

December 28, 2022

William Caldwell
Town Administrator
Town of Sterling
One Park Street
Sterling, Massachusetts 01564

Re: Town Center Revitalization Project

Dear Mr. Caldwell:

We are glad to hear your Board of Selectmen (BOS) voted to restart the Town Center Revitalization Project (Project) from Princeton Road (Rte 62) at Worcester Road (Rte 12) to Bridge Street utilizing Weston & Sampson Engineers, Inc (Weston & Sampson) as your consultant. It will be nice to get started again on such a vital project to the Town. The redesign and reconstruction of your sidewalks within your Town Center and the addition of lighting (by others) within this area will be a nice upgrade to downtown. As you know we updated the 2007 plans in 2019 to bring the sidewalk widths up to current ADA acceptable standards. This was to enable the Town to use the plans for funding purposes (only).

With the Town's recent grant award in 2022 for underground infrastructure (water and drain) engineering, we have revised this scope of services to include roadway reconstruction, as well as water and drain utility improvements, in addition to the original sidewalk and lighting scope. Please find herein a summary of project understanding and approach, as well as a detailed scope of services for Weston & Sampson to provide comprehensive design, permitting, and bidding services for this project.

Project Understanding and Approach

Weston & Sampson feels that the project will require a multi-disciplinary approach with great care taken to align scope with abutter interests and the Town's broader plan for revitalizing downtown Sterling. Work will include comprehensive road and sidewalk reconstruction, selective replacement of utilities (water and drain), and lighting installation (by others). The following is a general description of infrastructure improvements for which design, permitting, and bidding services are required:

- Roadway, Sidewalks, and Lighting
 - Shall include full-depth road reconstruction, complete granite curb and concrete sidewalk improvements on both sides of Main Street.
 - Realignment of the Main Street/Meetinghouse Hill Road intersection and reconfiguration of the library entrance as requested by the Town.
 - Addition of lighting improvements throughout the downtown corridor (by others), will be coordinated with the Sterling Municipal Light Department.

- Water Main

- Replace approximately 1,775 linear feet of existing 8-inch asbestos-cement (AC) water main with new C909 PVC water main on Main Street, from Bridge Street to 200-feet south of Cross Street. This includes replacement and optimization of valves, hydrants, and appurtenances.
- The remaining existing water main in the project area will be retained. Water mains to be retained include the following:
 - Approximately 300 linear feet of 16-inch AC water main on Main Street and Princeton Road (Rt 62) from Cross Street to the southwestern project limits on Princeton Road.
 - Approximately 1,100 linear feet of 12-inch C909 PVC water main on Main Street and Meetinghouse Hill Road from Cross Street to the northern project limits on Meetinghouse Hill Road.
 - Approximately 300 linear feet of 8-inch C909 PVC water main on Park Street.

- Drain

- Shall include removal of existing drainage infrastructure within the project limits and installation of new drainage improvements (pipes, manholes, and catch basin structures) as determined by the hydrologic and hydraulic (H&H) analysis described below.
- The majority of the existing drainage system appears to be 8-inch to 12-inch pipes and, per conversations with the Town, the system has a history of flooding in the downtown, including surcharging of grates and covers.
- Based on preliminary review of the survey, it appears the existing drainage system receives flow from off-site areas including Princeton Road (Rte 62), Houghton Road, Meetinghouse Hill Road, and east of the Clinton Road (Rte 62) project limits.
- No record plans of the existing system outside the limits of the survey are available for review. Based on the Town's understanding of the area, the system is routed behind the Sterling Fire Station at the corner of Main Street and Cross Street. From here the system cuts across Memorial Park and diagonally under Cross Street, behind the property of #14 School Street, before discharging near the 90-degree corner of School Street. The outfall daylights on the northern side of School Street before crossing under School Street via twin culverts into the marsh wetland area on Plat 105, Lot 22. A review of the Town of Sterling Stormwater Management Program (SWMP) from September 26, 2019 indicates that the twin culverts are 30-inch pipes.
- Review of available GIS and USGS data indicates that the wetland discharges to Connelly Brook, which converges with West Waushacum Pond, Waushacum Brook, Stillwater River, and ultimately the Wachusett Reservoir.
- The outfall area is very flat and has built up with sediment over the years, causing a half-full tailwater condition at the outlet, further exacerbating capacity issues upstream.
- Since this outfall area is outside the current project limits and is anticipated to add a significant permitting effort and timeline to the project if included under the Town Center Revitalization Project, we recommend the following phased approach to the improvements:

- A H&H analysis will be performed on the entire system, including the downstream portion that is outside the current project limits, to determine the current capacity of the system. Preliminary sizing and any recommendation(s) for additional downstream work (i.e., sediment removal, regrading, pipe size upgrades, etc.) will be provided in the H&H analysis memo under the Town Center Revitalization Project scope of work.
- Final design, permitting, and bidding services for the downstream portion of the drainage improvements will be provided under a separate proposal.

