGTON, ME, 2021 QUADRANGLES.

2000 0 1000 2000 4000

SCALE IN FEET
1"=2000'

SITE LOCATION MAP

STREAM CROSSING IMPROVEMENTS
44.68833°N, -70.23837°W
MITCHELL BROOK ROAD
TEMPLE, MAINE

TOWN OF TEMPLE
258 TEMPLE ROAD
TEMPLE, MAINE 04984

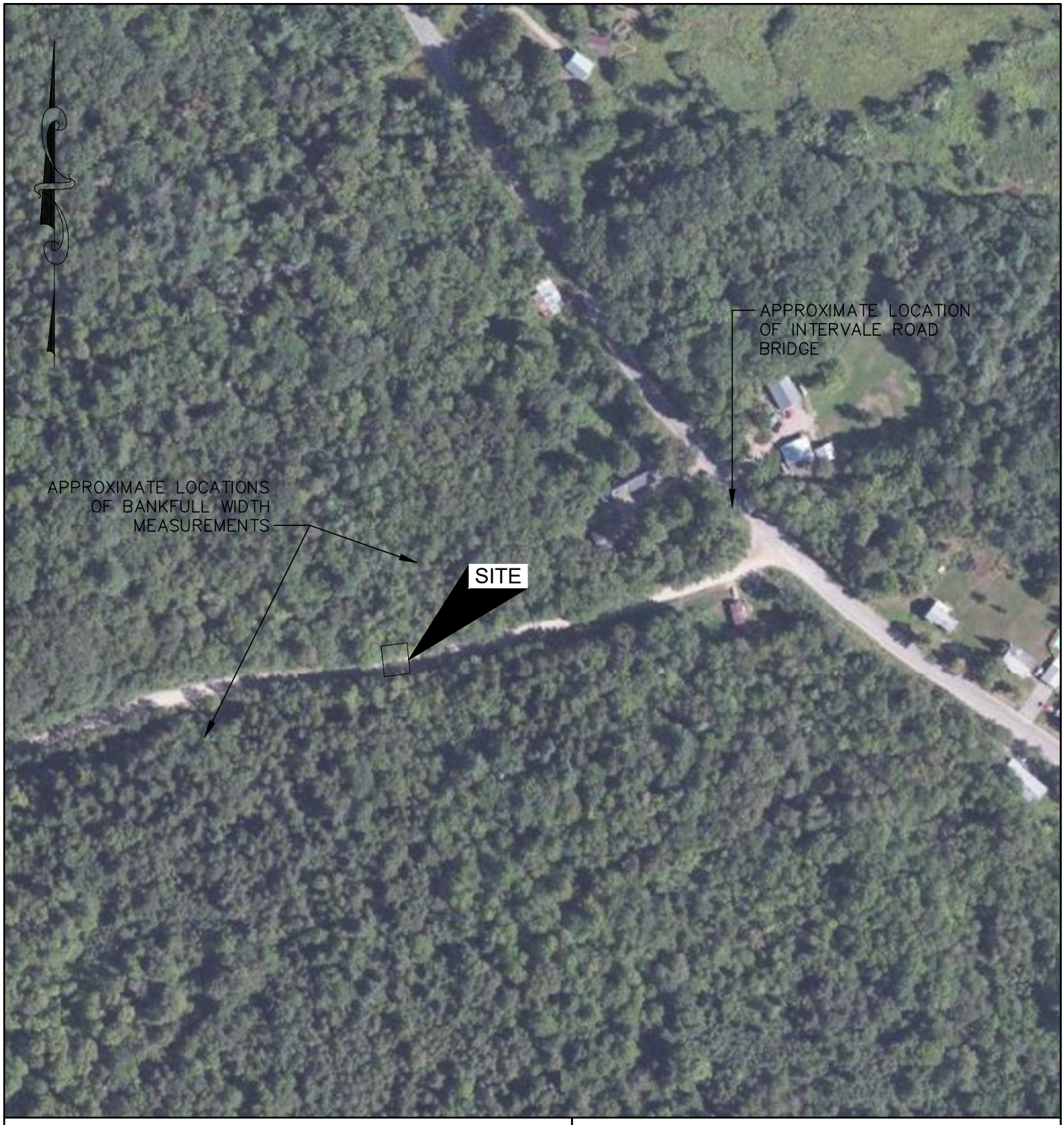
St.Germain

FIGURE 1

DATE: 10/28/2021	SCALE: 1"=2000'	PROJECT NO.:4067-0005	FILE: 4067-0005 Mitchell Brook SLM01

846 MAIN STREET, WESTBROOK, MAINE 04092 TEL: 207-591-7000 WWW.STGERMAIN.COM

M:\Cad Drawings - Dwgs\Active Dwgs\4067 TNC\4067-0005 Waterbond\15726 - Temple Mitchell Brook Road\DWG\4067-0005 Mitchell Brook SLM01.dwg 10/28/2021



REFERENCE:
AERIAL IMAGE OBTAINED FROM MICROSOFT BING OCTOBER 2021.

200 0 100 200 400
SCALE IN FEET
1"=200'

AERIAL MAP

STREAM CROSSING IMPROVEMENTS
44.68833°N, -70.23837°W
MITCHELL BROOK ROAD
TEMPLE, MAINE

TOWN OF TEMPLE
258 TEMPLE ROAD
TEMPLE, MAINE 04984

St.Germain

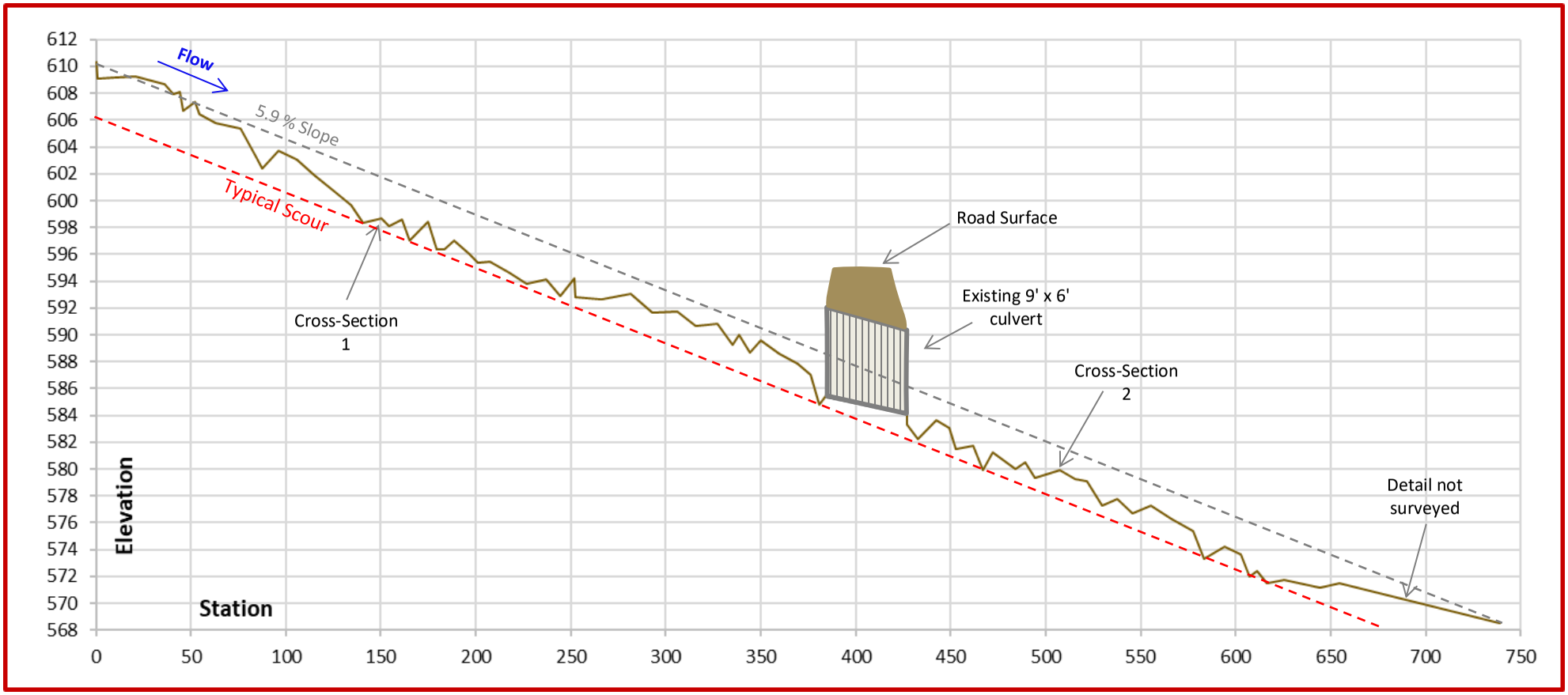
FIGURE
2

DATE: 11/4/2021	SCALE: 1"=200'	PROJECT NO.: 4067-0005	FILE:4067-0005 Mitchell Brook AERIAL01

846 MAIN STREET, WESTBROOK, MAINE 04092 TEL: 207-591-7000 WWW.STGERMAIN.COM

M:\Cad Drawings - Dwgs\Active Dwgs\4067 TNC\4067-0005 Waterbond\15726 - Temple Mitchell Brook Road\DWG\4067-0005 Mitchell Brook AERIAL01.dwg 10/28/2021

