



City of Auburn, Maine

Engineering Department

60 Court Street | Auburn, Maine 04210

[www.auburnmaine.gov](http://www.auburnmaine.gov) | 207.333.6601

January 18, 2022

Dear Bidder:

The City of Auburn is accepting written proposals for the Auburn Public Works Department's **Fish Hatchery Road Culvert Replacement Project**. The City reserves the right to accept or reject any or all proposals in whole or in part and to waive any informality the City may determine necessary. The City also reserves to itself the exclusive right to accept any proposal when it is deemed by the City to be in its best interest. The City of Auburn is governed by Title 1 M.R.S.A. § 401-410, otherwise known as the Freedom of Information Act, which considers bid specifications as public documents. In awarding any proposal, the City may consider, but not be limited to, any of the following factors: Bidder qualifications, price, experience, financial standing with the City, warranties, references, bonding, delivery date, and service of Bidder. Vendors/Contractors shall be current on all amounts due to the City of Auburn prior to the City entering into any contract agreement. All proposals must include FOB to Auburn, Maine unless otherwise specified.

Proposals will not receive consideration unless submitted in accordance with the following instructions to bidders. Please mark sealed envelopes plainly: **"Fish Hatchery Road Culvert Replacement-Bid #2022-023."**

Bid packages will be available beginning on Tuesday, January 18, 2022. Documents can be obtained from the City of Auburn's website: <https://www.auburnmaine.gov/Pages/Government/Bid-Notices>. Questions regarding this Request for Bids should be directed to the Engineer, Megan McDevitt, Project Manager, Woodard & Curran at [mmcdevitt@woodardcurran.com](mailto:mmcdevitt@woodardcurran.com). **A pre-bid meeting will be held on Tuesday, January 25, 2022, at 2:00pm via web conference.** Bidders must register via email with the Engineer, Megan McDevitt, at [mmcdevitt@woodardcurran.com](mailto:mmcdevitt@woodardcurran.com) with the subject line "Fish Hatchery Road Culvert Replacement Project" to be included on the Bidder's list, receive invite to all web conferences, and be notified of any addenda.

Please submit your proposal to the City of Auburn by 2:00 p.m. **Thursday, February 3, 2022.** Proposals must be delivered to **Derek Boulanger, Facilities Manager/Purchasing Agent, 60 Court Street, Auburn, Maine 04210** on or before the date and time appointed. No proposals will be accepted after the time and date listed above. Proposals will be opened at 2:00 p.m. on that date and read aloud via a web conference.

Sincerely,

Derek Boulanger  
Facilities Manager/Purchasing Agent

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## CONDITIONS AND INSTRUCTIONS TO BIDDERS

1. Bidders shall use the enclosed bid form for quotations. Whenever, in bid forms, an article is defined by using a trade name or catalog number, the term "or approved equal", if not inserted, shall be implied.
2. Submit a unit price for each item unless otherwise specified in the bid request. Prices stated are to be "delivered to destination".
3. Bid proposals must be completed in full, in ink and must be signed by firm official. Bid proposal **must be notarized** prior to bid being sealed and will be disqualified if not notarized. Bids may be withdrawn prior to the time set for the official opening.
4. Bids will be opened publicly. Bidders or representatives may be present at bid opening.
5. Awards will be made to the lowest responsible bidder, considering the quality of the materials, date of delivery, cost which meets specification and is in the best interest to the City of Auburn.
6. All transportation charges, including expense for freight, transfer express, mail, etc. shall be prepaid and be at the expense of the vendor unless otherwise specified in the bid.
7. The terms and cash discounts shall be specified. Time, in connection with discount offered, will be computed from date of delivery at destination after final inspection and acceptance or from date of correct invoice, whichever is later.
8. The City is exempt from payment of Federal Excise Taxes on the articles not for resale, Federal Transportation Tax on all shipments and Maine Sales Tax and Use Taxes. Please quote less these taxes. Upon application, exemption certificate will be furnished with the Purchase Order when required.
9. No contract may be assigned without the written consent of the Purchasing Director or his designate. The contract shall not be considered valid until a purchase order has been issued to the successful bidder.
10. Please state "**Fish Hatchery Road Culvert Replacement – Bid #2022-023**", on submitted, sealed envelope.
11. The City of Auburn reserves the right to waive any formality and technicality in bids whichever is deemed best for the interest of the City of Auburn.

12. All work must be completed from 7:00AM to 7:00PM. All construction activities in-water shall only occur during periods of low flow and during the in-water construction window of **July 15, 2022**, to **September 30, 2022**. The final completion date for this project is **November 18, 2022**.
13. Liquidated damages of \$500/calendar day will be assessed on uncompleted work.
14. The Contractor shall be responsible for providing temporary housing for the tenant of 114 Fish Hatchery Road during construction when excavation in Fish Hatchery Road will remain open for more than 24 hours. The Contractor shall assume providing temporary accommodations for the tenant at the Residence Inn by Marriot Auburn located at 670 Turner Street, Auburn, Maine 04210. Fish Hatchery Road will be closed to the public during construction.

## **GENERAL CONDITIONS**

### **1. Equal Employment Opportunity**

The City of Auburn is an Equal Opportunity Employer and shall not discriminate against an applicant for employment, and employee or a citizen because of race, color, sex, marital status, physical and/or mental handicap, religion, age, ancestry, or natural origin, unless based upon a bona-fide occupation qualification. Vendors and contractor or their agents doing business with the City shall not violate the above clause or the Civil Rights Acts of 1964. Violations by vendors shall be reviewed on a case-by-case basis and may mean an automatic breach of contract or service to the City of Auburn.

### **2. Save Harmless**

The Bidder agrees to protect and save harmless the owner from all costs, expenses or damages that may arise out of alleged infringement of patents of materials used.

### **3. Subcontracting**

The Bidder shall not subcontract any part of the work or materials or assign any monies due it without first obtaining the written consent of the municipality. Neither party shall assign or transfer its interest in the contract without the written consent of the other party.

### **4. Warranty**

The Bidder warrants that all work will be of good quality and free from faults and defects, and in conformance with the specifications. All work not so conforming to these standards may be considered defective. The Bidder agrees to be responsible for the acts and omissions of all of its employees and all subcontractors, their agents and employees, and all other persons performing any of the work under a contract with the Bidder.

### **5. Bonds, Retainage and Payments**

A bid bond shall be submitted with appropriate bid forms in the amount of 5% of the total contract value. Also, payment and performance bonds will be required from the contractor who is awarded this contract. Retainage in the amount of 10% will be held from each progress payment and shall be released at the discretion of the Assistant City Engineer. Payments shall be made by the City to the Contractor 30 days after receipt of the request for payment and all supporting materials.

**BID PROPOSAL FORM**

Due: Thursday, February 3, 2022

To: City of Auburn  
Derek Boulanger, Facilities Manager/Purchasing Agent  
60 Court Street  
Auburn, ME 04210

The undersigned individual/firm/business guarantees this price for Thirty days (30) from the bid due date. The undersigned submits this proposal without collusion with any other person, individual, or firm or agency. The undersigned ensures the authority to act on behalf of the corporation, partnership, or individual they represent; and has read and agreed to all of the terms, requests, or conditions written herein by the City of Auburn, Maine. By signing this bid form, the firm listed below hereby affirms that its bid meets the minimum specifications and standards as listed above.

Signature \_\_\_\_\_ Name (print) \_\_\_\_\_

Title \_\_\_\_\_ Company \_\_\_\_\_

Address \_\_\_\_\_

Telephone No. \_\_\_\_\_ Fax No. \_\_\_\_\_

Email Address: \_\_\_\_\_

STATE OF MAINE  
\_\_\_\_\_, SS.

Date: \_\_\_\_\_

Personally appeared and acknowledged the foregoing instrument to be his/her free act and deed in his/her capacity and the free act and deed of said company.

Notary Public \_\_\_\_\_

Print Name \_\_\_\_\_

Commission Expires \_\_\_\_\_

**BID FORM**

ITEM	DESCRIPTION	UNIT	QNTY	UNIT COST	TOTAL COST
BASE BID	Fish Hatchery Road Culvert Replacement	LS	1		
203.202	Removal of Unsuitable Soil	CY	80		
203.25	Granular Borrow	CY	80		
TOTAL (Basis of Award)					

Written total amount is: \_\_\_\_\_

Company Name: \_\_\_\_\_

Signed by: \_\_\_\_\_

Title: \_\_\_\_\_

Print Name: \_\_\_\_\_

Address: \_\_\_\_\_

Tel. # \_\_\_\_\_

Date: \_\_\_\_\_

Addendum Acknowledged:

# \_\_\_\_\_ Date \_\_\_\_\_

# \_\_\_\_\_ Date \_\_\_\_\_

## **SCOPE OF WORK**

The following scope of work is being proposed for the Fish Hatchery Road Culvert Replacement Project for the City of Auburn. The scope of work is a brief overview of the expected extent of work included in this contract.