We do not know the funding source for the engineering and construction for your new Town Center Revitalization Project, but as before, we are assuming that there will be no MassDOT involvement in the design reviews and that this will be a Town of Sterling project. If this is not the case, please let us know and we will re-assess our proposal accordingly.

The Scope of Services as we now anticipate them for this new effort is as follows:

Scope of Services

Task 1 – Update Base Plans and Field Investigation

The original project was based on a topographical survey with the 1965 County Layout by Chappell Engineering performed in 2005. That survey base was utilized for our original 2007 Bid Documents. Since that time existing conditions have changed to some degree and we need to update the base plan information to depict accurate existing conditions. This work includes:

- Perform site walk through to identify and tie-down new or changed features since survey. Update base map per new records and observations in field. *Chappell Engineering completed this task in 2022 under the original contract.*
- Perform a one (1) day field investigation at the site with two (2) Weston & Sampson staff to evaluate the existing drain system downstream of the project limits. The existing drainage within Main Street flows to a low point DMH north of #7 Main Street where it is believed to flow south behind the Sterling Fire Station property as described previously. To perform the hydrologic and hydraulic (H&H) analysis, we will need to gather necessary information such as manhole/catch basin structure locations, pipe size and material, approximate inverts, and outfall conditions of the downstream system. Assistance from the Sterling DPW may be needed to open or clean and flush structures for Weston & Sampson staff to evaluate the system. These efforts will be coordinated with the DPW Superintendent.

With the added roadway reconstruction scope, Weston & Sampson proposes performing pavement cores under this task. A site visit will be conducted to observe existing features exposed at the ground surface, assess site access, and mark potential locations. This work also includes:

- Explore pavement conditions in the project area by advancing up to six (6) pavement cores on Main Street. Cores will be terminated if refusal conditions are encountered above planned depths. Our scope does not include rock coring or groundwater monitoring well installation.

- We anticipate the proposed pavement cores can be completed in one 8-hour workday. Adjustment to the number and/or depth of cores could be required to limit the cores to the estimated days depending on the actual conditions encountered. We assume that coring activities can be completed between the hours of 8 AM and 5 PM. Restriction on working hours may result in additional days and costs.
- We will arrange for the pavement cores to be completed by a qualified boring contractor. The cores will be advanced using a push core drill rig. Bituminous asphalt core samples will be collected from each core location. The cores will be backfilled with soil cuttings and the surfaces cold-patched with bituminous concrete pavement. Excess drill cuttings will be disposed of on-site.
- The boring contractor will notify DIGSAFE to mark below-grade public utilities in public streets and easements in the project area following marking. As this service is limited to public utilities in public easements, we will need the Town to mark public utilities not marked by DIGSAFE. We can subcontract a private utility locator if requested for an additional fee. A private utility locator does not guarantee exploration locations are clear of underground utilities, but it decreases the risk associated with drilling in the subsurface.
- The boring contractor will supply, setup, and maintain necessary signs and cones during the work and will arrange and pay for a police detail to provide traffic control. The boring contractor will also prepare and submit local permits and secure local bonds, as necessary. Environmental services, special drilling methods, decontamination, off-site cuttings disposal, snow removal, and landscaping services (e.g., repair of turf disturbed by exploration activities) are not included in the cost estimate. Such items will result in additional costs and can be provided by amendment to this proposal.
- Weston & Sampson will monitor the pavement cores in the field, maintain logs of encountered pavement, and measure the core locations relative to existing site features.
- Weston & Sampson will review the results of the pavement cores to establish recommendations for pavement reconstruction including pavement and base/subbase thicknesses.

