



# TOWN OF WESTFORD

## ENGINEERING DEPARTMENT

*PAUL M. STARRATT, P.E.*  
*Town Engineer*  
*JEREMY R. DOWNS, P.E.*  
*Assistant Town Engineer*

**To: Town Manager Jodi Ross**

**From: Paul Starratt, P.E., Town Engineer**  
**Angus Jennings, AICP, Director of Land Use Management**

P.S.

**Re: Designer Amendment – Minot's Corner**

**Date: January 17, 2013**

Town Counsel has finished reviewing two proposed amendments to the Fay Spofford Thorndike (FST) design contract for Minot's Corner. Angus Jennings and I will be attending the January 22<sup>nd</sup> Selectmen meeting to request approval of the attached 2012 contract amendment that will be funded through the Minot's Corner Gift Account. If approved by the Selectmen, the 2012 amendment specifies a not-to-exceed limit that allows us to pay FST \$164,588.51 for work they have already completed. I have verified with the Accountant's Office that we have \$164,820.72 available in the Minot's Gift Account in order to pay this proposed amendment.

We request that the Board of Selectmen vote to approve use of the \$164,588.51 in the Minot's Corner Gift Account toward the 2012 contract amendment, which is a use consistent with the purpose of the gifted funds.

On Friday, January 18<sup>th</sup>, Angus and I will present a separate amendment to the Capital Planning Committee to request a Town Meeting appropriation for an additional \$31,000. This amendment covers some work that has already been completed, plus construction administration services once the project begins. The \$31,000 is required because of additional costs to the design such as adding crosswalks, exploring underground utilities, changes to landscaping, etc.

In the meantime, we look forward to the successful completion of this important project.

**AMENDMENT TO AGREEMENT FOR  
PROFESSIONAL ENGINEERING SERVICES  
BY AND BETWEEN THE  
TOWN OF WESTFORD  
AND  
FAY, SPOFFORD & THORNDIKE, LLC**

THE AGREEMENT of May 22, 2007 between the TOWN OF WESTFORD and FAY, SPOFFORD & THORNDIKE, LLC of Burlington, Massachusetts, is hereby amended on this \_\_\_\_\_ day of \_\_\_\_\_, 2012, as follows:

**SCOPE OF SERVICES**

This section shall be amended by the following:

**SCOPE OF SERVICES  
FINAL DESIGN AND CONSTRUCTION PHASE SERVICES  
ROUTE 110 CORRIDOR – MINOT’S CORNER TO NIXON ROAD**

**SECTION 150**

**ENVIRONMENTAL**

**157 NEPA–Categorical Exclusion (CE)**

A draft Categorical Exclusion (CE) Determination Checklist was prepared and submitted to MassDOT following the 25% Design Submission. FST will update the CE Checklist, as needed, based on any design revisions made as part of the Final Design Phase.

**166 MEPA - Environmental Notification Form (ENF)**

The project will require the filing of an Environmental Notification Form (ENF) due to the proposed widening of the existing roadway by four or more feet for one-half or more miles [301 CMR 11.03 (6) (b) 1b].

FST will prepare an ENF and associated correspondence to various agencies, as necessary, in accordance with the Massachusetts Environmental Policy Act (MEPA) and MEPA Regulations 301 CMR 11.00. We will submit a draft ENF to MassDOT and respond to one set of consolidated comments on that draft. Following MassDOT approval, FST will place one legal

notice in a newspaper of local distribution announcing the filing of the ENF and distribute copies of the ENF to the MEPA directed list. FST will attend one on-site MEPA consultation meeting.

In addition to the MEPA consultation meeting, FST anticipates two coordination meetings with MassDOT related to development of the ENF. One FST staff member will attend these meetings.

### **170 WPA Notice of Intent (NOI)**

LEC Environmental Consultants, Inc. will prepare and submit a Notice of Intent Application (NOI) for the reconstruction of Route 110 from Minot's Corner to Nixon Road with the Westford Conservation Commission. It is anticipated that the NOI filing will require supplemental information provided by FST. The NOI will document project construction impacts, mitigation, and stormwater compliance.

It is assumed that exploratory borings, installation of monitoring wells, and sediment sampling are exempt activities pursuant to 310 CMR 10.02(2) (b) (1) (g).

FST will support the NOI filing by providing LEC with project-related text and supporting plans. FST will also calculate the construction impact and disturbance areas as part of this task. This task also includes attendance at up to two (2) public hearings and one (1) site visit held by the Conservation Commission relative to the NOI for project construction.