### **Fish Hatchery Road Culvert Replacement**

- Provide and maintain work zone traffic control including signage.
- Provide and maintain temporary erosion and sedimentation controls.
- Provide and maintain temporary stream diversion and water pollution control system.
- Remove and dispose of existing 47-foot long, 48-inch diameter corrugated metal pipe culvert.
- Remove and dispose of unsuitable soils beneath existing culvert and proposed culvert footings.
- Furnish and install proposed 5' high (interior) by 9' wide (interior) reinforced concrete box culvert with wing walls as detailed on the plans. Place streambed material and large boulders within the culvert to create a stabilized streambank matching existing upstream conditions and materials.
- Backfill and provide base gravels and bituminous pavement courses as detailed on the plans.
- Regrade and stabilize streambed and banks as shown in the plans.
- Provide new guardrail as shown in the plans.
- Loam, seed, and mulch as required to restore all disturbed areas.
- Remove all temporary erosion control and traffic control measures.



## **SPECIAL PROVISIONS**

The following Supplemental Specifications and Special Provisions shall amend the "Maine, Department of Transportation Standard Specifications, **March 2020 Edition**" including any and all applicable revisions and special provisions. In case of conflicts, these Supplemental Specifications (1) and Special Provisions (2) shall take precedence and shall govern.

(1) Supplemental Specifications - modifications, additions, and deletions to the existing Standard Specifications.

(2) Special Provisions - specifications in the contract which are for additional items not covered in the Standard Specifications

### F-1 Work Hours

No work shall proceed on this project prior to the hour of 7:00 AM or after 7:00 PM (prevailing time) on any working day unless the City has granted prior approval. The definition of work for this specification shall include starting or moving of equipment, machinery, or materials. Any day worked for four hours or more will be considered a full working day.

### F-2 Notification of Residents

Residents shall be notified sufficiently in advance of any construction affecting access to driveway and sidewalk to allow adequate time for their removal of personal vehicles. Provide temporary accommodations for tenant of 114 Fish Hatchery Road during construction when excavation on Fish Hatchery Road will remain open for more than 24 hours. The Contractor shall assume providing temporary accommodations for the tenant at the Residence Inn by Marriot Auburn located at 670 Turner Street, Auburn, Maine 04210, whenever the road is not passible for more than 24 hours during construction. Fish Hatchery Road will be closed to the public during construction.

### F-3 Traffic Signs

All existing traffic signs, which are to be removed during construction, shall be dismounted and the posts removed and shall be stacked in an area approved by the Engineer. Contractor shall protect the signs from damage while in their possession and shall repair, at no additional cost to the City, any damages caused by their operations.

Stop signs are to be maintained at their original locations at all times during the work.

Prior to the start of any construction work, the Contractor shall prepare an acceptable inventory of all signs within the project limits which shall be used as a guide for replacement should signs be removed for construction purposes.

This work shall be considered as subsidiary obligation of the contract for which no special payment will be made.

#### F-4 Protection of Trees

The Contractor shall be responsible for the preservation of all trees on the project, which are not specified to be removed. Any trees damaged by the Contractor's operations shall be repaired as approved by tree dressing or paint in accordance with the appropriate provisions of Section 201 of Standard Specifications.

#### F-5 Maintenance and Protection of Traffic

The Contractor shall be responsible for the maintenance and protection of all vehicular and pedestrian traffic at all times during construction and shall erect suitable warning signs, flashing barriers or temporary lighting devices of sufficient size and number to afford protection to the traveling public in accordance with the most recent edition of "Manual on Uniform Traffic Control Devices for Streets Highways" published by the Department of Transportation of the Federal Highway Administration.

The Contractor shall be held responsible for all damage to the work due to any failure of the warning devices to properly protect the work from the traffic, pedestrians, or other causes. Traffic control shall be in accordance with the City of Auburn's Traffic Detail Policy effective April 1, 2006.

#### F-5A Materials

Materials shall meet the requirements specified for the various subsections of the Specifications. Equals shall be approved only prior to the bid opening.

#### F-6 Survey

The City of Auburn, Department of Public Works will establish, at their discretion, a benchmark location and one construction baseline. The Contractor shall be responsible for maintaining these controls during construction and providing all additional survey required, which shall be done by a competent Engineer or Surveyor.

#### F-7 Waste Areas

The disposal of waste and surplus material shall be as outlined in Section 203.06 - Waste Areas of the Specifications.

#### F-8 Occupational Safety and Health

The Contractor is hereby advised that all work to be furnished to the City shall be performed with equipment, methods, and use of personnel in conformance with the pertinent Occupational Safety

and Health Act requirements of the State of Maine and with the regulations for construction as specified by the Department of Labor and Occupational Safety and Health Administration (OSHA) as currently amended.

#### F-9 Pre-Construction Conference

A conference will be held at 60 Court Street, Auburn, Maine within ten (10) days after the awarding of the contract. At this time, the contractor will be required to submit a graphically illustrated schedule and a plan showing project activities. City officials and representatives of the various utility companies involved in the project will be present at this meeting.

It is the purpose of this meeting to inform the various agencies of the proposed work schedule, and to give them the opportunity of discussing any difficulties and of offering suggestions to the Contractor concerning his proposed schedule in order that full cooperation may be reached.

#### F-10 Schedule of Operations

The above-mentioned schedule of operations in Section F-9 shall consist of a bar chart detailing the activities included in the contract. Although a bar chart is acceptable as a minimum, more complex and detailed schedules (i.e., flow charts, critical paths, etc.) are encouraged and will be accepted by the City. Updates will be required.

#### F-11 Questions Regarding Plans and Documents

Questions from prospective bidders relative to this Contract shall be submitted no later than five days before bid opening and directed to:

Megan McDevitt, P.E.  
Project Manager  
Woodard & Curran  
mmcdevitt@woodardcurran.com

#### F-12 Record Drawings

The Contractor shall keep daily records of all changes in the work and records of underground infrastructure. Upon completion of the project, the Contractor shall deliver to the Engineer copies of daily records. Final payment will not be made until Engineering receives copies of daily records.

#### F-13 Waste Material

All waste material shall be removed from the site and the area left clean upon completion of work. Any equipment or structures damaged by the Contractor shall be repaired or replaced at no additional cost to the City.

#### F-14 Quality Assurance

The Contractor shall be responsible at all times for maintaining top quality assurance during performance of his work.

#### F-15 Bids

No bids shall be withdrawn within a period of sixty -(60)- days after the opening of the bids.

#### F-16 Aggregate Base Courses

All gravel products shall meet MDOT specifications and shall also be produced from quarry rock.

#### F- 17 Change Orders

Changes in the scope of work will be approved by the City Engineer or Assistant City Engineer and adjusted by Change Orders.

#### F-18 Permit Approvals

Contractor shall comply with all requirements of the Department of the Army Maine General Permit NAE-2021-02980, attached in the Appendix A.

#### F-19 Geotechnical Considerations

Contractor shall comply with all requirements and recommendations of the of the Explorations and Geotechnical Engineering Services Report, prepared by S.W. Cole Engineering, Inc., dated June 25, 2021, attached in the Appendix B.

**SUPPLEMENTAL SPECIFICATIONS  
SECTION 100 - GENERAL PROVISIONS**

1. SCOPE

The work covered by this section includes furnishing all labor, equipment, materials, incidentals, and the performing of all operations in connection with the work encompassed by these contract documents. All work shall be subject to the terms and conditions of the contract documents.

2. STANDARD SPECIFICATIONS

The City of Auburn, Maine has adopted for this project, the "State of Maine, Department of Transportation, Standard Specifications, **March 2020 Edition**", and the Standard Details (March 2020 and the following Supplemental Specifications including all current additions or modifications thereof. In the case of conflict with the following Supplemental Specifications, addenda shall take precedence and shall govern.

Wherever in the Specifications and in this Contract the term "Department", "the Department of Transportation", "MDOT", or any reference to the "State of Maine, Department of Transportation" or its "Engineers" is mentioned, the intent and meaning shall be interpreted to refer to the CITY OF AUBURN, MAINE, or their authorized representative.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 108 – PAYMENT**

The provisions of Section 108 of the Standard Specifications shall apply with the following additions:

108.1 Measurement of Quantities for Payment

A. Work under this Contract will be paid for as defined within this section and in accordance with the Payment Terms outlined in the Agreement. References in Division 100 through Division 700 of the State of Maine Department of Transportation Standard Specifications to “method of measurement” and “basis of payment” should be disregarded, unless noted otherwise.

B. Scope: This section describes the measurement and payment for the Work to be completed under each item in the Bid. Work as defined in the State of Maine Department of Transportation Standard Specifications, is all labor, services, personnel, materials, equipment, tools, supplies, and incidentals required or indicated by the Contract in Conformity with the same. All Work not specifically identified in the description of bid items shall be considered a subsidiary obligation of Contractor and all costs in connection therewith shall be included in the prices bid.

C. Payment Procedures are described in Article 5 of the Agreement.

108.2 Progress Payments

A. Schedule of Values: Within ten (10) working days of the date of the Contract Award, submit a detailed schedule of value for all items listed within the Bid Form. The detail shall be sufficient for City to estimate the amount of work performed to make Progress Payments, consistent with Section 108 of the Maine Department of Transportation Standard Specifications.