Stream Profile - Existing Conditions

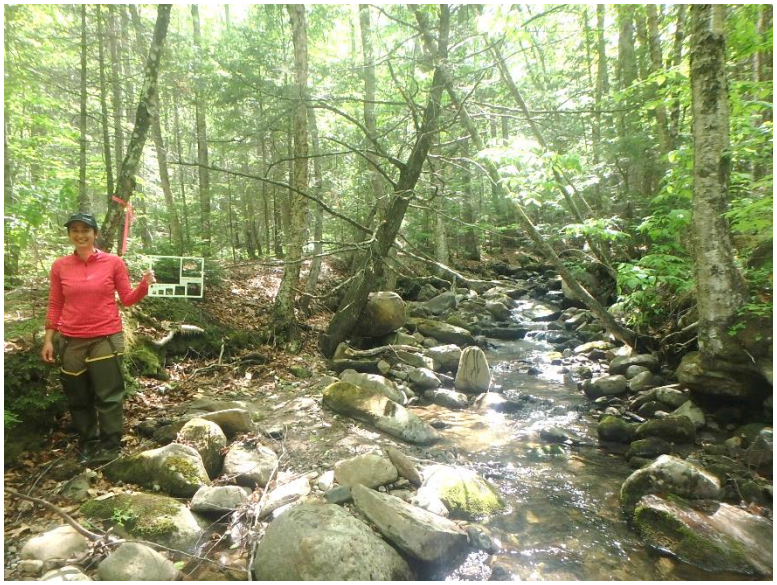


Note:

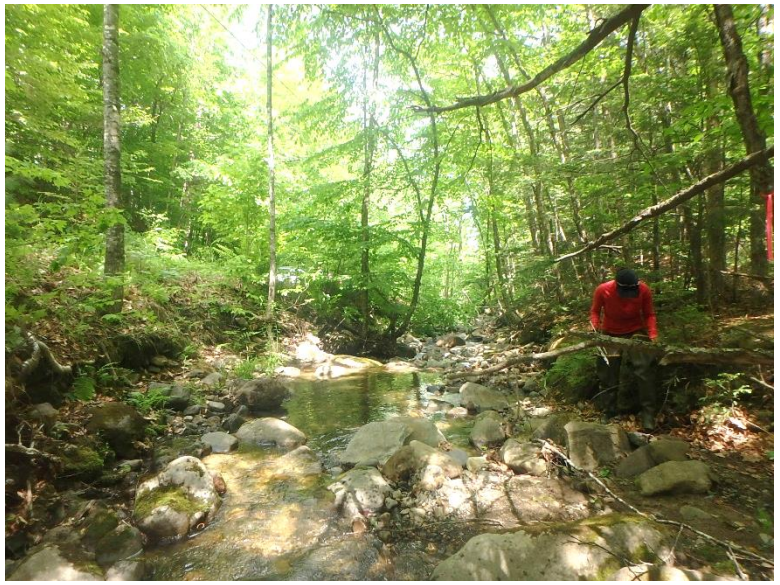
This view is vertically exaggerated, reflecting the different scales of units for elevation and distance.

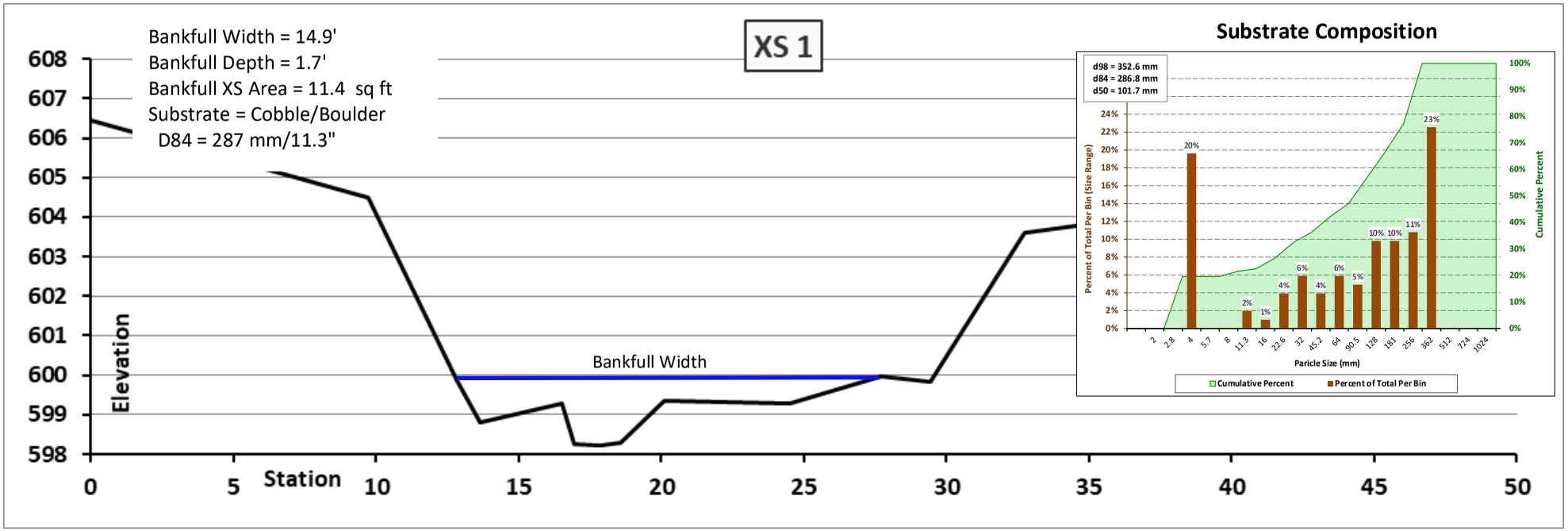
Cross-Section 1 - Reference Reach Upstream of Crossing

Upstream from Cross-Section



Downstream from Cross-Section

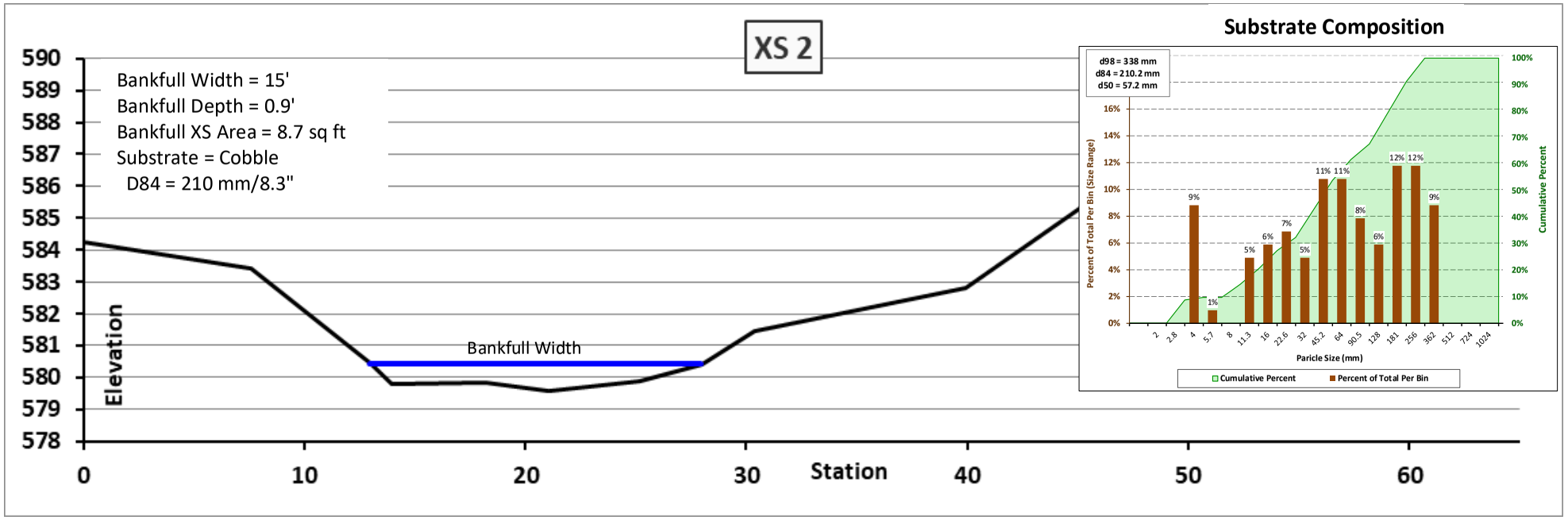




Cross-Section 2 - Reference Reach Downstream of Crossing

Upstream from Cross-Section

Downstream from Cross-Section



Substrate Composition

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - ALL STANDARDS REFER TO LATEST EDITION UNLESS OTHERWISE NOTED.

1.1.1 ASTM B-864 "STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM BOX CULVERTS" (AASHTO DESIGNATION M-219).

1.1.2 AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES - SECTION 12 DIVISION I - DESIGN.

1.1.3 AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES - SECTION 26DIVISION II - CONSTRUCTION.

1.2 DEFINITIONS

1.2.1 OWNER - IN THESE SPECIFICATIONS THE WORD "OWNER" SHALL MEAN CONTECH Engineered Solutions, LLC.

1.2.2 ENGINEER - IN THESE SPECIFICATIONS THE WORD "ENGINEER" SHALL MEAN THE ENGINEER OF RECORD OR OWNER'S DESIGNATED ENGINEERING REPRESENTATIVE.