Task 2 – Preliminary Design (PD)

We will start the Preliminary Design (PD) phase of your project by reviewing the past documents, updates prepared in the interim period and new documents provided by the Town, such as your newly designed lighting/electrical plans. As in all our projects we would like to have a (virtual) kickoff meeting with the Town to make sure we are going in the correct direction with our designs and that they reflect the latest wishes of the Town.

Weston & Sampson's PD effort will be reflective of this Scope of Services and discussions during the kickoff meeting. The plans will include the proposed roadway alignment and profile on construction and profile plans, typical sections, curb tie and grading plans, drainage and utility plans with updated electrical/lighting plans (by others), signing and pavement markings, traffic management, and construction details. In addition, we will revise the former quantities/calc book and estimate of probable construction cost to match the new scope of work and design for the project.

We will submit the PD documents to the Town for review and will meet to go over the plans and receive comments for inclusion in the final designs.

Upon review of the PD submittal to the Town and resolution of comments received by the Town we will make the final PD submittal to the Town for the record.

No public hearing is anticipated unless requested by the Town and at that time we can provide those services for an additional fee.

The following design elements will be included under this task:

Roadway and Sidewalk Design

- Horizontal Geometry Designs:
 - Horizontal elements of the project will be designed to closely conform to concepts prepared in the preliminary design.
 - All horizontal intersection and roadway geometry meets appropriate criteria for speed and superelevation, as well as for the ease of tractor trailers (WB-67) to negotiate mainline roadway and access by tractor trailers (WB-50) around the monument park to the southwest of Park Street.
 - Sidewalk designs will be in close conformance with ADA/ABA criteria.
- Vertical Geometry Designs
 - Design profiles to create a positive drained surface without degrading access to businesses along the route while addressing flood resiliency, as appropriate.
 - Create cross sections every 50 feet, and at crucial locations, to indicate how the proposed roadway elevations will meet existing grade.
 - Create a grading plan to indicate proposed profile elevations, gutter and top of curb elevations, as well as back of walk and grades at the limits of driveway tie-ins.

Lighting Design (by others)

Weston & Sampson will provide the Town of Sterling Municipal Light Department with an electronic CAD file of the proposed geometry for coordination with their lighting subconsultant (if applicable).

It is our understanding that the lighting installation is anticipated to begin prior to construction of the Town Center Revitalization Project. Weston & Sampson has assumed that the Town will provide electronic CAD files of the record drawings containing as-built locations of the lighting infrastructure (pole locations, conduit, pull boxes, etc.). We will then incorporate the as-built lighting into our plans as existing conditions.

Watershed Analysis and Pipe Sizing

Weston & Sampson will conduct a hydrologic and hydraulic (H&H) evaluation of the project area to better understand flow conditions to the existing drainage system, to support the analysis of the proposed drainage improvements, and to understand how climate change-driven increases to rainfall frequency, magnitude, and intensity may change flow conditions over the anticipated lifespan of the proposed improvements. This work includes the following:

- The H&H evaluation will begin with development of a stormwater model, using the Hydraflow Storm Sewers Extension for Autodesk Civil 3D or equivalent software. The model will consist of a representation of the existing drainage network within the study area from Main Street to its discharge point south of School Street via the twin 30-inch culverts. In addition, the model will include subcatchments to represent runoff generated in the watershed upgradient of the site, as well as upgradient of each of the catch basins within the study area. Using the rational method, we will use the model to develop estimates of total runoff, pipe capacity and velocity, as well as gutter spread and depth at catch basin structures along the project corridor. The system will be analyzed for a wide range of design storms, ranging from the 1-year to 100-year events. Design rainfall depths and time series used to define those storm events will be derived from the NOAA14 Hydrometeorological Atlas. Estimates of future rainfall depths will also be developed and used to drive potential future climate scenario simulations of the drainage system to understand how flow conditions will change over the life of the system.
- The H&H model will also be used to evaluate the proposed conditions, including the addition of catch basin structures and upsizing of pipes where applicable. The H&H model will be used to evaluate the relative effectiveness of the proposed drainage improvements and to ensure that they perform adequately within the study area and do not increase the volume or peak rate of discharge downstream into the wetland.
- The H&H evaluation will be summarized in a technical memorandum including the results of the analysis (existing and proposed), recommendations for improvements to the downstream system (i.e., increasing pipe sizes, regrading and sediment removal at the outfall, etc.), as well as a conceptual level Calculation Book and Estimate of Probable Construction Costs based on unit pricing by the latest MassDOT Average Weighted Bid Prices. We will discuss the findings with the Town in up to one (1) virtual meeting.