### **170A WPA Notice of Intent (NOI) - Stormwater Report**

FST will prepare and submit a Stormwater Report to the Town and MassDOT for review to support the NOI for Project Construction (Task 170). The report will document the project's compliance with the Stormwater Management Standards. This task also includes attendance at up to two (2) public hearings and one (1) site visit held by the Conservation Commission relative to the NOI.

### **177 Hazardous Materials Research/Review**

As part of the EEC Checklist effort under the prior contract, FST reviewed the Massachusetts Department of Environmental Protection (DEP) Bureau of Waste Site Cleanup (BWSC) database to determine the presence of hazardous waste sites with the potential to impact the project. The file for each site of concern was reviewed at the MassDEP Northeast Region Office (NERO). A preliminary environmental assessment memorandum was prepared to summarize FST's findings and included with the 25% Design Early Environmental Coordination (EEC) Checklist.

FST will review the location of proposed drainage structures and piping, infiltration basins, and light poles to determine the potential for encountering groundwater and/or soil contamination issues.

FST will schedule a file review at DEP NERO to conduct a more thorough review of the sites of concern along the corridor. This review will focus on determining the extent of contamination at each site, location of any remediation systems, and current groundwater quality and flow direction.

In follow up to the file review, FST will plan and implement a subsurface investigation program. This program will include at least one test pit at a proposed stormwater infiltration area. This test pit will establish soil composition and depth to groundwater in support of the final selection of Stormwater BMPs. This test pit will require deeper excavation for the purposes of determining depth of groundwater. Therefore, this scope assumes that the Town will obtain the necessary approval from the owner to enter the property and the Westford DPW will provide the backhoe and operator for performing the test pit.

A memo will be prepared to document and summarize relevant information from the file review, results of the subsurface investigations, and implications for construction of the project. This memo will also identify the contract bid items and special provisions, as appropriate, required to manage soil or groundwater concerns.

## **SECTION 400 - 75% HIGHWAY DESIGN SUBMITTAL**

### **403 Meetings Liaison and Coordination**

The design team understands the importance of coordination among various agencies, organizations and local groups throughout the design process. A qualified design team representative from the specified discipline is prepared to attend each of the meetings outlined in the "Schedule of Anticipated Meetings" included in the Town's Request for Proposals.

### **404 Utility Coordination**

Contact all utility companies affected by the proposed work. Discuss project impacts and note the locations of relocated utilities (poles, pipes, etc.) on the plans. Include estimate and special provisions for all utility work that is to be performed by the contractor.

### **405 Final Horizontal Design Geometrics**

FST will adjust the horizontal geometry based on the 25% review comments and comments stemming from the Design Public Hearing.

### **406 Final Vertical Design Geometrics**

FST will tweak the vertical geometry based on 25% review comments and comments stemming from the Design Public Hearing. Profiles will be prepared in accordance with the Highway Design Manual.

### **407 Pavement Design**

FST will respond to Pavement Design Engineer's comments and prepare a detailed pavement design with completed data sheets per Highway Design Manual.

### **408 Typical Cross Sections**

FST will finalize the typical cross sections ensuring that all materials and dimensions are clearly labeled in accordance with the proposed pavement structure approved by the Pavement

Management Section.

#### **409 Plot Cross Sections**

FST will tweak cross sections to ensure that the slope limits and treatments of each cross section are crafted to suit the specific site locations.

#### **410 Plot Proposed Easements**

FST will revise the plans based on the limits establish by the final cross sections to ensure that adequate right of way is available to perform the work.

#### **411 Construction Plans**

FST will prepare Construction Plans in accordance with the Highway Design Manual, MassDOT comments.

#### **412 Grading & Tie Plans**

FST will prepare grading and tie plans showing detailed information regarding proposed curve geometry and grades.

#### **413 Drainage and Water Supply Details**

FST will finalize design modifications to the existing surface and closed drainage system, plot the location of the drainage structures on the Construction Plans, and produce a table of structures detailing the rim and invert elevations, which will be provided in the PS&E documents. Design of the Best Management Practices (BMP's), including one (1) detention basin, for controlling the stormwater runoff for the project will be developed and shown on a Stormwater BMP detail sheet. It is assumed that the existing detention basin on Carlisle Road can be utilized for the additional drainage from Minot's Corner.