1.2.3 MANUFACTURER - IN THESE SPECIFICATIONS THE WORD "MANUFACTURER" SHALL MEAN CONTECH ENGINEERED SOLUTIONS, LLC 800-338-1122 Winchester .

1.2.4 CONTRACTOR - IN THESE SPECIFICATIONS THE WORD "CONTRACTOR" SHALL MEAN THE FIRM OR CORPORATION UNDERTAKING THE EXECUTION OF ANY INSTALLATION WORK UNDER THE TERMS OF THESE SPECIFICATIONS.

1.2.5 APPROVED - IN THESE SPECIFICATIONS THE WORD "APPROVED" SHALL REFER TO THE APPROVAL OF THE ENGINEER OR HIS DESIGNATED REPRESENTATIVE.

1.2.6 AS DIRECTED - IN THESE SPECIFICATIONS THE WORDS "AS DIRECTED" SHALL REFER TO THE DIRECTIONS TO THE CONTRACTOR FROM THE OWNER OR HIS DESIGNATED REPRESENTATIVE.

2.0 GENERAL CONDITIONS

2.1 THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL AND EQUIPMENT AND PERFORM ALL WORK AND SERVICES EXCEPT THOSE SET OUT AND FURNISHED BY THE OWNER, NECESSARY TO COMPLETE IN A SATISFACTORY MANNER THE SITE PREPARATION, EXCAVATION, FILLING, COMPACTION, GRADING AS SHOWN ON THE PLANS AND AS DESCRIBED THEREIN. THIS WORK SHALL CONSIST OF ALL MOBILIZATION CLEARING AND GRADING, GRUBBING, STRIPPING, REMOVAL OF EXISTING MATERIAL UNLESS OTHERWISE STATED, PREPARATION OF THE LAND TO BE FILLED, FILLING OF THE LAND, SPREADING AND COMPACTION OF THE FILL, AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES, SLOPES, AND SPECIFICATIONS. THIS WORK IS TO BE ACCOMPLISHED UNDER THE OBSERVATION OF THE OWNER OR HIS DESIGNATED REPRESENTATIVE.

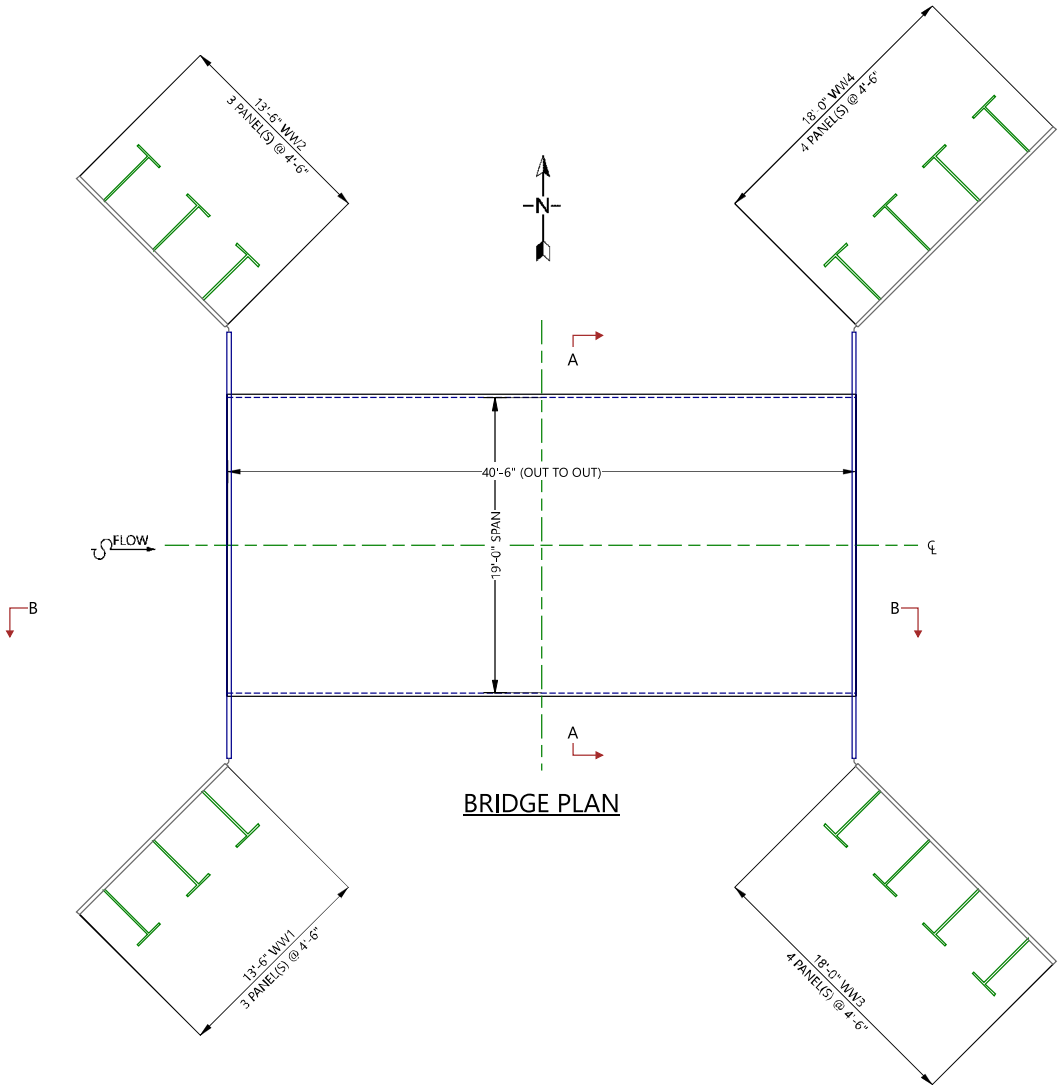
2.2 PRIOR TO BIDDING THE WORK, THE CONTRACTOR SHALL EXAMINE, INVESTIGATE AND INSPECT THE CONSTRUCTION SITE AS TO THE NATURE AND LOCATION OF THE WORK, AND THE GENERAL AND LOCAL CONDITIONS AT THE CONSTRUCTION SITE, INCLUDING WITHOUT LIMITATION, THE CHARACTER OF SURFACE OR SUBSURFACE CONDITIONS AND OBSTACLES TO BE ENCOUNTERED ON AND AROUND THE CONSTRUCTION SITE AND SHALL MAKE SUCH ADDITIONAL INVESTIGATION AS HE MAY DEEM NECESSARY FOR THE PLANNING AND PROPER EXECUTION OF THE WORK.

IF CONDITIONS OTHER THAN THOSE INDICATED ARE DISCOVERED BY THE CONTRACTOR, THE OWNER SHALL BE NOTIFIED IMMEDIATELY. THE MATERIAL WHICH THE CONTRACTOR BELIEVES TO BE A CHANGED CONDITION SHALL NOT BE DISTURBED SO THAT THE OWNER CAN INVESTIGATE THE CONDITION.

2.3 THE CONSTRUCTION SHALL BE PERFORMED UNDER THE DIRECTION OF THE ENGINEER.

2.4 ALL ASPECTS OF THE STRUCTURE DESIGN AND SITE LAYOUT INCLUDING FOUNDATIONS, BACKFILL, END TREATMENTS AND NECESSARY SCOUR CONSIDERATION SHALL BE PERFORMED BY THE ENGINEER.

ANY INSTALLATION GUIDANCE PROVIDED HEREIN SHALL BE ENDORSED BY THE ENGINEER OR SUPERSEDED BY THE ENGINEER'S PLANS AND SPECIFICATIONS.



BRIDGE PLAN

PRELIMINARY
NOT FOR CONSTRUCTION

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 4506
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALSP SINGLE RADIUS ARCH 19'-0" X 9'-0"
MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

Project No.:	Seq No.:	Date:
692929	010	11/1/2021
Designed: GR	Drawn:	
Checked:	Approved:	
Sheet No.: 1 OF 8		

II - ALUMINUM BOX CULVERT

1.0 GENERAL

1.1 Manufacturer shall fabricate the aluminum box culvert as shown on the plans. Fabrication shall conform to the requirements of ASTM B-864 and shall consist of plates, ribs, and appurtenant items.

Plate thickness, rib spacing, end treatment and type of invert and foundation shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.