Utility Design

- Drainage – Prepare a design for drainage replacement within the current project limits. Drawings shall be in 20-scale and depict each drain replacement on concurrent sheets. A drainage plan will be created that will collect surface stormwater runoff from the new roadway surface and convey it within a subsurface system of structures (DMH, CB, etc.) and pipes to existing outlets. Drainage profiles shall be prepared with stationing and indication of stationing at utility crossings. Drain shall be sized as described in the H&H section above. Drain manholes and catch basins shall be proposed with invert elevations and pipe slopes shall be labeled intermediately. The drainage plan will be designed in close conformance with Town of Sterling standards.
- Water – Prepare a design for water valve and hydrant replacement and parallel water main abandonment. Drawings shall be in 20-scale. Water main design shall include placement of hydrants, valves, and air relief as appropriate. Identify temporary water provisions that might be required because of work sequence. Prepare design for temporary systems. Identify location, size, fire taps, and typical connection configuration for temporary water main. Coordinate valve identification, valve exercising, and valve box cleaning program with the Sterling Water Department. Prepare a sequence model for proposed water shutdowns for tie-ins, with identification of impacted area, customers, and valves requiring operation. Document plan for record of valve location, exercising and valve box cleaning. Submit plans, profiles, estimate, and schedule for Town review and comment. Town review should include review by Sterling Fire of proposed revised hydrant locations, if applicable.

Task 3 – Final Design (FD)

Upon acceptance of the PD submittal by the Town we will jump into the Final Design (FD) of your project. The PD documents will be updated to reflect the next phase of design effort. The FD will be the final design effort prior to Bid Documents.

Based on the final PD record plans we will bring the project to the Final Design (FD) level, plans and documents suitable for preparation of Bid Documents. The FD at this level will include the following:

- Title Sheet
- Legend, Index, Abbreviation Sheet
- Typical Sections, General Notes, and Details
- Construction Plans
- Profile Plans
- Drainage and Utility Plans with Electrical/Lighting (by others)
- Curb Tie and Grading Plans
- Sign and Pavement Marking Plans
- Traffic Management Plans
- Cross Sections

In addition, we will include FD Technical Specifications for inclusion in the Bid Documents phase and a FD level Calculation Book and Estimate of Probable Construction Costs based on unit pricing by the latest MassDOT Average Weighted Bid Prices.

The FD documents will be presented to the Town for review, and we will meet with the Town in person to review any comments on the submittal.

Upon review of the FD submittal to the Town and resolution of comments received we will submit the FD submittal to the Town for the record.

Task 4 – Bid Documents

Upon acceptance of the FD documents by the Town, we will proceed to prepare Bid Documents for your construction project.

At this time, we will prepare the final Bid Books for bidding of your project. We anticipate the Town providing the front end in the Town format for inclusion in the final Bid Books for us to produce an entire bid package for contractors. Included in the final Bid Documents will be the Bid Books with a unit price bid form and other required bidding documents as required by the Town. The final construction plans, specifications, and details, with the final Estimate of Probable Construction Costs (to be utilized for unit price quantities) will be packaged. We propose to send the final documents for bidding to a local printer for production of electronic Bid Documents for bidder use. There will be no hard copy Bid documents for contractor pickup at the Town, however, we will produce a full size and half size set of Bid Documents for Town use as well as an electronic copy of the package.

Task 5 – Bidding Services

Weston & Sampson will assist the Town in the bidding of the project by performing the following services:

- Attend Pre-Bid meeting to explain the project to interested Contractors on behalf of the Town and to respond to questions by prospective bidders. We will prepare written responses to all questions received at the Pre-Bid meeting, as well as RFI's received during the bidding period and send to all plan holders.
- Attend the Bid Opening and assist the Town in the bid opening process.
- Check the bids for accuracy and perform reference checks on the three (3) lowest qualified bidders.
- Make recommendations to the Town for award of the most qualified low bidder.

Task 6 – Construction Administration (CA) (assume 12 Months Construction)

Upon the selection of a Contractor and subsequent Notice to Proceed (NTP), Weston & Sampson will perform Construction Administration Services on behalf of the Town. Services will not include a full time Resident Engineer under this task, but will include the following:

- Periodic site visits during construction. Twenty-four (24) site visits are included as a basis for this task
- Review and approval of shop drawings
- Responses to requests for information (RFI) by the Contractor
- Assistance to the Town in the approval of Contractor pay requisitions.