#### **414 Traffic Signs**

FST will identify locations for all warning, regulatory and route marker signs to present on the pavement marking plans being prepared under Task 416. Indicate on the construction plans the status of existing sign structures.

#### **415 Guide Sign Design**

Indicate proposed locations of all ground mounted guide signs. Develop panel legends and calculate size. Prepare a Sign Summary Sheet. Draft guide sign details.

#### **416 Traffic Signals and Plan Preparation**

FST will complete the design of signal installations, supports, and foundations and finalize phasing details. Signal specifications will be developed.

#### **417 Pavement Markings and Plan Preparation**

Design and layout of roadway pavement markings, stop lines, cross walks, gore markings, etc. will be shown on the Final Plans.

#### **418 Traffic Management Plans (TMP)**

FST will finalize construction staging and methods for maintaining traffic during construction.

FST will prepare traffic management plans in accordance with the MUTCD such that sufficient information is provided to demonstrate to the contractor a feasible means of constructing the project.

#### **421 Erosion Control Plans**

FST will detail the sequencing, material placement and measures to control the potential damage to adjacent properties, wetlands, bodies of water, etc.

#### **422 Miscellaneous Contract Plans**

FST will prepare miscellaneous full size drawings for presentation of the proposed project. Include Title Sheet, Index, Key Plan, etc.

#### **423 Estimate**

FST will prepare a detailed estimate based on the latest edition of the Standard Nomenclature and utilizing MassHighway's Weighted Bid Price Application. The estimate shall be prepared in accordance with the Method of Measurement and Basis of Payment described in the Standard Specifications for Highways and Bridges including the latest supplements and the Standard Special Provisions. This task includes an estimate of work hours associated with calculating quantities.

#### **424 Draft Special Provisions**

FST will develop special provisions only when absolutely necessary to describe a specific or unique activity to be performed by the contractor not covered by MassHighway's Standard Specifications.

#### **425 Constructability and Quality Control (QC) Review**

FST will perform a review of the project, focusing on the practicality of constructing the project based on access to site, equipment needs, material properties, etc. The review will include an overall review of the plans, specifications and estimate for conformity to the Highway Design Manual, the Standard Specifications for Highways and Bridges, the latest Supplemental Specifications, the Bridge Manual, the Construction and Traffic Standard Details, and the latest Engineering and Policy Directives.

### **SECTION 450 - 100% HIGHWAY DESIGN SUBMITTAL**

#### **451 Respond to 75% Comments**

FST will prepare a formal written response to all comments received regarding the 75% review.

#### **452 Finalize Plans**

FST will prepare a complete set of plans addressing all comments from the 75% review.

#### **453 Finalize Special Provisions**

FST will review the special provisions to ensure that the special provisions do not duplicate those with respect to Division I of the Standard Specifications. FST will review the Method of

Measurement and Basis of Payment for every item in order to ensure that the special provisions are clear and not ambiguous.

#### **454 Finalize Estimate**

A calculation book will be prepared in accordance with Chapter 13 of the Highway Design Manual. Ensure that all items of work have a pay item. Identify any non-participating work.

#### **455 Quality Control (QC) Review**

FST will have an experienced engineer who is not directly involved in the preparation of the contract documents perform an independent review of the project.

### **SECTION 500**

#### **RIGHT OF WAY**

#### **501 Preliminary Right of Way Plans**

FST will prepare Preliminary Right of Way Plans in accordance with Chapter 18 of the Highway Design Manual. Plans will include Title Sheet, Typical Sections, Parcel Summary Sheet, Location Maps and Property Plan Sheets.

#### **502 Layout and Order of Taking Plans**

Surveying and Mapping Consultants, Inc. (SMC) will review highway alteration plans and instruments prepared by FST. This review will include calculations to confirm the geometry and areas shown on the draft plans and research at the Town offices to update parcel ownership. SMC will modify the draft plans as needed and provide Mylar copies, signed and sealed by a registered Professional Land Surveyor in the Commonwealth of Massachusetts.

The Layout Plans will show lengths and bearings of all lines and calculate areas. The Layout Plans will be prepared in accordance with Chapter 18 of the Guidebook and will include the proposed layout lines, property lines, corner markers, names of property owners, parcels to be taken, access and non-access points and the locations of all bounds.