1.2 The contractor shall verify all field dimensions and conditions prior to ordering materials.

2.0 DIMENSIONS

Designation: ALBC 58-A6
Span: 19'-0"
Rise: 9'-0"
Min. Cover: 3'-6"
Max. Cover: 4'-6"
Loading: HL-93

2.1 The proposed structure shall be an ALUMINUM BOX CULVERT with the following dimensions:

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan unless otherwise noted.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 or ASTM A-449. The box culvert shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The box culvert shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

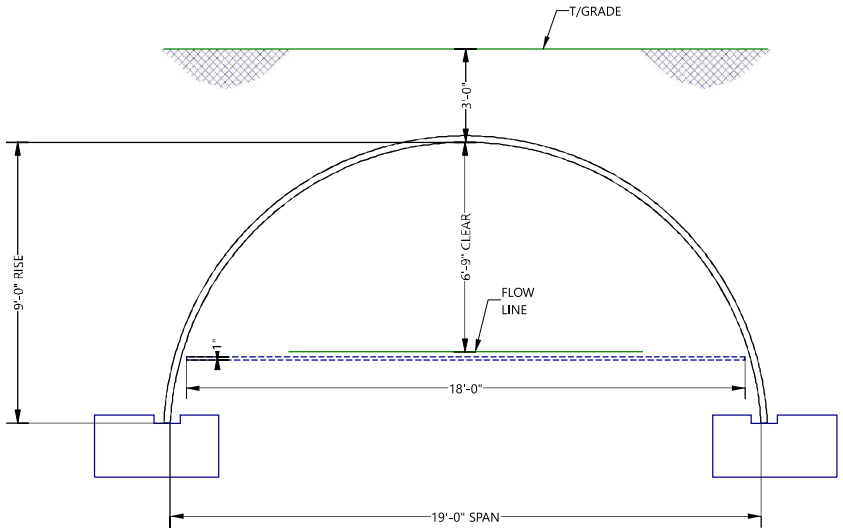
When installed on a full invert or on flexible footing pads, assembly of the invert or footing pads shall start at the downstream end. Circumferential seam laps shall shingle over the top of the downstream plates as assembly progresses upstream. Whether the box culvert is installed on a concrete footing, full metal invert, or flexible footing pad, assembly of the structure shell shall start at the upstream end. Downstream rings of plates shall be assembled outside of the upstream rings. (Circumferential seams are shingled downstream when viewed from the inside of the shell).

3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5 or A-3 modified to be more select than AASHTO M-145. See the information at the right of this sheet.

Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180

3.8 Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.



CROSS SECTION A-A

Approximate Area: 90 sq. ft. used, 133 sq. ft. total

NOTES
- MEASUREMENTS ARE TO THE INSIDE CRESTS OF THE CORRUGATION
- DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

PRELIMINARY
NOT FOR CONSTRUCTION

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CONTECH® ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 4506
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALSP SINGLE RADIUS ARCH 19'-0" X 9'-0"
MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

Project No.:	Seq No.:	Date:
692929	010	11/1/2021
Designed: GR	Drawn:	
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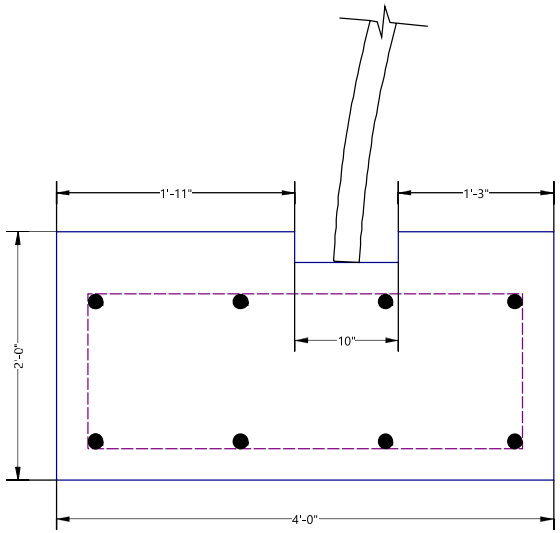
Sheet No.: 2 OF 8		



TYPICAL FOOTING DETAIL

NOTES
- FOOTING DIMENSIONS AND DETAILS SHOWN ARE CONCEPTUAL ONLY
- FINAL DIMENSIONS & DETAILS TO BE FURNISHED BY THE PROJECT ENGINEERS
- FOUNDATION REINFORCING TO BE DETERMINED

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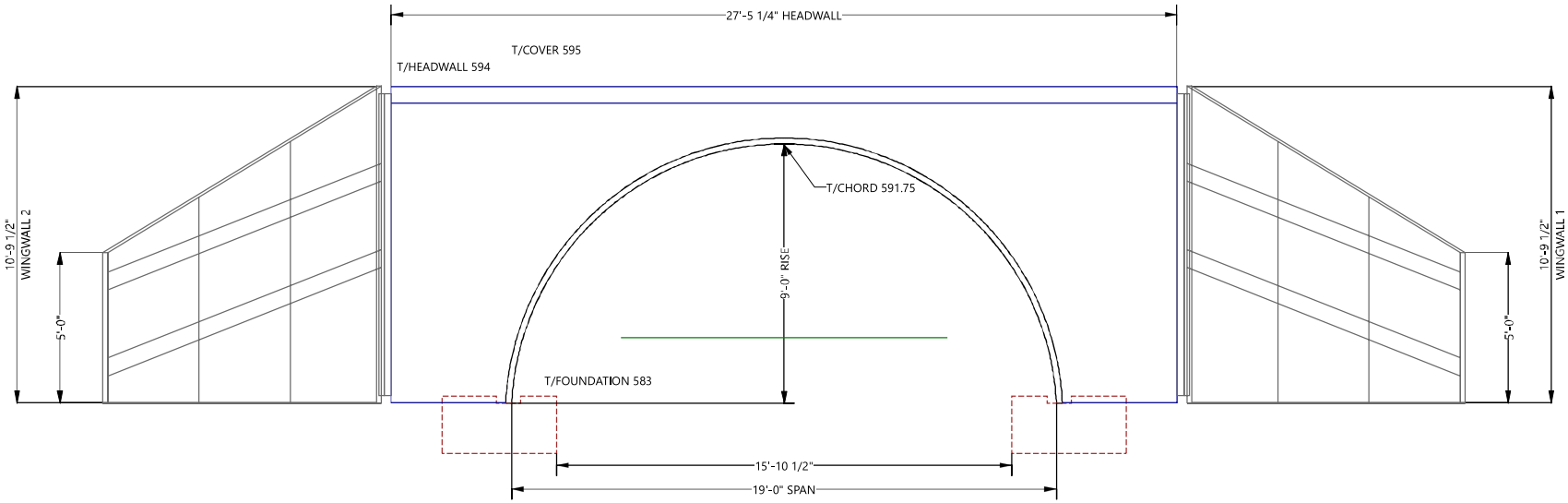
Sheet No.: 3 OF 8		



INLET END ELEVATION

ALUMINUM HEADWALL TO BE FIELD CUT AT TIME OF INSTALLATION (BY OTHERS)

PRELIMINARY
NOT FOR CONSTRUCTION

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MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

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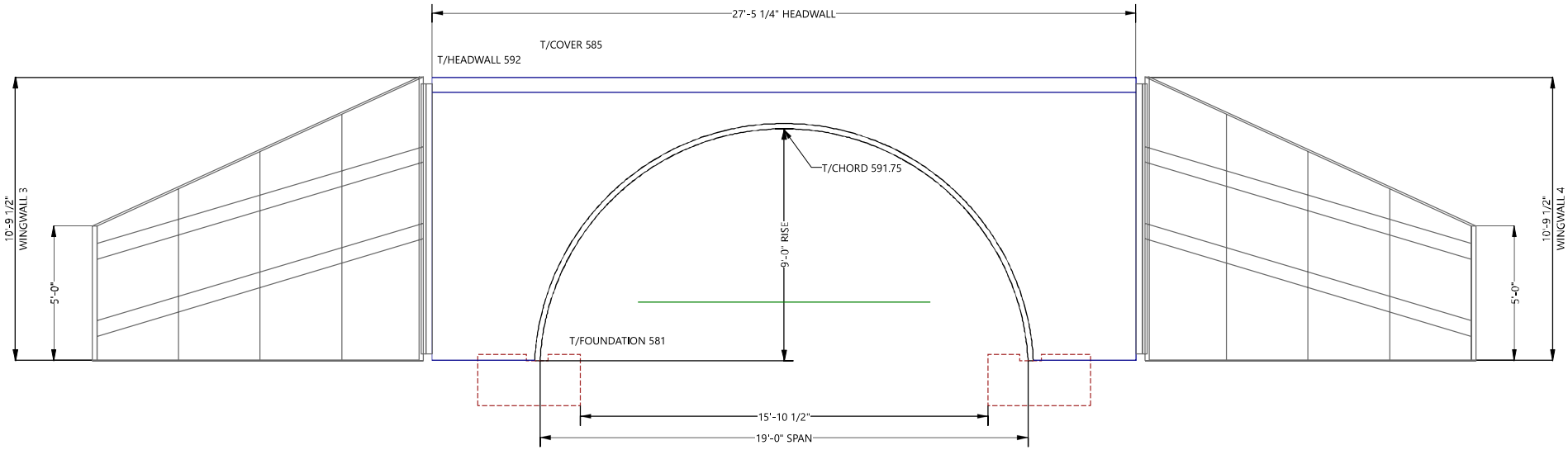

OUTLET END ELEVATION

PRELIMINARY
NOT FOR CONSTRUCTION

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PROPOSAL
DRAWING

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MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