108.10 Description of Bid Items

A. Item: Base Bid – Fish Hatchery Road Culvert Replacement

1. Payment: Lump sum price as stated in the bid form.
2. Measurement: Determine percentage of work completed to date relative to total work as shown on Contract Plans.
3. Includes all costs, materials, and labor associated with the replacement of the existing culvert located beneath Fish Hatchery Road, including but not limited to mobilization and demobilization; work zone traffic control; site preparation; temporary erosion and sedimentation control measures; brook flow control and bypass pumping; sawcut and removal of bituminous pavement; excavation; demolition of existing culvert; providing precast concrete box culvert wingwalls; construction of stabilized streambed within culvert; backfill & compaction; stream and bank restoration; furnishing and installation of

guardrails; provision and compaction of aggregate base and subbase gravels; placement and compaction of bituminous pavement; and installation of loam and seed as required to restore disturbed areas as shown and described within the Contract Documents.

B. Item 203.202 Unsuitable Material Excavation Below Grade

1. Refer to Supplemental Section 203

C. Item 203.25 Granular Borrow

1. Refer to Supplemental Section 203

**SUPPLEMENTAL SPECIFICATIONS  
SECTION 203 – EXCAVATION AND EMBANKMENT**

The provisions of Section 203 of the Standard Specifications shall apply with the following additions and modifications:

203.19 Basis of Payment

Unless noted otherwise, payment for work performed under this section shall be included in the Base Bid Item.

Payment for excavation and disposal of unsuitable materials located below the bottom of the subbase of the proposed culvert (elevation 261.85'), as described in the geotechnical report in Appendix B and approved the City, shall be paid for at the contract unit price per cubic yard. If no excavation is required or approved by City, no payment will be made for this pay item.

Payment for granular borrow placed below subbase of the proposed culvert (elevation 261.85') as approved by the City shall be paid for at the contract unit price per cubic yard. Payment shall be full compensation for obtaining borrow, hauling, placing, grading, and compacting all material necessary to meet the required grades.

Pay Item		Pay Unit
203.202	Removal of Unsuitable Soil	Cubic Yard
203.25	Granular Borrow	Cubic Yard



**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 304 – AGGREGATE BASE AND SUBBASE COURSE**

The provisions of Section 304 of the Standard Specifications shall apply with the following additions and modifications.

304.01 Description

Aggregate Base Course Type A material **shall** be a crushed product sourced from a quarry. This surface shall be graded with minimum 2.0% slopes in a normal crowned cross section unless otherwise directed.

**Dust Control.** The Contractor shall employ dust control measures to minimize the creation of airborne dust during the construction process. As a minimum, standard dust control techniques shall be employed where heavy equipment and the public will be traveling. These may include techniques such as watering-down the site or spreading hygroscopic salts.

304.07 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 403 - HOT MIX ASPHALT PAVEMENT**

The provisions of Section 403 of the Standard Specifications shall apply with the following additions and modifications.

403.01 Description

This work shall include machine placing HMA as indicated in the Scope of Work. Materials and their use shall conform to the requirements of all related and applicable sections of this contract. HMA shall be placed and compacted with a minimum of two lifts where the total thickness of pavement to be placed exceeds 2".

403.05 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 534 – PRECAST STRUCTURAL CONCRETE**

The provisions of Section 534 of the Standard Specifications shall apply with the following additions and modifications.

534.01 Description

Provide a precast concrete box structure with interior dimensions of 5-foot high (interior), 9-foot wide (interior) and approximately 52-foot in length and wingwalls as shown in the plans.

Segmental or clamshell box culverts sections are acceptable.

534.22 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 606 – GUARDRAIL**

The provisions of Section 606 of the Standard Specifications shall apply with the following additions and modifications.

606.01 Description

Guardrail work shall include the installation of guardrail located in the plans, including guardrail terminal buffer wings.

606.09 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 610 – STONEFILL, RIPRAP, STONE BLANKET, AND STONE DITCH PROTECTION**

The provisions of Section 610 of the Standard Specifications shall apply with the following additions and modifications.

610.01 Description

This work shall consist of constructing a protective covering of stone within the limits of existing riprap slope stabilization and in disturbed areas with slopes greater than 2:1 as shown on the plans. Riprap shall be angular particles between 3" and 12" with 50% being greater than 6". A non-woven geotextile shall be placed under riprap.

610.06 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS  
SECTION 615 - LOAM**

615.01 Description

This work shall consist of loaming and seeding areas adjacent to existing lawn areas or any disturbed areas not specified with a different surface finish. Loam and its applications shall conform to the requirements of Section 615 of the Standard Specifications. Loam shall have a finished depth of four (4") inches and shall be screened through a one (1") inch square mesh screen. **Loam areas shall be rolled (compacted) prior to placement of seed and mulch.**

Seeding shall be Method Number 1 and shall conform to the requirements of Section 618 of the Standard Specifications. The Contractor shall be required to continually seed area of loam and seed until a satisfactory growth of grass is established. If so required, all areas to be loamed and seeded shall be mulched with an approved wood cellulose fiber compatible with recommended hydro-seeding practices. This mulch shall be applied simultaneously with the seed and shall be of sufficient quantity to protect the seed and hold moisture in to insure a satisfactory growth of grass.

The specifications for the wood cellulose fiber proposed to be used shall be presented to the Engineer for acceptance at least ten (10) days (working days) prior to the application thereof.

The Contractor shall also be responsible for mowing any and all areas loamed and seeded. The mowings will be required if deemed necessary to insure and maintain a satisfactory growth of grass and shall not exceed two mowings.

615.02 Materials

After a sample of loam has been submitted to the Engineer, they may require that a sample be submitted to a testing agency to determine its organic content, characteristics, and potential use as loam suited to the site.

615.06 - Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 620 – GEOTEXTILES**

The provisions of Section 620 of the Standard Specifications shall apply with the following additions and modifications.

620.02 Materials

Nonwoven geotextile fabric to be used on this project for slope stabilization under riprap shall be Mirafi 160N or approved equal. The geotextile fabric shall be placed on the graded and compacted embankments as shown in the plans. Riprap shall be placed, and care shall be taken as to not disturb the fabric layer.

Nonwoven geotextile fabric to be used on this project between the compacted granular borrow and ¾" crushed stone shall be Mirafi 180N or approved equal. The geotextile fabric shall be placed on the graded compact granular borrow as shown in the plans. The ¾" crushed stone shall be placed, and care shall be taken as to not disturb the fabric layer.

620.10 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 652 – MAINTENANCE OF TRAFFIC**

The provisions of Section 652 of the Standard Specifications shall apply with the following additions and modifications.

652.3.6 Traffic Control

Access must be maintained to all local residences at all times, or other accommodations shall be made. The Contractor shall maintain signage for the duration of the project and remove when complete.

The Contractor must submit a written Traffic Control Plan, identifying proposed construction signage, barrels, cones, barriers, and all other items necessary to maintain traffic in accordance with the specifications and the MUTCD, prior to the Preconstruction Meeting to the City Engineer for approval.

652.8 Basis of Payment

Payment for this work shall be included in the Base Bid Item.



**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 656 – TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL**

The provisions of Section 656 of the Standard Specifications shall apply with the following additions and modifications.

656.01 Description

Contractor shall comply with all requirements of the Department of the Army Maine General Permit NAE-2021-02980, attached in the Appendix A.

656.5.2 If No Pay Item

Payment for this work shall be included in the Base Bid Item.

**SUPPLEMENTAL SPECIFICATIONS**  
**SECTION 659 – MOBILIZATION**

The provisions of Section 659 of the Standard Specifications shall apply with the following additions and modifications.

659.01 Description

This item shall consist of preparatory work and operations including, but not limited to those necessary to the movement of personnel, equipment, supplies and incidentals to the project site; and for all other work and operations which must be performed, or costs incurred prior to beginning work on the various items on the project site.

659.02 Basis of Payment

Payment for this work shall be included in the Base Bid Item.

**BID BOND**

KNOW ALL BY THESE PRESENTS, that we, the undersigned, \_\_\_\_\_ as Principal, and \_\_\_\_\_ as Surety, are hereby held and firmly bound unto \_\_\_\_\_ as OWNER in the penal sum of \_\_\_\_\_ for payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 2021.

The Condition of the above obligation is such that whereas the principal has submitted to \_\_\_\_\_ a certain BID,

attached hereto and hereby made a part hereof to enter into a contract in writing, for the \_\_\_\_\_

NOW, THEREFORE,

- (a) If said BID shall be rejected, or
- (b) If said BID shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said BID) and shall furnish a BOND for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for all and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates, and agrees that the obligations of said Surety and its BOND shall be in no way impaired or affected by any extension of time within which the OWNER may accept such BID; and said Surety does hereby waive notice of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

\_\_\_\_\_  
Principal (L.S)

Surety

By: \_\_\_\_\_

IMPORTANT - Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

## SAMPLE AGREEMENT

THIS AGREEMENT is made this ### day of Month Year, by and between the CITY OF AUBURN, a municipal corporation existing under the laws of the State of Maine and located in the County of Androscoggin, State of Maine (hereinafter "CITY"), Company Name, Address, EIN, (hereinafter "CONTRACTOR"),

### WITNESSETH:

In consideration of the mutual covenants and conditions contained herein, the CITY and the CONTRACTOR agree as follows:

### SPECIFICATIONS:

1. The CONTRACTOR shall furnish all of the material and perform all of the work shown on the drawings and described in the specifications entitled: Bid # XXXXX Bid Title which are attached hereto and made a part hereof, and the CONTRACTOR covenants that they shall do everything required by this Agreement, the Special Provisions of the Agreement, the Invitation to Bid and the Specifications in return for payment as provided herein.