Task 7 – Resident Representative (RR) Services (For Budgeting Purposes Only)

Weston & Sampson estimates twelve (12) working construction months to complete the contract. A resident representative will be provided for the estimated construction period:

- Weston & Sampson will provide one (1) full-time resident representative to observe construction of the project. The following assumptions have been used as a basis for this task: 240 working days, eight (8)-hour workdays, up to 1,920 total hours, and mileage to and from the site.

Please note, this task has been added for budgeting purposes only, per the Town's request, to include full-time resident engineering services during construction of the project. Once the timeline and schedule for construction has been established, Weston & Sampson will provide an additional amendment proposal to finalize the full-time resident representative services, if requested by the Town.

Proposed Fee

As the Town is aware, an agreement for engineering services between the Town of Sterling and Weston & Sampson Engineers, Inc. was signed on March 16, 2022. The agreement includes engineering costs for the original scope of work for the replacement of the sidewalks and lighting (by others), totaling \$119,200. Based on the Town's request for additional project scope to include the roadway and utility improvements as detailed in the Project Understanding section above, we have developed an amended fee as shown below. A total amendment of \$135,070 is being requested to complete the work, which would bring the total payments to the Engineer under the Agreement to \$254,270. The following table summarizes the original fee, the amended fee, and the fee difference for each task.

We suggest a Lump Sum Fee by Task for the Scope of Services listed above as follows:


Task No.	Task Description	Original Fee	Revised Original Fee	Additional Fee	Total Amended Fee
Task 1	Update Base Plans and Field Investigation	\$14,700	\$14,700	\$7,270	\$21,970
Task 2	Preliminary Design (PD)	\$22,100	\$19,800	\$60,500	\$80,300
Task 3	Final Design (FD)	\$46,900	\$41,850	\$60,350	\$102,200
Task 4	Bid Documents	\$5,550	\$5,550	\$6,950	\$12,500
Task 5	Bidding Services	\$2,900	\$5,200	--	\$5,200
Task 6	Construction Administration (CA)	\$27,050	\$32,100	--	\$32,100
TOTAL		\$119,200	\$119,200	\$135,070	\$254,270
Task 7	Resident Representative (RR) Services (For Budgeting Purposes Only)	--	--	\$251,000	\$251,000

Each total above includes all labor and reasonable expenses (travel, printing, copying, mail services) to complete each Task as outlined in the Scope of Services.

Upon acceptance of this proposal Weston & Sampson will prepare a contract, in a format approved by the Town, for signatures of all parties. Please feel free to contact me with any questions or to discuss at 508-203-8322 or email at Linhares.Jared@wseinc.com.

Sincerely,

WESTON & SAMPSON ENGINEERS, INC.

 Digitally signed by Pompeo Casale
 DN: C=US,
 E=casalep@wseinc.com,
 O=Weston & Sampson Engineers, Inc., CN=Pompeo Casale
 Date: 2022.12.28 09:51:44 -05'00'

Pompeo Casale, PE
 Vice President/Director of Transportation



Jared Linhares, PE
 Project Manager

Cc: Alyssa Peck, PE – Project Manager

NOTICE TO PROCEED/AGREED BY THE TOWN OF STERLING



BY Maurice Cranson DATE 1/4/23

NAME Maurice Cranson

TITLE Chair

Town Center Revitalization Project - Sterling, MA

Task	Month															
	Jan 2023	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Jan 2024	Feb	Mar	
Task 1 - Update Base Plans and Field Investigation 2 Days (Weather Dependent)	■	■														
Task 2 - Preliminary Design (PD) 14 Weeks	■	■	■	■												
Submit PD & Review Meeting 4 Weeks for Town Review					■											
Task 3 - Final Design (FD) 22 Weeks						■	■	■	■	■	■	■	■	■	■	■
Submit FD & Review Meeting 4 Weeks for Town Review											■	■				
Task 4 - Bid Documents 4 Weeks												■	■			
Task 5 - Bidding Services 4 Weeks for Advertising and Bidding													■	■		
Award of Contract 4 Weeks to Award														■	■	
Task 6 - Construction Administration Construction Start: mid-March 2024																■

 Weston & Sampson Action
 Town of Sterling Action

