



March 16, 2023

Mr. Michael Boynton, Town Manager
Town of Medway
155 Village Street
Medway, MA 02053

**Re: Professional Engineering Services Proposal
Stream Crossing 9 Culvert Design
Medway, Massachusetts**

Dear Mr. Boynton:

We are pleased to submit this Proposal to the Town of Medway (the Client) for professional engineering services associated with the above-referenced Project (the Project). The objective of our services is to provide the Client a feasible and resilient design option for replacement of an aging reinforced concrete pipe double-barrel culvert (Cottage Street/Wellington St at Intermittent Stream) tributary to the Chicken Brook. We will prepare an alternatives analysis and drainage improvement concepts with supporting calculations to enable the Client to choose the best option for design. Design will be in compliance with *Massachusetts River and Stream Crossing Standards (MA Stream Crossing Standards)*.

SCOPE OF SERVICES

The following specifically describes the Scope of Services to be completed:

Task 1 Site Visit

- A. We will conduct a site visit during a storm event to gather pertinent information to assist in concept scope and help inform future tasks for the Project.

Task 2 Hydrologic/Hydraulic Study

- A. We will conduct a study to model flow characteristics at the culvert location and study upstream watershed and potential downstream impacts. The following items will be completed under this task:
 - 1. **Hydrologic Study:** We will use USGS StreamStats to generate design storm discharges and estimate bankfull stream width.
 - 2. **Hydraulic Study:** The bankfull stream width will be used to inform the design of the hydraulic opening with respect to the MA Stream Crossing Standards. The design storm discharges generated by StreamStats will be used to model culvert capacity for the feasible alternatives using FHWA's HY-8 Culvert Hydraulic Analysis Program. If the proposed span width is greater than 10 feet for the preferred alternative, we will transition to the US Army Corps of Engineers HEC-RAS program for the hydraulic design during the next phase of services, as it requires detailed topographic survey, which is otherwise not needed for this phase. The project area is not within a Floodway FEMA Hazard Area.

Task 3 Culvert Design Concept Plan and Construction Plan

- A. We will provide the Client with a conceptual design plan of the recommended culvert-crossing improvements using survey information provided by the Client as a base. It will be developed using AutoCAD Civil 3D and will be provided in Adobe PDF format. The conceptual plan is expected to be reviewed by the Client to generate comments and general approval of the design moving forward.
- B. The conceptual design will be brought to construction level detail using comments provided during the conceptual plan review. This plan will be used to permit the Project with Medway Conservation Commission.



March 16, 2023

Mr. Michael Boynton, Town Manager
Town of Medway
155 Village Street
Medway, MA 02053

**Re: Professional Engineering Services Proposal
Stream Crossing 5 Culvert Design
Medway, Massachusetts**

Dear Mr. Boynton:

We are pleased to submit this Proposal to the Town of Medway (the Client) for professional engineering services associated with the above-referenced Project (the Project). The objective of our services is to provide the Client a feasible and resilient design option for replacement of the aging corrugated metal culvert (Guernsey Street over Chicken Brook) with noticeable pavement settlement at roadway grade. We will prepare an alternatives analysis and drainage improvement concepts with supporting calculations to enable the Client to choose the best option for design. Design will be in compliance with *Massachusetts River and Stream Crossing Standards (MA Stream Crossing Standards)*.

SCOPE OF SERVICES

The following specifically describes the Scope of Services to be completed:

Task 1 Site Visit

- A. We will conduct a site visit during a storm event to gather pertinent information to assist in concept scope and help inform future tasks for the Project.

Task 2 Hydrologic/Hydraulic Study

- A. We will conduct a study to model flow characteristics at the culvert location and study upstream watershed and potential downstream impacts. The following items will be completed under this task:
 - 1. **Hydrologic Study:** We will use USGS StreamStats to generate design storm discharges and estimate bankfull stream width.
 - 2. **Hydraulic Study:** The bankfull stream width will be used to inform the design of the hydraulic opening with respect to the MA Stream Crossing Standards. The design storm discharges generated by StreamStats will be used to model culvert capacity for the feasible alternatives using FHWA's HY-8 Culvert Hydraulic Analysis Program. If the proposed span width is greater than 10 feet for the preferred alternative, we will transition to the US Army Corps of Engineers HEC-RAS program for the hydraulic design during the next phase of services, as it requires detailed topographic survey, which is otherwise not needed for this phase. The project area lies within a Zone AE Regulatory Floodway FEMA Hazard Area, which means that the boundary is defined with a calculated Base Flood Elevation.

Task 3 Culvert Design Concept Plan and Construction Plan

- A. We will provide the Client with a conceptual design plan of the recommended culvert-crossing improvements using survey information provided by the Client as a base. It will be developed using AutoCAD Civil 3D and will be provided in Adobe PDF format. The conceptual plan is expected to be reviewed by the Client to generate comments and general approval of the design moving forward.
- B. The conceptual design will be brought to construction level detail using comments provided during the conceptual plan review. This plan will be used to permit the Project with Medway Conservation Commission.