### COMPLETION DATE:

2. The work to be performed under this Agreement shall be commenced by Month day, year and fully completed on or before Month day, year.

### CONTRACT PRICE:

3. The CITY shall pay the CONTRACTOR for the performance of the Agreement the sum of \$XXX

### PERFORMANCE BOND:

4. If required by the City, the CONTRACTOR shall furnish to the CITY at the time of the execution of this Agreement a performance bond and a labor and material payment bond each in the amount of \$ Dollar amount or N/A (whichever applies) executed by a surety company satisfactory to the CITY, guaranteeing the performance and payment by the CONTRACTOR.  Yes, Required (Initials: \_\_)  No, Waived (Initials \_\_)

### GUARANTEE:

5. The CONTRACTOR shall guarantee their work against any defects in workmanship and materials for a period of one year from the date of the CITY's written acceptance of the project.

### PERMITS AND LICENSES:

6. Permits and licenses necessary for the prosecution of the work shall be secured and paid by the CONTRACTOR.

CITY'S RIGHT TO TERMINATE CONTRACT:

7. If the CONTRACTOR should be adjudged a bankrupt, or if it should make a general assignment for the benefit of creditors, or if a receiver should be appointed on account of its insolvency, or if it should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply enough properly skilled workers or proper materials, or if it should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, and ordinances, or otherwise be guilty of a substantial violation of any provision of the Agreement, then the CITY when sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the CONTRACTOR, and its surety, seven (7) days written notice, terminate the employment of the CONTRACTOR and take possession of the premises and of all materials, tools and appliances thereon and finish the work by whatever method it may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the Agreement price shall exceed the expense of the finishing the work, including compensation for additional architectural, managerial and administrative services, such excess shall be paid to the CONTRACTOR. If such expense shall exceed such unpaid balance, the CONTRACTOR shall pay the difference to the CITY.

CONTRACTOR'S LIABILITY INSURANCE:

8. The CONTRACTOR shall not commence work under this Agreement until it has obtained all insurance required under this paragraph and such insurance has been approved by the CITY, nor shall the CONTRACTOR allow any subcontractor to commence work on their subcontract until all similar insurance required of subcontractor has been so obtained and approved. It is a requirement that the CITY be named as an Additional Insured on the General Liability and Automobile Liability policies.

Commercial General Liability to include products and completed operations, and blanket contractual. The limits of liability shall be as follows:

Bodily Injury and Property Damage	\$1,000,000
Personal Injury and Advertising Injury	\$1,000,000
Per Project Aggregate	\$1,000,000
General Aggregate	\$2,000,000
Products and Completed Operations Aggregate	\$2,000,000
Medical Payments	\$10,000

(b) Business Automobile Liability

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractors to maintain business automobile liability insurance covering all owned non-owned, leased, rented or hired automobiles (symbol 1). The limits of liability shall be as follows:

Bodily Injury and Property Damage	\$1,000,000
-----------------------------------	-------------

Automobile physical damage coverage shall be at the option of the CONTRACTOR, all sub-contractors and lower tier contractors. The CITY shall not be liable for physical loss or damage to any owned, non-owned, leased, rented, or hired automobile.

#### Workers' Compensation Insurance

The CONTRACTOR shall maintain and cause all sub-contractors and lower tier contractors to maintain Workers' Compensation and Employers Liability in accordance with the laws and regulations of the State of Maine. The limits of liability provided shall be as follows:

Coverage A:	Statutory
Coverage B:	\$100,000/\$500,000/\$100,000

#### Professional Liability

If the CONTRACTOR is an Architect, Engineer or Surveyor, they shall maintain a policy of insurance to pay on their behalf whatever amounts that may become legally required to pay on account of an error, omission or negligent act.

Limits of Liability shall be as follows:

\$1,000,000 per occurrence and in the aggregate site specific.

It is a requirement that this policy be maintained for a period of three (3) years following completion of the project.

Certificates of Insurance of the types and in the amounts required shall be delivered to the CITY prior to the commencement of any work by the CONTRACTOR, subcontractor or lower tier contractor or any person or entity working at the direction or under control of the CONTRACTOR. The CONTRACTOR shall assume the obligation and responsibility to confirm insurance coverage for all sub-contractors or lower tier contractors who will participate in the project.

The Certificate of Insurance and the policies of insurance shall include a sixty (60) day notice to the CITY of cancellation, non-renewal or material change in coverage or form.

The CONTRACTOR and their surety shall indemnify and save harmless the CITY, his officers and employees from all suits, actions or claims of any character brought because of any injuries or damage received or sustained by any person, persons or property on account of the operations of the

said CONTRACTOR; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in construction of the work; or because of any act or omission, neglect, or misconduct of said CONTRACTOR; or because of any claims or amounts recovered from any infringements or patent trademark, or copyright; or from any claims or amounts arising or recovered under the "Workmen's Compensation Act" or of any other law, ordinance, order or decree; and so much of the money due to the said CONTRACTOR under and by virtue of his/her contract as shall be considered necessary by the CITY for such purpose, may be retained; or in case no money is due, his surety may be held until such suit or suits, action or actions, claim or claims, for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the CITY.

#### Waiver of Subrogation

Payment of any claim or suit including any expenses incurred in connection therewith by the CITY, or any insurance company on behalf of the CITY shall not constitute a waiver of subrogation against the CONTRACTOR, sub-contractors, or any lower tier contractor in the event that such claim or suit was caused by or contributed to as a result of the negligent acts of the CONTRACTOR, any sub-contractors or lower tier contractors.

#### Construction Agreement

The CONTRACTOR shall and does hereby agree to indemnify, save harmless and defend the CITY from the payment of any sum or sums of money to any person whomsoever on account of claims or suits growing out of injuries to persons, including death, or damages to property, caused by the CONTRACTOR, its employees, agents or sub-contractors or in any way attributable to the performance and execution of the work herein contracted for, including (but without limiting the generality of the foregoing), all claims for service, labor performed, materials furnished, provisions and suppliers, injuries to persons or damage to property, liens, garnishments, attachments, claims, suits, costs, attorney's fees, costs of investigation and defense. It is the intention of this paragraph to hold the CONTRACTOR responsible for the payment of any and all claims, suits, or liens, of any nature character in any way attributable to or asserted against the CITY, or the CITY and the CONTRACTOR, which the CITY may be required to pay. In the event the liability of the CONTRACTOR shall arise by reason of the sole negligence of the CITY and/or the sole negligence of the CITY's agents, servants, or employees, then and only then, the CONTRACTOR shall not be liable under the provisions of this paragraph.

#### DAMAGES:

9. The CONTRACTOR shall defend, indemnify, and save harmless the CITY and all persons acting for or on behalf of it against all claims for injuries (including death), loss or damage, arising out of the performance out this contract.

#### LIENS:



10. Neither the final payment nor any part of the retained percentage shall become due until the CONTRACTOR, if required, shall deliver to the CITY a complete release of all liens arising out of the Agreement, or receipts in full in lieu thereof and, if required in either case, an affidavit that so far as it has knowledge or information the releases and receipts include all the labor and material for which a lien could be filed; but the CONTRACTOR may, if any SUB-CONTRACTOR refuses to furnish a release or receipt in full, furnish a bond satisfactory to the CITY to indemnify it against any lien. If any lien remains unsatisfied after all payment are made, the CONTRACTOR shall refund to the CITY all moneys that the latter may be compelled to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

#### ASSIGNMENT:

11. Neither party to the Agreement shall assign the Agreement or sublet it as a whole without the written consent of the other, nor shall the CONTRACTOR assign any moneys due or to become due to it hereunder, without the previous written consent of the CITY.

#### SUBCONTRACTS:

12. The CONTRACTOR shall not sublet any part of this Agreement without the written permission of the CITY. The CONTRACTOR agrees that it is as fully responsible to the CITY for the acts and omissions of its SUB-CONTRACTORS and of persons either directly or indirectly employed by them, as it is for the acts and omissions of persons directly employed by it.

#### USE OF PREMISES:

13. The CONTRACTOR shall confine its apparatus, the storage of materials and operations of its workers to limits indicated by law, ordinance and permits and shall not otherwise unreasonably encumber the premises with its materials. If any part of the project is completed and ready for use, the CITY may, by written and mutual consent, without prejudice to any of its rights or the rights of the CONTRACTOR, enter in and make use of such completed parts of the project. Such use or occupancy shall in no case be construed as an acceptance of any work or materials.