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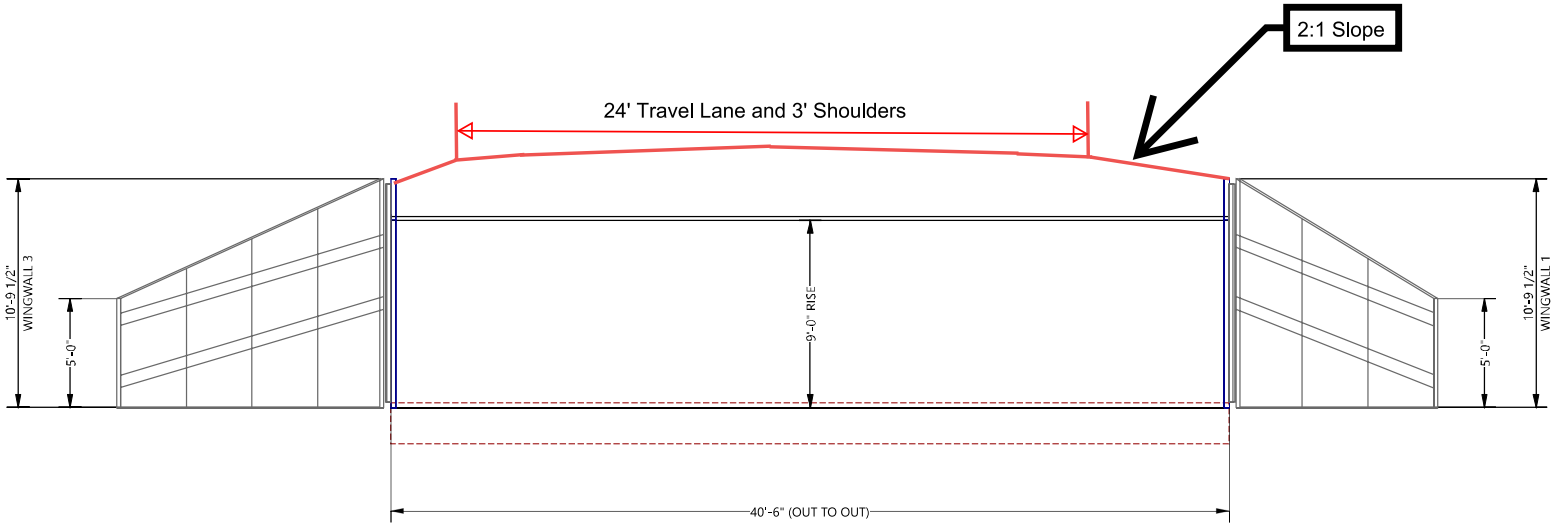
Sheet No.: 5 OF 8		



PROFILE SECTION B-B

PRELIMINARY
NOT FOR CONSTRUCTION

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CONTECH® ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 4506
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALSP SINGLE RADIUS ARCH 19'-0" X 9'-0"
MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

Project No.:	Seq No.:	Date:
692929	010	11/1/2021
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Checked:	Approved:	
Sheet No.: 6 OF 8		

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CONTECH ALSP SINGLE RADIUS ARCH

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to latest edition unless otherwise noted.

1.1.1 ASTM B-746 "Corrugated Aluminum Alloy Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches" (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26.

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean
Town of Temple ME

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.3 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH Construction Products Inc. 800-338-1122
Glenn Robie

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

2.1 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.2 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.3 The construction shall be performed under the direction of the Engineer.

2.4 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

Any installation guidance provided herein shall be endorsed by the Engineer or superceded by the Engineer's plans and specifications.

II - ALUMINUM STRUCTURAL PLATE SINGLE RADIUS ARCH.

1.0 GENERAL

1.1 Manufacturer shall fabricate the ALSP Single Radius Arch as shown on the plans. Fabrication shall conform to the requirements of ASTM B-746 and shall consist of plates, ribs, and appurtenant items.

Plate thickness, rib spacing, end treatment and type of invert and foundation shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.

1.2 The contractor shall verify all field dimensions and conditions prior to ordering materials.

2.0 DIMENSIONS

2.1 The proposed structure shall be ALSP Single Radius Arch with the following dimensions:

Span: 19'-0"
Rise: 9'-0"
Gage: 0

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan unless otherwise noted.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 or ASTM A-449. The structure shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The structure shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

When assembled on a cast in place spread footing, the structure shall be assembled in the footing starting at the upstream end. When assembled on a full invert or on flexible footing pads, the invert or footing pad shall be placed starting at the downstream end. The structure shell shall be assembled on the invert or footing pad starting at the inlet end. Circumferential seams shall be installed with the plate laps shingled downstream as viewed from the inside of the structure.

The structure shall be backfilled using clean well graded granular material that meets the requirements of AASHTO M-145 for soil classifications A-1, A-2 or A-3.

Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180

3.7 Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.

GROUP CLASSIFICATION	A-1	A-3	A-2-4	A-2-5
Sieve Annalists Percent Passing				
No. 10 (2.000 mm)		----	----	----
No. 40 (0.425 mm)	50 max.	51 max.	----	----
No. 100 (0.150 mm)	----	----	50 max.	50 max.
No. 200 (0.075 mm)	25 max.	10 max.	20 max.	20 max.
Atterberg Limits for Fraction Passing No., 40 (0.425 mm)				
Liquid Limits	----	----	40 max.	41 max.
Plasticity Index	6 max.	Non Plastic	10 max.	10 max.
Usual Materials	Stone Fragment, Gravel and Sand	Sand	Silty or Clayey Gravel and Sand	

NOTE: Atterberg Limits are modified to provide material that are primarily granular

IARY
NOT FOR CONSTRUCTION

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CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 4506
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALSP SINGLE RADIUS ARCH 19'-0" X 9'-0"
MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

Project No.:	Seq No.:	Date:
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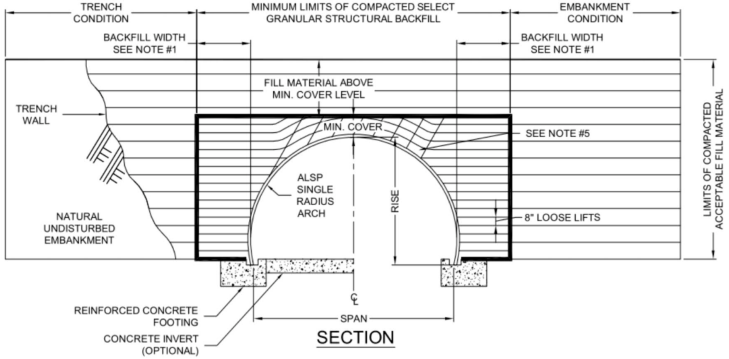


SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

INITIAL LIFTS OVER THE CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH SMALL LIGHTWEIGHT (D-4 OR LIGHTER) EQUIPMENT.

NOTES:

1. TRENCH WIDTH AND/OR SELECT BACKFILL WIDTH SHALL BE DETERMINED BY THE ENGINEER DEPENDING ON SITE SPECIFIC CONDITIONS. TYPICAL BACKFILL WIDTH IS 4 FEET FOR STRUCTURE SPANS GREATER THAN 14 FEET.
2. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICAL) AND COMPACTED TO 95 PERCENT DENSITY PER AASHTO T-180.
3. COMPLETE AND REGULAR MONITORING OF THE SINGLE RADIUS ARCH STRUCTURE IS NECESSARY DURING THE BACKFILL PROCESS TO AT LEAST THE MINIMUM COVER LEVEL.
4. PREVENT DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
5. PLACE SELECT GRANULAR BACKFILL IN RADIAL LIFTS AT APPROXIMATELY 75% OF THE RISE OF THE SINGLE RADIUS ARCH STRUCTURE.

ADDITIONAL SELECT GRANULAR STRUCTURAL BACKFILL NOTES:
SATISFACTORY BACKFILL MATERIAL, PROPER PLACEMENT, AND COMPACTION ARE KEY FACTORS IN OBTAINING MAXIMUM STRENGTH AND STABILITY. THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5 OR A-3 MODIFIED. *SEE THE STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION TABLE ON THIS SHEET*. BACKFILL MUST BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 8" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180. A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION. IF THE PROPOSED BACKFILL IS NOT A WELL GRADED GRANULAR MATERIAL, A NON-WOVEN GEOTEXTILE FILTER FABRIC SHALL BE PLACED BETWEEN THE SELECT BACKFILL AND THE IN SITU MATERIAL. DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE. THE ENGINEER AND CONTRACTOR ARE CAUTIONED THAT THE MINIMUM COVER MAY NEED TO BE INCREASED TO HANDLE TEMPORARY CONSTRUCTION VEHICLE LOADS (HEAVIER THAN D-4).

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145					
GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5	A-3
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	50 max.	----	----	----	----
No. 40 (0.425 mm)	30 max.	50 max.	----	----	51 max.*
No. 200 (0.075 mm)	15 max.	25 max.	35 max.	35 max.	10 max.
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	----	----	40 max.	41 min.	----
Plasticity Index	6 max.	6 max.	10 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand		Silty or Clayey Gravel and Sand		Coarse Sand

*Modified from AASHTO M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically classified by AASHTO M-145 as A-3 Materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to the current ASTM/AASHTO edition unless otherwise noted.

1.1.1 ASTM B746 "Corrugated Aluminum Alloy for Structural Plate for Field-Bolted Pipe, Pipe-Arches, and Arches." (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12 Division I - Design, AASHTO LRFD Bridge Design Specifications Section 12.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction, AASHTO LRFD Bridge Construction Specifications - Section 26. ASTM B789, Standard Practice for Installing Corrugated Aluminum Structural Plate Pipe.