#### **503 Written Instrument**

The Written Instrument will be prepared by SMC. FST will prepare Layout Plans based on the approved Preliminary Right of Way Plans. The Written Instrument for the Layout and Order of Taking will be prepared in accordance with MassDOT Policy. The Written Instrument will be carefully checked against the Layout Plan.

#### **504 Final Right of Way Plans**

After the Right of Way Bureau accepts the Preliminary Right of Way Plan, the Preliminary Right of Way Plan will become the Final Right of Way. FST will also prepare State Highway Alteration Plans in accordance with MassDOT requirements.

**SCOPE OF SERVICES (CONT'D)**  
**OUT OF SCOPE FINAL DESIGN SERVICES**  
**ROUTE 110 CORRIDOR - MINOT'S CORNER TO NIXON ROAD**

Subsequent to the 25% Highway Submission and during the Final Design process, several items were added to the Final Design Scope of Services. These items are incorporated into this Agreement and are list below.

**SECTION 150 - ENVIRONMENTAL**

**170 WPA Notice of Intent (NOI)**

After submitting the NOI to the Conservation Commission, FST reviewed comments from the Westford DPW, specifically regarding the Stormwater Management Report and Drainage Study. A follow up conference call and additional coordination with DPW was required to review comments. FST prepared a draft and final comment response letter with revised drainage calculations, NOI plans and supporting documentation to the DPW and Conservation Commission. Attendance at 2<sup>nd</sup> Conservation Commission meeting to discuss modifications to the NOI plans.

**SECTION 400 - 75% HIGHWAY DESIGN SUBMITTAL**

**403 Meetings Liaison and Coordination**

FST has been requested to attend more meetings than the original budget anticipated. Please note that meeting time is not invoiced on a lump sum basis but by an hourly, time per meeting cost. Additional meetings attend are as follows:

June 4, 2012 Board of Selectman meeting.

Comment Review Meeting 4/23/12.

Meeting @ D3 with Town and MassDOT to discuss Cornerstone Drainage tie into existing Boston Rd drainage system 5/11/12

Conference Call w/Town 6/1/12 (to discuss Board of Selectman Meeting approach)

Conference Call with Town and MassDOT 6/13/12 (to discuss impacts to existing leaching fields at 3&5 Carlisle Rd property)

**403A Additional Services for the Town of Westford**

In addition to liaison and coordination for project meetings, FST prepared the following memorandums for the Town of Westford:

*September 21, 2011 – Pedestrian Crosswalks at Minot's Corner*

As requested by the Town, FST prepared a memorandum to summarize the impacts of providing crosswalks across Boston Road and on the west side of the Minot's Corner intersection. The previously submitted 25% Design plans provided concurrent pedestrian phasing across Littleton Road (Route 110) on the eastern side of Minot's Corner and also across Carlisle Road. Under existing conditions, there are no pedestrian crosswalks at this intersection.

*September 23, 2011 – Traffic Volume Projections at Minot's Corner*

As requested by the Town, FST prepared a memorandum to summarize how the future traffic volumes were developed at the Minot's Corner intersection. These volumes and backup information were included in the July 2009 Functional Design Report.

**404 Utility Coordination**

In addition to the standard utility coordination performed on MassDOT projects, FST assisted the Town with an alternatives analysis for undergrounding the utilities along the Route 110 corridor and at the Minot's Corner (between UP # 76 and UP/LP # 54).

FST prepared memos/graphics and attended meetings/conference calls to discuss as follows:

- Logistics of how the non-participating items would need to be handled (i.e. payment schedule, supervision, etc.)
- Considerations associated with undergrounding the lines at Minot's Corner (i.e. service drops, risers, switchgears, infrastructure, ROW, etc).
- Cost estimate for the non-participating force accounts to perform this work

This process also involved correspondence with the District 3 DUCE and an addition Undergrounding On-Site meeting with the Town, MassDOT and FST on November 9, 2010.

**405 Final Horizontal Design Geometrics**

In addition to geometric changes resulting from the 25% Design Submission review comments, FST was asked by the Town to evaluate adding a crosswalk across Littleton Road (Route 110) just west of Boston Road and across Boston Road at the Littleton Road and Boston/Carlisle Road Intersection. A traffic analysis and the effect on the Level of Service by adding these crossings were evaluated and review with MassDOT.

Upon agreeing that the crosswalks could be added to the design, FST adjusted the roadway geometry and modified the traffic signal phasing to accommodate the crosswalks.