#### CLEANING UP:

14. The CONTRACTOR shall at all times keep the premises free from accumulation of waste materials or rubbish caused by its employees or work, and at the completion of the work it shall remove all its rubbish from and about the project, and all its tools, scaffolding and surplus materials and shall leave its work "broom-clean" or its equivalent, unless more exactly specified. In case of dispute, the CITY may remove the rubbish and charge the cost to the CONTRACTOR.

PAYMENTS:

15. Unless otherwise agreed to, the CITY shall make payments on account of the Agreement as follows:

Within 30 days, as invoices are submitted for work completed to the satisfaction of the CITY.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

BY: \_\_\_\_\_  
Witness

BY: \_\_\_\_\_  
Finance Director

BY: \_\_\_\_\_  
Witness

BY: \_\_\_\_\_  
Contractor

**APPENDIX A: DEPARTMENT OF THE ARMY MAINE GENERAL PERMIT**



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
NEW ENGLAND DISTRICT, CORPS OF ENGINEERS  
696 VIRGINIA ROAD  
CONCORD, MASSACHUSETTS 01742-2751

MAINE GENERAL PERMITS (GPs)  
AUTHORIZATION LETTER AND SCREENING SUMMARY

ANTHONY BEAULIEU  
CITY OF AUBURN  
AUBURN HALL, 60 COURT STREET  
AUBURN, ME 04210

CORPS PERMIT # NAE- 2021-02980  
CORPS GP(s) # 22  
STATE ID# PBR

DESCRIPTION OF WORK:

Place permanent and temporary fill below the ordinary high mark of an unnamed tributary to Auburn Lake and in adjacent freshwater wetland off Fish Hatchery Road (44.166105, -70.237274) in Auburn, ME in order to replace an existing stream crossing. The project will result approximately 147sf of temporary and 732sf of permanent streambed, and 507sf of temporary and 44sf of permanent wetland impact. This work is described on the attached plans entitled "City of Auburn – Fish Hatchery Road Culvert Replacement" on 8 sheets dated "November 2021 and 12/16/21", respectively, and "Fish Hatchery Road Culvert Replacement Resource Area Impacts" dated "12/16/2021". See Conditions

LAT/LONG COORDINATES: 44.166105° N -70.237274° W USGS QUAD: LAKE AUBURN EAST, MAINE

I. CORPS DETERMINATION:

Based on our review of the information you provided, we have determined that your project will have only minimal individual and cumulative impacts on waters and wetlands of the United States. Your work is therefore authorized by the U.S. Army Corps of Engineers under the Federal Permit, the Maine General Permit which can be found at: <https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/>. Accordingly, we do not plan to take any further action on this project.

You must perform the activity authorized herein in compliance with all the terms and conditions of the GP(s) [including any attached Additional Conditions and any conditions placed on the State 401 Water Quality Certification including any required mitigation]. Please review the GP(s) carefully, including the GP(s) conditions beginning on page 5, to familiarize yourself with its contents. You are responsible for complying with all of the GP(s) requirements; therefore you should be certain that whoever does the work fully understands all of the conditions. You may wish to discuss the conditions of this authorization with your contractor to ensure the contractor can accomplish the work in a manner that conforms to all requirements.

If you change the plans or construction methods for work within our jurisdiction, please contact us immediately to discuss modification of this authorization. This office must approve any changes before you undertake them.

Condition 45 of the GP(s) (page 19) provides one year for completion of work that has commenced or is under contract to commence prior to the expiration of the GP(s) on October 14, 2025. You will need to apply for reauthorization for any work within Corps jurisdiction that is not completed by October 14, 2026.

This authorization presumes the work shown on your plans noted above is in waters of the U.S. Should you desire to appeal our jurisdiction, please submit a request for an approved jurisdictional determination in writing to the undersigned.

No work may be started unless and until all other required local, State and Federal licenses and permits have been obtained. **This includes but is not limited to a Flood Hazard Development Permit issued by the town if necessary.**

II. STATE ACTIONS: PENDING [  ], ISSUED [  ], DENIED [  ] DATE \_\_\_\_\_

APPLICATION TYPE: PBR:  TIER 1:  TIER 2:  TIER 3:  INDIV  LURC:  DMR LEASE:  NA:

III. FEDERAL ACTIONS:

JOINT PROCESSING MEETING: November 18, 2021 LEVEL OF REVIEW: Self-Verification:  Pre-Construction Notification:

AUTHORITY (Based on a review of plans and/or State/Federal applications): SEC 10 , 404  10/404 , 103

EXCLUSIONS: The exclusionary criteria identified in the general permit do not apply to this project.

FEDERAL RESOURCE AGENCY OBJECTIONS: EPA NO, USF&WS NO, NMFS NO

If you have any questions on this matter, please contact my staff at 207-623-8367 at our Augusta, Maine Project Office. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey/>

Digitally signed by Heather S. Stukas  
Date: 2021.12.21 07:47:42 -05'00'

HEATHER S. STUKAS  
PROJECT MANAGER  
MAINE PROJECT OFFICE

Frank J Del  
Giudice

Digitally signed by Frank J  
Del Giudice  
Date: 2021.12.21 10:52:31  
-05'00'

FRANK J. DEL GIUDICE  
CHIEF, PERMITS & ENFORCEMENT BRANCH  
REGULATORY DIVISION



**US Army Corps  
of Engineers**<sup>®</sup>  
New England District

**PLEASE NOTE THE FOLLOWING  
GENERAL CONDITIONS FOR  
DEPARTMENT OF THE ARMY  
GENERAL PERMIT 22  
NO. NAE- 2021-02980**

**3. Other Permits.** Permittees shall obtain other Federal, State, or local authorizations as required by law. Permittees are responsible for applying for and obtaining all required State of Maine or local approvals including a Flood Hazard Development Permit issued by the town/city. Work that is not regulated by the State of Maine, but is subject to Corps jurisdiction, may still be eligible for authorization under these GPs.

**18. Aquatic Life Movements and Management of Water Flows.**

**18(a).** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. Unless otherwise stated, activities permanently impounding water in a stream require a PCN to ensure impacts to aquatic life species are avoided and minimized. All permanent and temporary crossings of waterbodies and wetlands shall be: (i) Suitably spanned, bridged, culverted, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species; and (ii) Properly aligned and constructed to prevent bank erosion or streambed scour both adjacent to and inside the crossing.

**18(b).** To avoid adverse impacts on aquatic organisms, the low flow channel/thalweg shall remain unobstructed during periods of low flow, except when it is necessary to perform the authorized work.

**18(d).** To the maximum extent practicable, the preconstruction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be constructed to withstand expected high flows. The activity shall not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g. stream restoration or relocation activities).

**22. Invasive and Other Unacceptable Species.**

**22(a).** The introduction or spread of invasive or other unacceptable plant or animal species on the project site or areas adjacent to the project site caused by the site work shall be avoided to the maximum extent practicable. For example, construction mats and equipment shall be thoroughly cleaned and free of vegetation and soil before and after use. The introduction or spread of invasive plant or animal species on the project site caused by the site work shall be controlled.

**22(b).** No cultivars, invasive or other unacceptable plant species may be used for any mitigation, bioengineering, vegetative bank stabilization or any other work authorized by these GPs. However, non-native species and cultivars may be used when it is appropriate and specified in a written verification, such as using *Secale cereale* (Annual Rye) to quickly stabilize a site. All PCNs shall justify the use of non-native species or cultivars.

**22(c).** For the purposes of these GPs, plant species that are considered invasive and unacceptable are provided in Appendix K "Invasive and Other Unacceptable Plant Species" of the most recent "New England District Compensatory Mitigation Guidance" and is found at: [www.nae.usace.army.mil/Missions/Regulatory/Mitigation](http://www.nae.usace.army.mil/Missions/Regulatory/Mitigation) The June 2009 "U.S. Army Corps of Engineers Invasive Species Policy" provides policy, goals and objectives and is located at [www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species](http://www.nae.usace.army.mil/Missions/Regulatory/Invasive-Species) If an Invasive Species Control/Management Plan has been prepared it should be included with any SV or PCN.

**23. Soil Erosion, Sediment, and Turbidity Controls.**

**23(a).** Adequate sedimentation and erosion control management measures, practices and devices, such as phased construction, installation of sediment control barriers (i.e. silt fence, vegetated filter strips, geotextile silt fences, erosion control mixes, hay bales or other devices) downhill of all exposed areas, retention of existing vegetated buffers, application of temporary mulching during construction, and permanent seeding and stabilization shall be installed and properly maintained to reduce erosion and retain sediment on-site during and after construction. They shall be capable of preventing erosion; of collecting sediment, suspended and floating materials; and of filtering fine sediment.

**23(b).** Temporary sediment control barriers shall be removed upon completion of work, but not until all disturbed areas are permanently stabilized. The sediment collected by these sediment barriers shall be removed and placed at an upland location and stabilized to prevent its later erosion into a waterway or wetland.

**23(c).** All exposed soil and other fills shall be permanently stabilized at the earliest practicable date.

**26. Temporary Fill.**

**26(a).** Temporary fills, including but not limited to construction mats and corduroy roads shall be entirely removed as soon as they are no longer needed to construct the authorized work. Temporary fill shall be placed in its original location or disposed of at an upland site and suitably contained to prevent its subsequent erosion into waters of the U.S.