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean ##########.

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.3 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH ENGINEERED SOLUTIONS 800-338-1122 ##########.

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

2.1 Any installation guidance provided herein shall be endorsed by the Engineer; discrepancies herein are governed by the Engineer's plans and specifications.

2.2 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.3 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for t he planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.4 The construction shall be performed under the direction of the Engineer.

2.5 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A307 and/or ASTM A449. The single radius arch structure shall be assembled in accordance with the plate layout drawings provided by the Manufacturer and per the Manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The single radius arch structure shall be installed in accordance with the plans and specifications, the Manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction/AASHTO LRFD Bridge Construction Specifications - Section 26.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.5 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

3.6 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5 or A-3 modified per AASHTO M-145. See the structural plate backfill group classification table on this sheet.

Backfill must be placed symmetrically on each side of the structure in 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180

3.7 If temporary construction vehicles are required to cross the structure, it is the Contractor's responsibility to contact the Engineer to determine the amount of additional minimum cover necessary to handle the specific loading condition.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.

3.8 If an aluminum headwall and/or wingwall system is specified, the select granular structural backfill limits shall extend past the deadman anchor system. Contact the Engineer if stiff material or rock is encountered where the wingwalls and deadmen are to be installed.

PRELIMINARY
NOT FOR CONSTRUCTION

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH® ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 4506
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

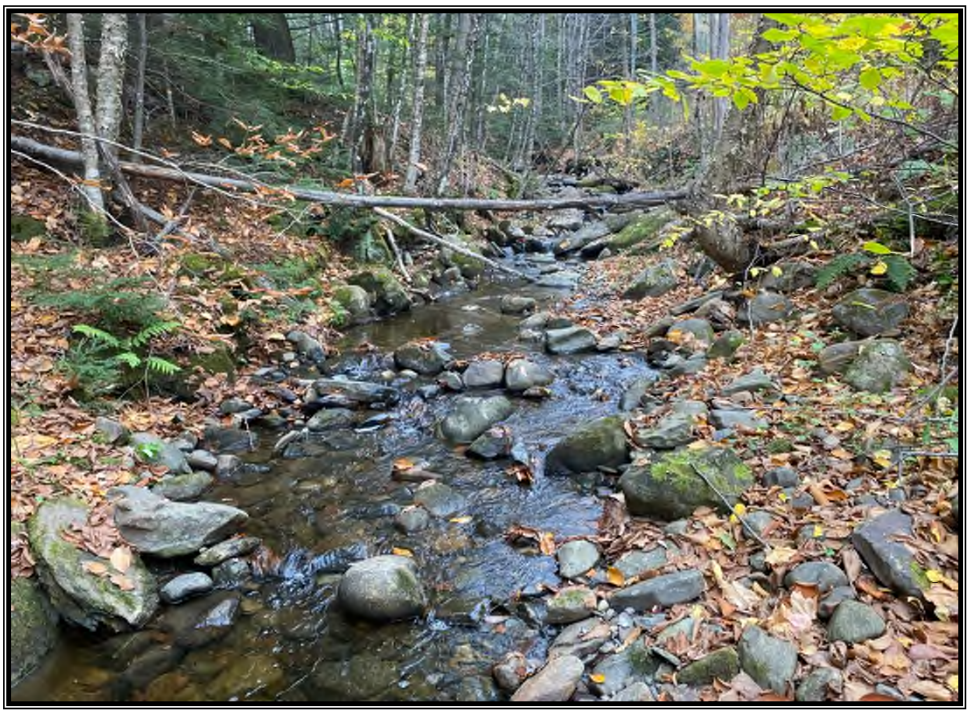
ALSP SINGLE RADIUS ARCH 19'-0" X 9'-0"
MITCHELL BROOK RD CULVERT REPLACEMENT

TEMPLE, ME

Project No.:	Seq No.:	Date:
692929	010	11/1/2021
Designed: GR	Drawn:	
Checked:	Approved:	
Sheet No.: 8 OF 8		

Picture #1: Upstream condition of culvert

Picture #2: Upstream condition of culvert



Picture #3: Upstream of culvert

Picture #4: Upstream of culvert

Picture #5: Downstream condition of culvert

Picture #6: Erosion of road next to culvert

Picture #7: Downstream of culvert

Picture #8: Scour pool downstream of culvert

Picture #9: View of eroded road embankment from September 13, 2021

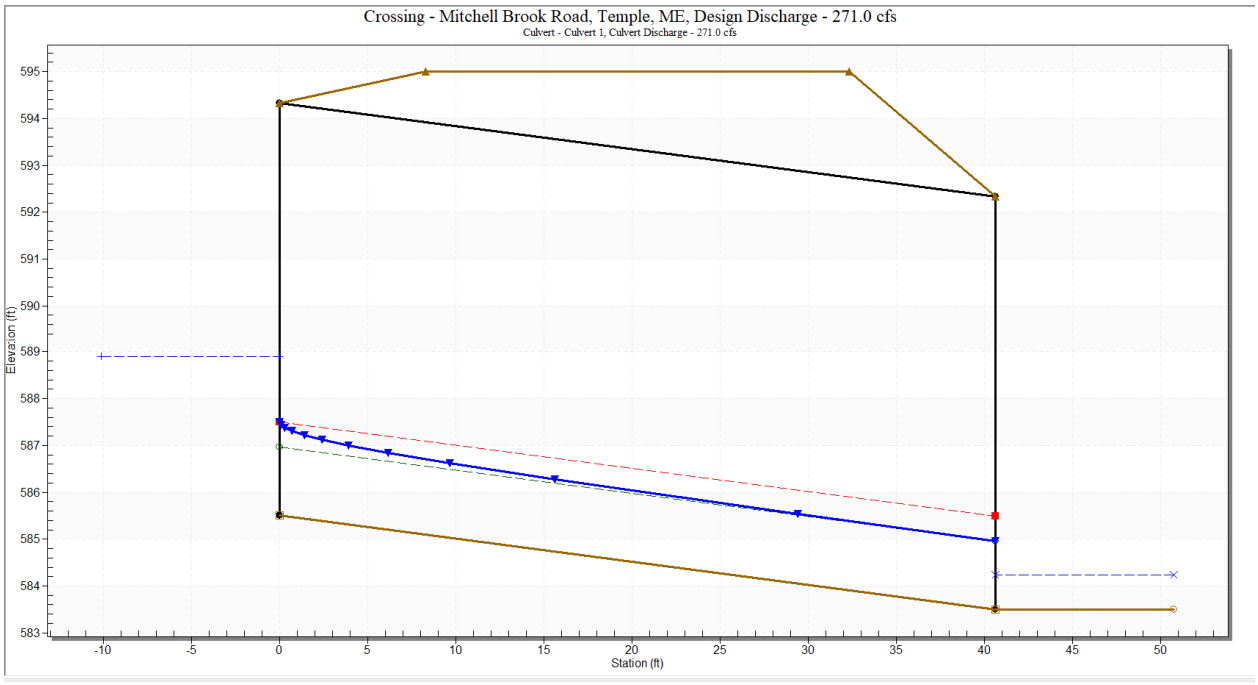
Picture #10: View of eroded road embankment from September 13, 2021

HY-8 Analysis Results

Culvert Summary Table - Culvert 1

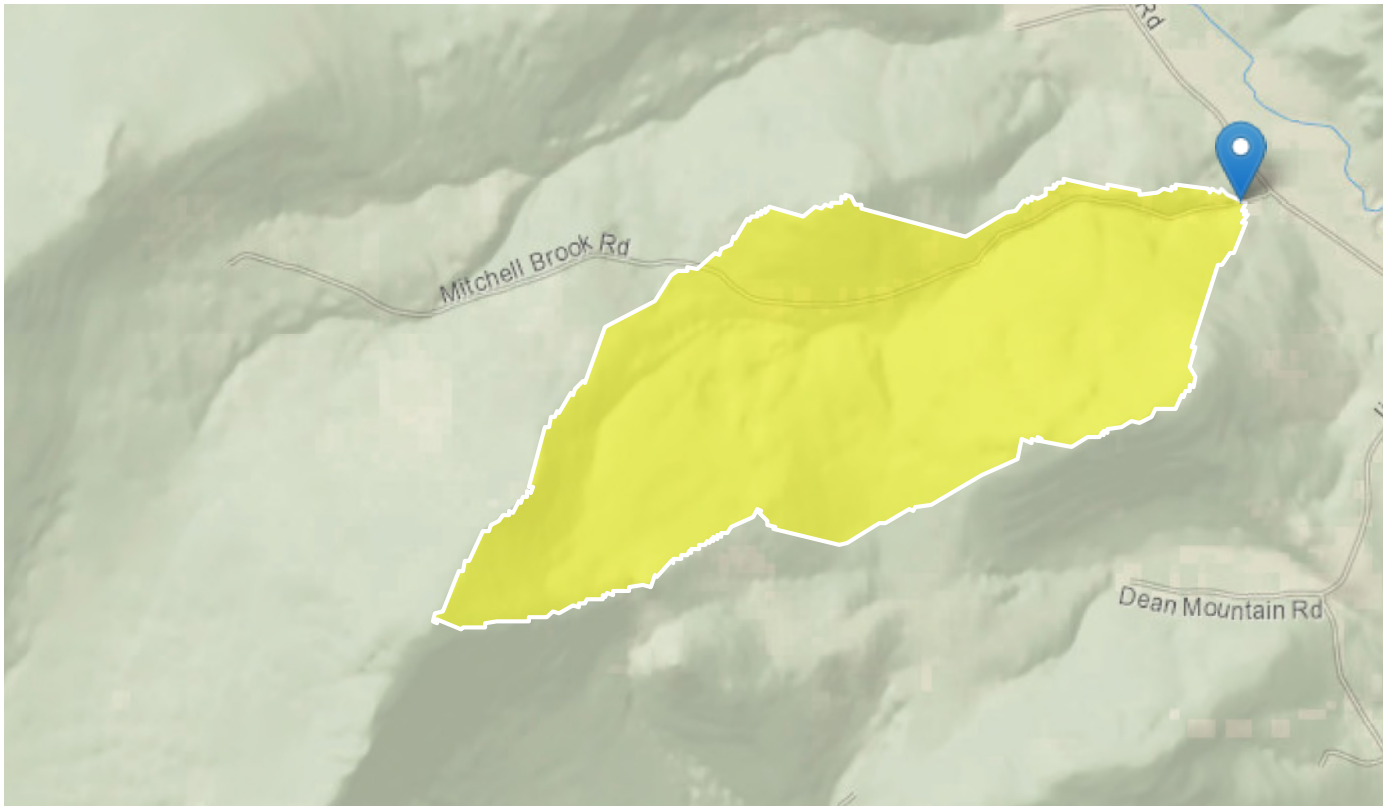
Culvert Crossing: Mitchell Brook Road, Temple, ME