FST was also requested by the Town to evaluate shifting the proposed alignment to avoid driveway impacts at the Mobil gas station. The alignment was revised to avoid impacts and the contract drawings updated to reflect the new alignment.

#### **406 Final Vertical Design Geometrics**

FST was asked by the Town to revise the roadway profile along Boston Road in the vicinity of the new driveway for the Cornerstone Development. Because of relatively flat profile grades in this area, stormwater runoff does not drain well. FST will revise the profile to increase the roadway and gutter line slope to improve the drainage in this area.

#### **413 Drainage and Water Supply Details**

The proposed design will be revised to tie into the proposed Cornerstone Development roadway drainage. Design of the proposed water main is included under separate contract.

FST will dig test pits in the vicinity of the proposed detention basin and leaching galleys to ensure proper ground water levels and soil conditions.

During the Project's design development, the plan presentation of proposed drainage facilities will show rim and invert elevations. These will be included in the final contract documents for reference only to the Contractor. The Contractor shall still be responsible for verify field conditions prior to installation of the proposed drainage system.

#### **420 Landscaping and Plan Preparation**

Due to construction impacts, FST will develop a landscaping design around the proposed stormwater detention basin. Landscape plantings will be selected from a diversity of low-maintenance, indigenous deciduous and evergreen materials to be placed in front of the proposed stormwater detention basin to provide an aesthetically pleasing buffer. FST will develop Landscaping Plans and Details in accordance with MassDOT standards.

#### **426 Submission Check List**

Subsequent to the original Agreement, MassDOT has required that a Design Checklist be submitted with every submission. FST will prepare and submit the 75% Design Check List.

### **SECTION 450 100% HIGHWAY DESIGN SUBMISSION**

#### **452A Traffic Signal Plans**

FST revised the Traffic Signal Plans to supply Loop Detection as requested by MassDOT at the signals after previously being directed to use Video Detection.

#### **456 Submission Check List**

Subsequent to the original Agreement, MassDOT has required that a Design Checklist be submitted with every submission. FST will prepare and submit the 100% Highway Design Check

List.

**457A Additional Services for the Town of Westford**

FST prepared the following memorandums for the Town of Westford.

*February 23, 2012 – Minot’s Corner Median Alternatives*

As requested by the Town, FST prepared a memorandum identifying the access issues associated with the proposed median island on Littleton Road (Route 110) east of Boston Road. In addition, this memorandum is intended for distribution to MassDOT in an effort to solicit MassDOT input into the potential alternatives to the proposed design, which have come as a result of local input. These access issues are related to the proposed median island located on Route 110 east of Boston Road

**458A Additional Coordination with Cornerstone Square Developer**

FST provided assistance to Hancock Associates in regards to the “Cornerstone Square” Access Permit currently being reviewed by MassDOT District 3. Services provided included attendance at a meeting with MassDOT District 3 Office to discuss concerns of the District. Subsequent coordination with Hancock Associates and development of a Hydraulic Grade Line (HGL) Analysis with supporting documentation of the Boston Road drainage system for submission to District 3.

**Reimbursable Expenses**

Anticipated reimbursable expenses may include but not be limited to:

- Printing and reprographics
- Plotting
- Travel and subsistence
- Data collection
- Traffic counts
- Borings/subsurface investigations
- Photo documentation
- Shipping, postage, courier services
- Permits
- Purchase of maps and required documents

**COMPENSATION**

This section shall be amended by changing the first paragraph to the following:

The Design Consultant's TOTAL LUMP SUM FEE for the engineering and design services hereinbefore described shall not exceed the amount of \$547,280 without prior written approval of the Town. The total direct costs hereinbefore described shall not exceed the amount of \$10,000, without prior written approval of the Town. The reimbursement for authorized expenses associated with the direct costs will be based on receipted bills. The Design Consultant's COST PLUS FIXED FEE for Meetings hereinbefore described shall not exceed the amount of \$44,540 without prior written approval of the Town. The Design Consultant's COST PLUS FIXED FEE for Construction Administration hereinbefore described shall not exceed the amount of \$8,400 without prior written approval of the Town.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed the day and year first herein written.

FAY, SPOFFORD, THORNDIKE, LLC

TOWN OF WESTFORD

Duly authorized by:

Duly authorized by:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Name

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Date

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Date

Certification of available appropriation:

\_\_\_\_\_  
Alice M. Ferro, Town Accountant

Approval as to legal form:

\_\_\_\_\_  
Kopelman and Paige, P.C., Town Counsel