**26(b).** All temporary fill and disturbed soils shall be stabilized to prevent its eroding into waters of the U.S. where it is not authorized. Work shall include phased or staged development to ensure only areas under active development are exposed and to allow for stabilization practices as soon as practicable. Temporary fill shall be placed in a manner that will prevent it from being eroded by expected high flows.

**26(c).** Unconfined temporary fill authorized for discharge into waters of the U.S. shall consist of material that minimizes impacts to water quality (e.g. washed stone, stone, etc.).

**26(d).** Appropriate measures shall be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Materials shall be placed in a location and manner that does not adversely impact surface or subsurface water flow into or out of the wetland. Temporary fill authorized for discharge into wetlands shall be placed on geotextile fabric or other appropriate material laid on the pre-construction wetland grade where practicable to minimize impacts and to facilitate restoration to the original grade. Construction mats are excluded from this requirement.

**26(e).** Construction debris and/or deteriorated materials shall not be placed or otherwise located in waters of the U.S.

**29. Stream Work and Crossings, and Wetland Crossings.**

**29(g).** Scour protection or armoring of the inlet and/or outlet of a crossing shall not disrupt normal flow patterns or substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area (see GC 18).

**29(h).** The permittee shall maintain the work authorized herein in good condition and in conformance with the terms and general conditions of this permit to facilitate aquatic life passage as stated in GC 18. Culverts that develop “hanging” inlets or outlets, result in bed washout, or a stream that doesn’t match the characteristics of the substrate in the natural stream channel such as mobility, slope, stability confinement will require maintenance or repair to comply with this GC (this does not apply to temporary stream crossings).

**33. Permit(s)/Authorization Letter On-Site.** The permittee shall ensure that a copy of the terms and conditions of these GPs and any accompanying authorization letter with attached plans are at the site of the work authorized by these GPs whenever work is being performed and that all construction personnel performing work which may affect waters of the U.S. are fully aware of the accompanying terms and conditions. The entire permit authorization shall be made a part of any and all contracts and subcontracts for work that affects areas of Corps jurisdiction at the site of the work authorized by these GPs. This shall be achieved by including the entire permit authorization in the specifications for work. The term “entire permit authorization” means all terms and conditions of the GPs, the GPs, and the authorization letter (including its drawings, plans, appendices and other attachments) and subsequent permit modifications as applicable. If the authorization letter is issued after the construction specifications, but before receipt of bids or quotes, the entire permit authorization shall be included as an addendum to the specifications. If the authorization letter is issued after receipt of bids or quotes, the entire permit authorization shall be included in the contract or subcontract. Although the permittee may assign various aspects of the work to different contractors or subcontractors, all contractors and subcontractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire GP authorization, and no contract or subcontract shall require or allow unauthorized work in areas of Corps jurisdiction.

**34. Inspections.** The permittee shall allow the Corps to make periodic inspections at any time deemed necessary in order to ensure that the work is eligible for authorization under these GPs, is being, or has been performed in accordance with the terms and conditions of these GPs. To facilitate these inspections, the permittee shall complete and return to the Corps the Work-Start Notification Form and the Compliance Certification Form when either is provided with an authorization letter. The Corps may also require post-construction engineering drawings and/or photographs for completed work or post-dredging survey drawings for any dredging work to verify compliance.

## **SPECIAL CONDITIONS**

- 1.** No additional filling of waters of the United States (wetlands or waterways) is authorized without written approval from the Corps.
- 2.** All construction activities at or below the ordinary high water mark (OHWM) shall only occur during periods of low flow and during the in-water construction window of July 15 to September 30 and in the dry. Work above the OHWM may occur outside the in-water work window.



**US Army Corps  
of Engineers**®  
New England District

**WORK-START NOTIFICATION FORM**  
(Minimum Notice: Two weeks before work begins)

\*\*\*\*\*

EMAIL TO: [heather.s.stukas@usace.army.mil](mailto:heather.s.stukas@usace.army.mil) or [cenae-r@usace.army.mil](mailto:cenae-r@usace.army.mil); or

MAIL TO: Heather Stukas  
Regulatory Division  
U.S. Army Corps of Engineers, New England District  
696 Virginia Road  
Concord, Massachusetts 01742-2751

\*\*\*\*\*

Corps of Engineers Permit No. NAE- 2021-02980 was issued to City of Auburn c/o Anthony Beaulieu. This work authorized the placement of permanent and temporary fill below the ordinary high mark of an unnamed tributary to Auburn Lake and in adjacent freshwater wetland off Fish Hatchery Road (44.166105, -70.237274) in Auburn, ME in order to replace an existing stream crossing. The project will result approximately 147sf of temporary and 732sf of permanent streambed, and 507sf of temporary and 44sf of permanent wetland impact.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

**PLEASE PRINT OR TYPE**

**Name of Person/Firm:** \_\_\_\_\_

**Business Address:** \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Phone & email:** ( ) \_\_\_\_\_ ( ) \_\_\_\_\_

**Proposed Work Dates:**     **Start:** \_\_\_\_\_     **Finish:** \_\_\_\_\_

**Permittee/Agent Signature:** \_\_\_\_\_     **Date:** \_\_\_\_\_

**Printed Name:** \_\_\_\_\_     **Title:** \_\_\_\_\_

**Date Permit Issued:** \_\_\_\_\_ **Date Permit Expires:** \_\_\_\_\_

\*\*\*\*\*

**FOR USE BY THE CORPS OF ENGINEERS**

**PM:** \_\_\_\_\_ Stukas     **Submittals Required:** \_\_\_\_\_

**Inspection Recommendation:** \_\_\_\_\_ random compliance inspections





**US Army Corps  
of Engineers**®  
New England District

(Minimum Notice: Permittee must sign and return notification  
within one month of the completion of work.)

**COMPLIANCE CERTIFICATION FORM**

**Permit Number:** NAE- 2021-02980

**Name of Permittee:** City of Auburn c/o Anthony Beaulieu

**Permit Issuance Date:** \_\_\_\_\_

Please sign this certification and return it to the following address upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not the mitigation monitoring, which requires separate submittals.

\*\*\*\*\*  
\* MAIL TO: U.S. Army Corps of Engineers, New England District \*  
\* Permits and Enforcement Branch C \*  
\* Regulatory Division \*  
\* 696 Virginia Road \*  
\* Concord, Massachusetts 01742-2751 \*  
\*\*\*\*\*

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

**I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.**

\_\_\_\_\_  
Signature of Permittee

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Date of Work Completion

( ) \_\_\_\_\_  
Telephone Number

( ) \_\_\_\_\_  
Telephone Number

**APPENDIX B: EXPLORATIONS AND GEOTECHNICAL ENGINEERING SERVICES REPORT**



## REPORT

21-0415 S

June 25, 2021

### Explorations and Geotechnical Engineering Services

Proposed Culvert Replacement  
Fish Hatchery Road  
Auburn, Maine

**Prepared For:**  
Woodard & Curran  
Attention: Megan McDevitt, P.E.  
41 Hutchins Drive  
Portland, Maine 04102

**Prepared By:**  
S. W. Cole Engineering, Inc.  
286 Portland Road  
Gray, Maine  
T: 207-657-2866

[www.swcole.com](http://www.swcole.com) | [info@swcole.com](mailto:info@swcole.com)

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21-0415 S

June 25, 2021

Woodard & Curran  
Attention: Megan McDevitt, P.E.  
41 Hutchins Drive  
Portland, Maine 04102

Subject: Explorations and Geotechnical Engineering Services  
Proposed Culvert Replacement  
Fish Hatchery Road  
Auburn, Maine

Dear Megan:

In accordance with our Proposal, dated March 26, 2021, we have performed subsurface explorations for the subject project. This report summarizes our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Appendix A.

## **1.0 INTRODUCTION**

### **1.1 Scope and Purpose**

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations and earthwork associated with the proposed construction. Our scope of services included two test boring explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

### **1.2 Site and Proposed Construction**

The site is located at an existing culvert crossing of Fish Hatchery Road over an unnamed stream in Auburn, Maine. Fish Hatchery Road is currently a gravel surfaced road with existing road surface grade at approximately elevation 270.5 feet (project datum) at the culvert crossing. Low-laying wet areas are present on either side of the road embankment. The existing culvert consists of a 24-inch corrugated metal pipe with

inverts of about 266 feet and stacked stone headwalls on each end. The culvert is reportedly under capacity and shows sign of failure, including visible corrosion and sinkholes around the inlet. Existing site features are shown on the “Exploration Location Plan” attached in Appendix B.

We understand two options are being considered for the replacement culvert:

- A new four-sided, closed bottom box culvert set at approximately elevation 264 feet, corresponding to approximately 2 feet below stream bed, or;
- A new three-sided, open bottom culvert bearing on independent strip footings at approximately elevation 262 feet.

For both options, we understand the proposed structure will need a clear width of between 8.4 and 10.8 feet. Additionally, we understand Fish Hatchery Road is to remain gravel surfaced.