Task 4 Permitting

- A. We understand that the Medway Conservation agent may be able to delineate the wetlands for this project, but we include this Task in the event that the Town may not be able to undertake the flagging due to scheduling or other unforeseen matter. Should that occur, Tetra Tech will delineate wetlands within the vicinity of the proposed culvert replacement in accordance with the Massachusetts Wetlands Protection Act, MGL C. 131 § 40, MassDEP's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act (March 1995)*, and the current versions of the United States Army Corps of Engineers (USACE) *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*.
- B. We will prepare and submit a Notice of Intent (NOI) to the Medway Conservation Commission (MCC) pursuant to the Massachusetts Wetlands Protection Act (WPA) and the Town of Medway's Wetlands Protection Bylaw (Bylaw). Tetra Tech will produce one draft of the NOI in electronic format to be reviewed and commented on by the Town prior to producing and submitting the Final NOI in accordance with MCC requirements. Tetra Tech will prepare the Stormwater Management Checklist as part of the NOI and assumes that a full Stormwater Management Report will not be required.

Task 5 Meetings

- A. We have included an allowance for two (2) Tetra Tech staff (Engineer and Environmental Scientist) to attend two (2) four (4) hour meetings/hearings with the Medway Conservation Commission. This item includes preparation time for the meetings/hearings.

ASSUMPTIONS

- LiDAR coverage of the project will be used as the basis for the analyses conducted in Task 2.
- Up to 3 conceptual alternatives for culvert improvements will be evaluated.
- The Client will provide Survey base plan in AutoCAD format in Massachusetts State Plane Coordinate System for work conducted in Task 3.
- The Client will place and pay the required legal ad fees for the anticipated permitting effort with Medway Conservation Commission.
- The Project is exempt from filing fees associated with the MA Wetlands Protection Act and the local bylaw.
- The Client will provide the required abutters list.
- Twenty abutters will require certified mailings.
- Full Stormwater Management Report will not be required.
- All specifications will be included in the Plans, written technical specifications will not be provided.

BUDGET

The fee for the work outlined in this proposal will be billed on a Time and Expenses basis according to Tetra Tech's and Medway's then current contract rates. Reimbursable expenses budget for execution of the tasks included in this scope of work are limited to mileage, field equipment, internal-use printing costs and hard-copy production of deliverables for submission and are billed at the fixed fee noted in the breakdown below. We suggest that you establish a budget as summarized below, which will not be exceeded without your approval. **We anticipate the Town may be required to fund up to 25% of the total cost of this Project depending on the cost share implemented by MEMA during the application review process, this condition has been noted in the cost breakdown below.**

Please be advised that this estimate is based on our current understanding of the Project needs and is for budget purposes only. The total actual cost of our services will largely depend on the scope and breadth of the information provided to us by the Client and information gathered during due diligence phases of the Project. Please be advised, additional funding will be required if additional scope is required beyond what is specifically described above.

The breakdown of this fee by task is as follows:

Task	Task Description	Budget
Task 1	Site Visit	\$800
Task 2	Hydrologic/Hydraulic Study	\$5,000
Task 3	Culvert Design Plans	\$4,000
Task 4	Permitting	
A	Wetland Delineation	\$1,000
B	NOI	\$6,200
Task 5	Meetings	\$3,000
Labor Subtotal		\$20,000
Expenses		\$500
Total		\$20,500
Anticipated Funding Shares		
FMA Program Share (75%)		\$15,375
Town of Medway Share (25%)		\$5,125

SCHEDULE AND CONDITIONS

We recognize that timely performance of these services is an important element of this proposal and will put forth our best effort, consistent with accepted professional practices to complete the work described within the Client's schedule. We are not responsible for delays in performance caused by circumstances beyond our control or that could not have been anticipated or prevented.

To signify your acceptance of this Agreement, please sign and return one copy and the retainer to us along with the attachments. When signed by representatives of both parties, this Proposal will become an agreement between Tetra Tech, Inc. (ENGINEER) and Town of Medway (CLIENT). The Agreement is subject to the existing contract Terms and Conditions between the Engineer and Client. The price is valid for 60 days from the date of this letter.