Discharge Names	Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
2 year	68.00	68.00	586.84	1.34	-1.20	1-S2n	0.61	0.79	0.61	0.31	6.57	14.61
5 year	112.00	112.00	587.38	1.87	-0.86	1-S2n	0.83	1.11	0.83	0.42	7.91	17.73
10 year	146.00	146.00	587.74	2.24	-0.63	1-S2n	0.99	1.32	0.99	0.50	8.73	19.65
25 year	192.00	192.00	588.19	2.69	-0.32	1-S2n	1.18	1.58	1.18	0.59	9.64	21.82
50 year	231.00	231.00	588.55	3.04	-0.07	1-S2n	1.32	1.79	1.32	0.66	10.32	23.41
100 year	271.00	271.00	588.89	3.39	0.18	1-S2n	1.46	1.99	1.46	0.73	10.94	24.87
200 year	310.00	310.00	589.21	3.71	0.42	1-S2n	1.60	2.18	1.63	0.80	11.27	26.16
500 year	367.00	367.00	589.67	4.16	0.78	1-S2n	1.78	2.44	1.82	0.88	11.93	27.87



StreamStats Report

Region ID: ME
Workspace ID: ME20211019183014365000
Clicked Point (Latitude, Longitude): 44.68834, -70.23849
Time: 2021-10-19 14:30:38 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.84	square miles
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	3.03	inches
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	1.203	percent
I24H5Y	Maximum 24-hour precipitation that occurs on average once in 5 years	3.75	inches

Parameter Code	Parameter Description	Value	Unit
I24H10Y	Maximum 24-hour precipitation that occurs on average once in 10 years	4.34	inches
I24H25Y	Maximum 24-hour precipitation that occurs on average once in 25 years	5.15	inches
I24H50Y	Maximum 24-hour precipitation that occurs on average once in 50 years	5.77	inches
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	6.41	inches
I24H200Y	Maximum 24-hour precipitation that occurs on average once in 200 years	7.1	inches
I24H500Y	Maximum 24-hour precipitation that occurs on average once in 500 years	8.09	inches
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0	dimensionless

Bankfull Statistics Parameters [Central and Coastal Bankfull 2004 5042]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.84	square miles	2.92	298

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.84	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.84	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.84	square miles	0.07722	59927.7393

Bankfull Statistics Disclaimers [Central and Coastal Bankfull 2004 5042]

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

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

Statistic	Value	Unit
Bankfull Streamflow	4.32	ft^3/s
Bankfull Width	7.01	ft
Bankfull Depth	0.56	ft
Bankfull Area	3.92	ft^2

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	14.1	ft
Bieger_D_channel_depth	1.07	ft
Bieger_D_channel_cross_sectional_area	15.3	ft^2

Bankfull Statistics Disclaimers [New England P Bieger 2015]

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

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	24.1	ft
Bieger_P_channel_depth	1.32	ft
Bieger_P_channel_cross_sectional_area	31.7	ft^2

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	11.6	ft
Bieger_USA_channel_depth	1.16	ft
Bieger_USA_channel_cross_sectional_area	15.6	ft^2

Bankfull Statistics Flow Report [Area-Averaged]

Statistic	Value	Unit
Bankfull Streamflow	4.32	ft^3/s
Bankfull Width	7.01	ft
Bankfull Depth	0.56	ft
Bankfull Area	3.92	ft^2
Bieger_D_channel_width	14.1	ft
Bieger_D_channel_depth	1.07	ft
Bieger_D_channel_cross_sectional_area	15.3	ft^2
Bieger_P_channel_width	24.1	ft
Bieger_P_channel_depth	1.32	ft
Bieger_P_channel_cross_sectional_area	31.7	ft^2
Bieger_USA_channel_width	11.6	ft
Bieger_USA_channel_depth	1.16	ft
Bieger_USA_channel_cross_sectional_area	15.6	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)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_can

Peak-Flow Statistics Parameters [Statewide multiparameter peakflows SIR 2020 5092]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.84	square miles	0.26	5680
I24H2Y	24 Hour 2 Year Precipitation	3.03	inches	1.92	4.17
STORAGE	Percent Storage	1.203	percent	0	29.4
I24H5Y	24 Hour 5 Year Precipitation	3.75	inches	2.48	5.38
I24H10Y	24 Hour 10 Year Precipitation	4.34	inches	2.84	6.38

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
I24H25Y	24 Hour 25 Year Precipitation	5.15	inches	3.3	7.75
I24H50Y	24 Hour 50 Year Precipitation	5.77	inches	3.65	8.79
I24H100Y	24 Hour 100 Year Precipitation	6.41	inches	3.99	9.88
I24H200Y	24 Hour 200 YearPrecipitation	7.1	inches	5.26	11.1
I24H500Y	24 Hour 500 Year Precipitation	8.09	inches	5.95	13.1

Peak-Flow Statistics Flow Report [Statewide multiparameter peakflows SIR 2020 5092]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp
50-percent AEP flood	68	ft^3/s	36.1	128	39.1
20-percent AEP flood	112	ft^3/s	60.4	208	38.1
10-percent AEP flood	146	ft^3/s	77.6	275	38.9
4-percent AEP flood	192	ft^3/s	101	366	39.9
2-percent AEP flood	231	ft^3/s	119	448	39.7
1-percent AEP flood	271	ft^3/s	140	524	40.7
0.5-percent AEP flood	310	ft^3/s	155	620	42.8
0.2-percent AEP flood	367	ft^3/s	181	745	43.8

Peak-Flow Statistics Citations

Lombard, P.J., and Hodgkins, G.A.,2020, Estimating flood magnitude and frequency on gaged and ungaged streams in Maine: U.S. Geological Survey Scientific Investigations Report 2020–5092, 56 p. (https://doi.org/10.3133/sir20205092)

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

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.84	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	0.0187	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)

Application Version: 4.6.2
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Site ID: 15726
Crossing Type: Culvert
Crossing Class: Barrier
Survey Date: 2010-07-29
Stream: Henry Mitchell Brook
Town: Temple
County: Franklin
Road: Mitchell Brook Road

Photos
Downstream Inlet Outlet Upstream

Detailed Stream Crossing Information
Latitude: 44.68833
Longitude: -70.23837
Road Type: Unpaved
Road Class: Town
Number Of Culverts: 1
Crossing Condition: No data
Structure Type: Round Culvert
Material: Metal
Inlet Grade: At Stream Grade
Inlet Width (ft): 9.30
Inlet Water Depth (ft): 0.20
Inlet Height (ft): 6.20
Crossing Length (ft): 41.00
Outlet Grade: Free Fall
Outlet Width (ft): 9.30
Outlet Water Depth (ft): 0.00
Outlet Drop (ft): 0.60
Outlet Height (ft): 6.70
Structure Substrate Matches Stream: Comparable
Physical Barriers: No data
Physical Barrier Severity: No data
Road Fill Height (ft): -1.00
Total Opening Width (ft): 9.30
Area of Opening (sq ft): 48.90
Estimated Bankfull Width (ft): 8.10
Upstream Blocked Miles: 1.75
Upstream Total Miles: 1.75
Upstream Barriers: 0
Downstream Barriers: 5

Potential Effects of this Crossing
Atlantic Salmon Modeled 100 sq m Habitat Units Blocked: 25.22
Alewife Pond Acres Blocked: -1.00
Wild Eastern Brook Trout Habitat: Yes
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: Temple Stream
HUC 10 Watershed Name: Middle Sandy River
HUC 8 Sub-basin Name: Lower Kennebec
HUC 6 Basin Name: Kennebec

JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
353 WATER STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

JUDITH CAMUSO
COMMISSIONER

October 27, 2021

Libby Gorse
St. Germain
846 Main Street
Westbrook, ME 04092

RE: Information Request – Culvert Replacement Mitchell Brook Road Project, Temple

Dear Libby:

Per your request received on October 22, 2021, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and inland fisheries habitat concerns within the vicinity of the *Culvert Replacement Mitchell Brook Road* project in Temple.