## **2.0 EXPLORATION AND TESTING**

### **2.1 Explorations**

Two test borings (B-101 and B-102) were made at the site on April 19, 2021 by S. W. Cole Explorations, LLC. The exploration locations were selected and established in the field by S. W. Cole Engineering, Inc. (S.W.COLE) using measurements from existing site features. The approximate exploration locations are shown on the “Exploration Location Plan” attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the “Exploration Location Plan”.

### **2.2 Testing**

The test borings were drilled using cased wash-boring techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) methods. SPT blow counts are shown on the logs.

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Laboratory testing included one grain size analysis, one organic content test, and two moisture content tests. Organic and moisture content test results are noted on the boring logs. The results of the grain size analysis are attached in Appendix D.

### **3.0 SUBSURFACE CONDITIONS**

#### **3.1 Soil and Bedrock**

The test borings encountered a soils profile generally consisting of fill, overlying wetland deposits, overlying outwash sands. The principal soils encountered at the explorations are summarized below; refer to the attached logs for more detailed subsurface information.

Fill: The borings encountered fill, associated with the existing roadway embankment, consisting of medium dense brown silty sand with varying portions of gravel and asphalt debris. The fill extended to depths about 2.5 to 4 feet below the ground surface (bgs) at the borings.

Wetland Deposits: Underlying the fill, the borings encountered wetland deposits consisting of loose dark brown and gray brown silty sand with roots, wood, organics, and layers of peat. The wetland deposits extended to depths of about 8 to 9.5 feet bgs at the borings.

Outwash Sands: Underlying the wetland deposits, the borings encountered outwash sands, consisting of loose to medium dense, brown and gray-brown sand, with trace to some silt and trace gravel. The borings were terminated in the outwash sands at depths of 17 and 30 feet bgs.

#### **3.2 Groundwater**

The soils encountered at the test borings were moist from the ground surface. Saturated soils were encountered at a depth of about 2 feet below ground surface. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, changes in site use, and the water level of the stream and surrounding low-laying wet areas.

## **4.0 EVALUATION AND RECOMMENDATIONS**

### **4.1 General Findings**

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations include:

- The test borings encountered peat and organics extending several feet deeper than proposed culvert invert elevation. The peat and organics, as well as any existing structures and fill, are unsuitable for support of the proposed structure and must be removed and replaced with compacted Granular Borrow for Underwater Backfill.
- Following removal and replacement of the unsuitable soils, support of the proposed culvert on a mat (box culvert) foundation or spread footings (3-sided culvert) foundations appears appropriate. We recommend foundations be underlain with a 12-inch thick layer of compacted Crushed Stone wrapped in geotextile fabric.
- The proposed excavation must be carefully planned. Stream diversion and bypass pumping will be needed. Braced sheetpiling will likely be needed for groundwater cutoff and excavation stability.
- Culvert subgrades are anticipated to consist of wet sands. Excavation should be completed with a smooth-edged bucket to reduce soil disturbance.

### **4.2 Site and Subgrade Preparation**

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. Surficial organics, roots and topsoil should be completely removed from areas of proposed fill and construction. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

As discussed, the borings encountered peat and organics extending to depths of about 8 to 10 feet below ground surface. Existing fill, structures, foundations, peat, and organics are unsuitable for foundation support and should be completely removed from beneath the



proposed culvert. The contractor should be aware that peat and organics appear interlayered within native sands and test pits into the subgrade soils may be needed during construction to observe removal of the organics. Overexcavations should extend 1-foot laterally outward from outer culvert edges for every 1-foot of vertical depth (1H:1V bearing splay). The overexcavation should be backfilled with compacted Granular Borrow for Underwater Backfill.

In all cases, we recommend the culvert foundations be underlain by at least 12-inches of compacted Crushed Stone wrapped in non-woven geotextile fabric, such as Mirafi 180N.

We recommend final excavation to subgrade be made with a smooth-edged bucket to reduce soil disturbance. Subgrades which become soft or difficult to work should be overexcavated and backfilled with compacted Granular Borrow for Underwater Backfill.

#### **4.3 Excavation and Dewatering**

Excavation work will generally encounter roadway fills, organic wetland deposits, and native outwash sands. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Equipment should not operate directly on the culvert subgrade soils. Final cuts to subgrade should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Vibrations from construction should be controlled below threshold limits of 0.5 in/sec for structures, water supply wells and infrastructure within 500 feet of the project site. More restrictive vibration limits may be warranted in specific cases with sensitive equipment, historic structures or artifacts on-site or within close proximity.

The proposed excavation will extend below groundwater and must be carefully planned. Stream diversion and bypass pumping will be needed. Braced sheetpiling with continuous sumping and pumping will likely be needed for groundwater cutoff, dewatering, and excavation stability. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. In all cases, excavations must be properly shored in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of

excavations, excavation support systems, and dewatering is the responsibility of the contractor. We recommend a support of excavation plan, sealed by a Professional Engineer licensed in Maine, be prepared for review by the project team prior to construction.

#### **4.4 Foundations**

We recommend the proposed culvert be supported on a mat foundation or spreads footing foundations bearing on a 12-inch thick mat of compacted Crushed Stone wrapped in geotextile fabric overlying properly prepared subgrades. For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

<b>Geotechnical Parameters for Spread Footings and Foundation Walls</b>	
Design Frost Depth (100 year AFI)	4.5 feet
Net Allowable Soil Bearing Pressure	2.0 ksf
Base Friction Factor	0.35
Total Unit Weight of Backfill	125 pcf
At-Rest Lateral Earth Pressure Coefficient	0.5
Internal Friction Angle of Backfill	30°
Seismic Soil Site Class	D (ASCE 7-10)
Estimated Total Settlement	1-inch
Differential Settlement	½-inch

#### **4.5 Fill, Backfill and Compaction**

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Granular Borrow for Underwater Backfill: Backfill for overexcavations should be sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow for Underwater Backfill.

Structural Fill: Culvert backfill should be clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below:

Structural Fill	
Sieve Size	Percent Finer by Weight
4 inch	100
3 inch	90 to 100
¼ inch	25 to 90
No. 40	0 to 30
No. 200	0 to 6

Crushed Stone: Crushed Stone, used beneath foundations and for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The existing site soils are unsuitable for reuse around the proposed culvert. Portions of the granular fill and native sands, free from organics and deleterious material, may be suitable for reuse in landscape areas provided they are at a compactable moisture content at the time of reuse.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that fill and backfill be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

#### **4.6 Weather Considerations**

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

#### **4.7 Design Review and Construction Testing**

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our foundation and earthwork recommendations have been properly interpreted and implemented.

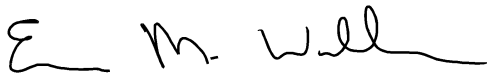
A construction materials testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the preparation of foundation bearing surfaces, as well as to provide testing and IBC Special Inspection services for soil and concrete construction materials.

#### **5.0 CLOSURE**

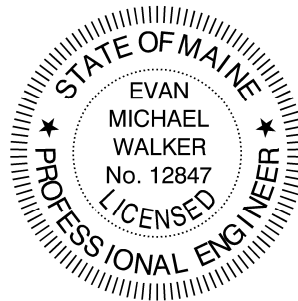
It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

**S. W. Cole Engineering, Inc.**



Evan M. Walker, P.E.  
Senior Geotechnical Engineer



EMW:tjb

## **APPENDIX A**

### **Limitations**

This report has been prepared for the exclusive use of Woodard & Curran for specific application to the proposed Culvert Replacement on Fish Hatchery Road in Auburn, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