Very truly yours,



Steven M. Bouley, P.E.
Project Manager



Sean P. Reardon, P.E.
Vice President

Certified by:

Authorized Representative
Town of Medway

Date

M:\SITE\BOULEY\PROPOSALS\TOWNS\MEDWAY\2023-03-14 (DER GRANT APPLICATIONS)\MEDWAY_STREAM CROSSING 5 CULVERT_2023-03-16.DOCX

Task 4 Permitting

- A. We understand that the Medway Conservation agent may be able to delineate the wetlands for this project, but we include this Task in the event that the Town may not be able to undertake the flagging due to scheduling or other unforeseen matter. Should that occur, Tetra Tech will delineate wetlands within the vicinity of the proposed culvert replacement in accordance with the Massachusetts Wetlands Protection Act, MGL C. 131 § 40, MassDEP's *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act (March 1995)*, and the current versions of the United States Army Corps of Engineers (USACE) *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region*.
- B. We will prepare and submit a Notice of Intent (NOI) to the Medway Conservation Commission (MCC) pursuant to the Massachusetts Wetlands Protection Act (WPA) and the Town of Medway's Wetlands Protection Bylaw (Bylaw). Tetra Tech will produce one draft of the NOI in electronic format to be reviewed and commented on by the Town prior to producing and submitting the Final NOI in accordance with MCC requirements. Tetra Tech will prepare the Stormwater Management Checklist as part of the NOI and assumes that a full Stormwater Management Report will not be required.

Task 5 Meetings

- A. We have included an allowance for two (2) Tetra Tech staff (Engineer and Environmental Scientist) to attend two (2) four (4) hour meetings/hearings with the Medway Conservation Commission. This item includes preparation time for the meetings/hearings.

ASSUMPTIONS

- LiDAR coverage of the project will be used as the basis for the analyses conducted in Task 2.
- Up to 3 conceptual alternatives for culvert improvements will be evaluated.
- The Client will provide Survey base plan in AutoCAD format in Massachusetts State Plane Coordinate System for work conducted in Task 3.
- The Client will place and pay the required legal ad fees for the anticipated permitting effort with Medway Conservation Commission.
- The Project is exempt from filing fees associated with the MA Wetlands Protection Act and the local bylaw.
- The Client will provide the required abutters list.
- Twenty abutters will require certified mailings.
- Full Stormwater Management Report will not be required.
- All specifications will be included in the Plans, written technical specifications will not be provided.

BUDGET

The fee for the work outlined in this proposal will be billed on a Time and Expenses basis according to Tetra Tech's and Medway's then current contract rates. Reimbursable expenses budget for execution of the tasks included in this scope of work are limited to mileage, field equipment, internal-use printing costs and hard-copy production of deliverables for submission and are billed at the fixed fee noted in the breakdown below. We suggest that you establish a budget as summarized below, which will not be exceeded without your approval. **We anticipate the Town may be required to fund up to 25% of the total cost of this Project depending on the cost share implemented by MEMA during the application review process, this condition has been noted in the cost breakdown below.**

Please be advised that this estimate is based on our current understanding of the Project needs and is for budget purposes only. The total actual cost of our services will largely depend on the scope and breadth of the information provided to us by the Client and information gathered during due diligence phases of the Project. Please be advised, additional funding will be required if additional scope is required beyond what is specifically described above.

The breakdown of this fee by task is as follows:

Task	Task Description	Budget
Task 1	Site Visit	\$800
Task 2	Hydrologic/Hydraulic Study	\$5,000
Task 3	Culvert Design Plans	\$4,000
Task 4	Permitting	
A	Wetland Delineation	\$1,000
B	NOI	\$6,200
Task 5	Meetings	\$3,000
Labor Subtotal		\$20,000
Expenses		\$500
Total		\$20,500
Anticipated Funding Shares		
FMA Program Share (75%)		\$15,375
Town of Medway Share (25%)		\$5,125

SCHEDULE AND CONDITIONS

We recognize that timely performance of these services is an important element of this proposal and will put forth our best effort, consistent with accepted professional practices to complete the work described within the Client's schedule. We are not responsible for delays in performance caused by circumstances beyond our control or that could not have been anticipated or prevented.

To signify your acceptance of this Agreement, please sign and return one copy and the retainer to us along with the attachments. When signed by representatives of both parties, this Proposal will become an agreement between Tetra Tech, Inc. (ENGINEER) and Town of Medway (CLIENT). The Agreement is subject to the existing contract Terms and Conditions between the Engineer and Client. The price is valid for 60 days from the date of this letter.

Very truly yours,



Steven M. Bouley, P.E.
Project Manager



Sean P. Reardon, P.E.
Vice President

Certified by:

Authorized Representative
Town of Medway

Date

M:\SITE\BOULEY\PROPOSALS\TOWNS\MEDWAY\2023-03-14 (DER GRANT APPLICATIONS)\MEDWAY_STREAM CROSSING 9 CULVERT_2023-03-16.DOCX



Looking into inlet



Intersection of Cottage Street and Wellington Street



Looking into outlet



Cottage Street Structure 1 – Stream Crossing # 9



Looking into culvert from inlet



Guernsey Street



Looking at outlet



Guernsey Street Structure 2 Stream Crossing #5