Our Department has not mapped any Essential or Significant Wildlife Habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Northern Spring Salamander - Northern spring salamanders, a State-listed Species of Special Concern, may occur in the project area. Any instream work in unmapped perennial or intermittent streams has the potential to impact this species (i.e., high elevation headwater streams) but they are also found in larger third order streams and rivers with suitable substrate (large cobble and/or gravel bars) within the documented range of primarily the western Maine mountains north and east into mountains of central Penobscot County. Replacing the existing culvert with a structure that meets Stream Smart design guidelines will benefit this rare species. Immediately prior to construction, the project area should be surveyed, and any observed salamanders be relocated into suitable habitat upstream.

Fisheries Habitat

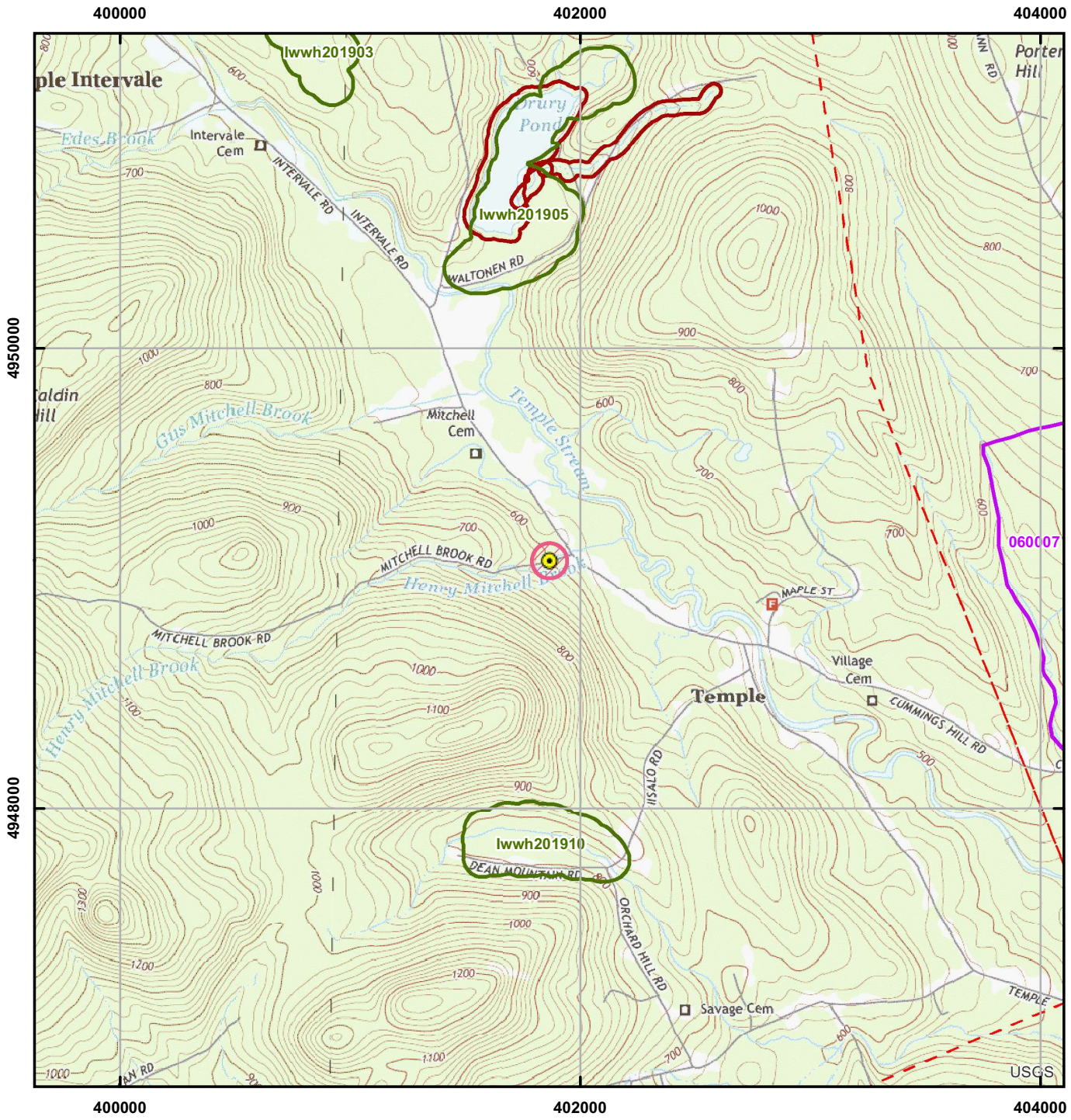
Per your letter, the new structure will be designed to meet Stream Smart guidelines. Construction Best Management Practices should be closely followed to avoid erosion, sedimentation, alteration of stream flow, and other impacts as eroding soils from construction activities can travel significant distances as well as transport other pollutants resulting in direct impacts to fisheries and aquatic habitat. In addition, we recommend that any necessary instream work occur between July 15 and October 1.

This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program, Maine Department of Marine Resources, and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

Becca Settele
Wildlife Biologist



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name: Culvert Replacement Mitchell Brook Road, Temple (Version 1)

Maine Department of Inland Fisheries and Wildlife

Miles

0 0.125 0.25 0.5 0.75 1

Projection: UTM, NAD83, Zone 19N

Date: 10/26/2021

- ProjectSearchAreas - All Versions
- Maine Cliff and Talus Areas
- Deer Winter Area
- LUPC p-fw
- Cooperative DWAs
- Seabird Nesting Islands
- Shorebird Areas
- Inland Waterfowl and Wading Bird
- 2008 Iwwh - Shoreland Zoning
- Tidal Waterfowl and Wading Bird
- Significant Vernal Pools
- Environmental Review Polygons
- Roseate Tern
- Piping Plover and Least Tern
- Aquatic ETSc - 2.5 mi review
- Rare Mussels - 5 mi review
- Maine Heritage Fish Waters
- Arctic Charr Habitat
- Redfin Pickerel and Swamp Darter Habitats - buffer100ft
- Special Concern occupied habitats - 100ft buffer
- Wild Lake Trout Habitats

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
Phone: (207) 469-7300 Fax: (207) 902-1588
http://www.fws.gov/mainefieldoffice/index.html

In Reply Refer To: October 26, 2021
Consultation Code: 05E1ME00-2022-SLI-0099
Event Code: 05E1ME00-2022-E-00380
Project Name: Temple Mitchell Brook Road

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies the threatened, endangered, candidate, and proposed species and designated or proposed critical habitat that may occur within the boundary of your proposed project or may be affected by your proposed project. This species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC Web site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 et seq.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the Endangered Species Consultation Handbook at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

This species list also identifies candidate species under review for listing and those species that the Service considers species of concern. Candidate species have no protection under the Act but are included for consideration because they could be listed prior to completion of your project. Species of concern are those taxa whose conservation status is of concern to the Service (i.e., species previously known as Category 2 candidates), but for which further information is needed.

If a proposed project may affect only candidate species or species of concern, you are not required to prepare a Biological Assessment or biological evaluation or to consult with the Service. However, the Service recommends minimizing effects to these species to prevent future conflicts. Therefore, if early evaluation indicates that a project will affect a candidate species or species of concern, you may wish to request technical assistance from this office to identify appropriate minimization measures.

Please be aware that bald and golden eagles are not protected under the Endangered Species Act but are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Projects affecting these species may require development of an eagle conservation plan: http://www.fws.gov/windenergy/eagle_guidance.html Information on the location of bald eagle nests in Maine can be found on the Maine Field Office Web site: http://www.fws.gov/mainefieldoffice/Project%20review4.html

Additionally, wind energy projects should follow the wind energy guidelines: http://www.fws.gov/windenergy/ for minimizing impacts to migratory birds and bats. Projects may require development of an avian and bat protection plan.

Migratory birds are also a Service trust resource. Under the Migratory Bird Treaty Act, construction activities in grassland, wetland, stream, woodland, and other habitats that would result in the take of migratory birds, eggs, young, or active nests should be avoided. Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm and at:

http://www.towerkill.com; and at:
http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Maine Ecological Services Field Office
P. O. Box A
East Orland, ME 04431
(207) 469-7300

Project Summary

Consultation Code: 05E1ME00-2022-SLI-0099
Event Code: Some(05E1ME00-2022-E-00380)
Project Name: Temple Mitchell Brook Road
Project Type: BRIDGE CONSTRUCTION / MAINTENANCE
Project Description: Potential site of culvert replacements, upgrade to stream smart crossings.
Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.688186650000006,-70.23944216552857,14z

Counties: Franklin County, Maine

Endangered Species Act Species

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Fishes

NAME	STATUS
Atlantic Salmon *Salmo salar* Population: Gulf of Maine DPS There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2097	Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

There is 1 critical habitat wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Atlantic Salmon *Salmo salar* https://ecos.fws.gov/ecp/species/2097#crithab	Final