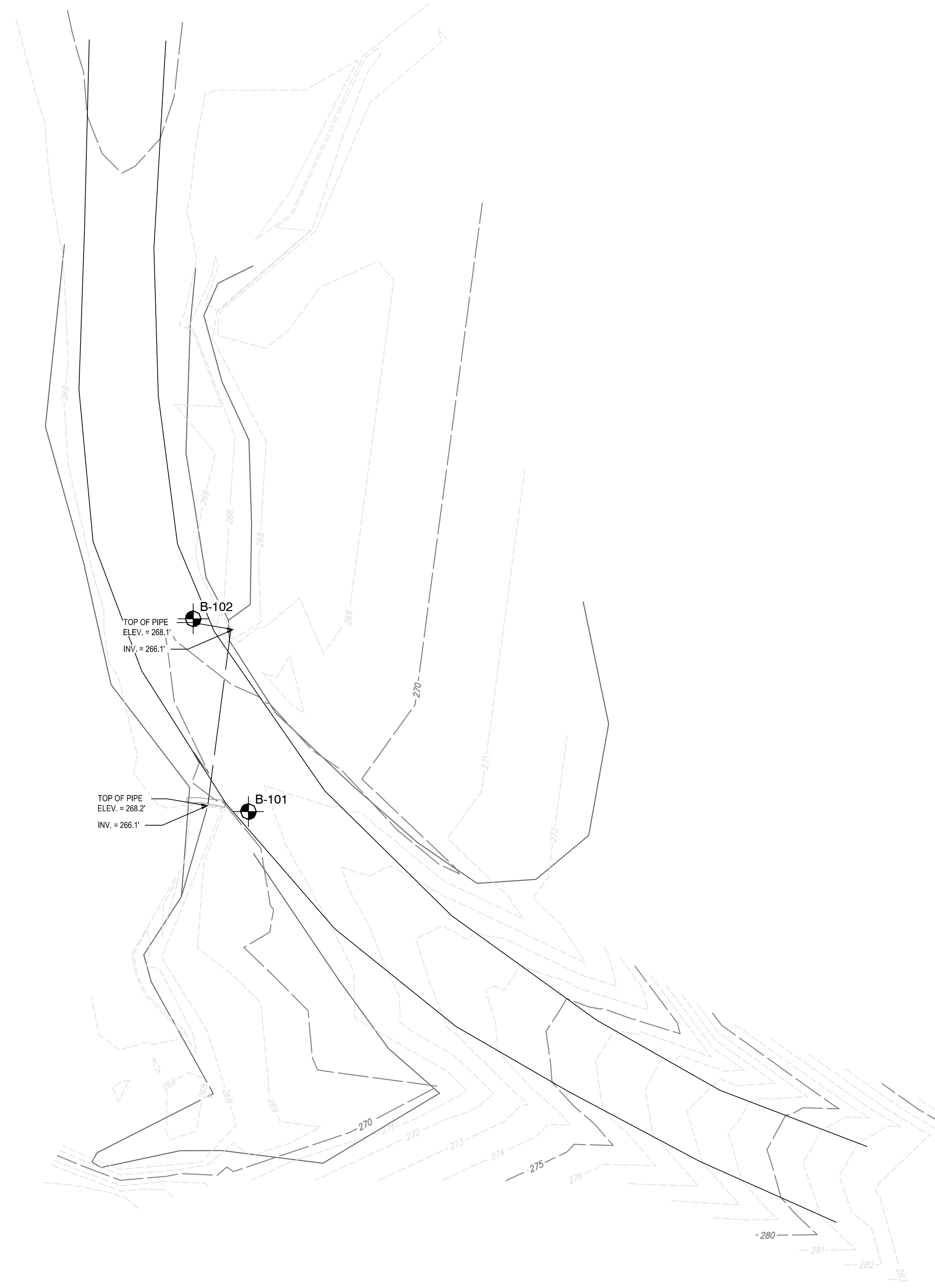
Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.

## **APPENDIX B**

### **Figures**



FISH HATCHERY ROAD

**LEGEND:**

APPROXIMATE BORING LOCATION

**NOTES:**

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=20' SCALE PLAN OF THE SITE PREPARED BY SGC ENGINEERING, LLC.
2. THE BORINGS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

**LEGEND:**

CORRUGATED METAL CULVERT

EDGE OF GRAVEL ROAD

WETLAND DELINEATION

WETLAND FLAG

TEMPORARY BENCHMARK  
SPIKE IN GROUND  
ELEVATION = 289.88'

WOODARD & CURRAN <b>EXPLORATION LOCATION PLAN</b> PROPOSED CULVERT REPLACEMENT FISH HATCHERY ROAD AUBURN, MAINE	
Job No.:	21-0415
Date:	06/25/2021
Scale:	1" = 20'
Sheet:	1

R:\2021\21-0415\CAD\Drawings\21-0415-SEP.dwg 6/25/2021 9:29:47 AM L11\_CEM.S.W. Cole Engineering, Inc.

## **APPENDIX C**

### **Exploration Logs and Key**







# BORING LOG

**BORING NO.:** B-102  
**SHEET:** 1 of 1  
**PROJECT NO.:** 21-0415  
**DATE START:** 4/19/2021  
**DATE FINISH:** 4/19/2021

**CLIENT:** Woodard & Curran  
**PROJECT:** Proposed Culvert Replacement  
**LOCATION:** Fish Hatchery Road, Auburn, Maine

## Drilling Information

**LOCATION:** See Exploration Location Plan    **ELEVATION (FT):** 269.5' +/-    **TOTAL DEPTH (FT):** 30.0    **LOGGED BY:** Evan Walker  
**DRILLING CO.:** S. W. Cole Explorations, LLC    **DRILLER:** Joe Layfield    **DRILLING METHOD:** Cased Boring  
**RIG TYPE:** Track Mounted Diedrich D-50    **AUGER ID/OD:** N/A / N/A    **SAMPLER:** Standard Split-Spoon  
**HAMMER TYPE:** Automatic    **HAMMER WEIGHT (lbs):** 140 / 140    **CASING ID/OD:** 3 in / 3 1/2 in    **CORE BARREL:**  
**HAMMER EFFICIENCY FACTOR:** 0.995    **HAMMER DROP (inch):** 30 / 30  
**WATER LEVEL DEPTHS (ft):**  $\nabla$  2 ft Soils Moist from Surface, Saturated Below 2' +/-

### GENERAL NOTES:

**KEY TO NOTES AND SYMBOLS:**  
 Water Level  $\nabla$  At time of Drilling  
 $\nabla$  At Completion of Drilling  
 $\nabla$  After Drilling  
 D = Split Spoon Sample  
 U = Thin Walled Tube Sample  
 R = Rock Core Sample  
 V = Field Vane Shear  
 Pen. = Penetration Length  
 Rec. = Recovery Length  
 bpf = Blows per Foot  
 mpf = Minute per Foot  
 WOR = Weight of Rods  
 WOH = Weight of Hammer  
 RQD = Rock Quality Designation  
 PID = Photoionization Detector  
 S<sub>v</sub> = Field Vane Shear Strength, kips/sq.ft.  
 q<sub>u</sub> = Unconfined Compressive Strength, kips/sq.ft.  
 Ø = Friction Angle (Estimated)  
 N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION					Graphic Log	Sample Description & Classification	H <sub>2</sub> O Depth	Remarks
			Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD				
265 260 255 250 245 240	5 10 15 20 25 30		1D	X	0-2	24/15	6-7-10-9		Medium dense, brown, silty gravelly SAND (FILL)	$\nabla$	Sand Heave in Casing Below 15' During Drilling
			2D	X	2-4	24/14	10-9-10-4				
			3D	X	4-6	24/22	3-2-2-2		Loose, dark brown, silty gravelly SAND, with organics (FILL)		
			4D	X	6-8	24/15	13-12-4-2		Loose, gray-brown, sandy SILT, with roots and organics		
			5D	X	8-10	24/18	3-2-2-6		Loose, dark gray-brown, sandy PEAT, with wood and roots		
			6D	X	10-12	24/20	4-4-5-6		Medium dense, brown, SAND and GRAVEL, some silt		
			7D	X	15-17	24/18	4-6-6-6	w = 13.9 %	Loose, gray, silty fine to medium SAND, with PEAT layers, roots and organics		
			8D	X	20-22	24/20	3-3-5-8		Loose to medium dense, gray-brown, fine to medium SAND, some silt		
			9D	X	25-27	24/18	3-4-4-5		Loose, brown, SAND, some silt, trace fine gravel		
Bottom of Exploration at 30.0 feet										36" Sand Heave in Casing at 30' - No Sample	

BORING / WELL 21-0415.GPJ SWCE TEMPLATE.GDT 6/25/21

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

**BORING NO.:** B-102

## **KEY TO NOTES & SYMBOLS**

### **Test Boring and Test Pit Explorations**

Stratification lines represent the approximate boundary between soil types and the transition may be gradual.

#### **Key to Symbols Used:**

w	-	water content, percent (dry weight basis)
q <sub>u</sub>	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S <sub>v</sub>	-	field vane shear strength, kips/sq. ft.
L <sub>v</sub>	-	lab vane shear strength, kips/sq. ft.
q <sub>p</sub>	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W <sub>L</sub>	-	liquid limit - Atterberg test
W <sub>P</sub>	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ <sub>T</sub>	-	total soil weight
γ <sub>B</sub>	-	buoyant soil weight

#### **Description of Proportions:**

Trace:	0 to 5%
Some:	5 to 12%
“Y”	12 to 35%
And	35+%
With	Undifferentiated

#### **Description of Stratified Soils**

Parting:	0 to 1/16” thickness
Seam:	1/16” to 1/2” thickness
Layer:	½” to 12” thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

**REFUSAL: Test Boring Explorations** - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

**REFUSAL: Test Pit Explorations** - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.

## **APPENDIX D**

### **Laboratory Test Results**

Project Name AUBURN ME - PROPOSED FISH HATCHERY ROAD CULVERT  
REPLACEMENT - GEOTECHNICAL ENGINEERING

Project Number 21-0415

Client WOODARD & CURRAN, INC.

Lab ID 27480G

Date Received 4/29/2021

Date Completed 5/3/2021

Material Source B-102 7D 15'-17'

Tested By PAUL SHAFFER

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	98	
4.75 mm	No. 4	97	2.7% Gravel
2.00 mm	No. 10	95	
850 μm	No. 20	88	
425 μm	No. 40	66	86.7% Sand
250 μm	No. 60	37	
150 μm	No. 100	21	
75 μm	No. 200	10.6	10.6% Fines

