



Town Manager

**TOWN OF ACTON**  
472 Main Street  
Acton, Massachusetts 01720  
Telephone (978) 929-6611  
Fax (978) 929-6350  
manager@acton-ma.gov

**MEMORANDUM**

**To:** Community Preservation Committee **Date:** October 25, 2016  
**From:** Steven L. Ledoux, Town Manager  
**Subject:** CPA Administrative Support 2017

As you consider CPA project applications for the 2017 funding round, please keep in mind that the Town provides all administrative and program support to the CPA Program primarily through staff in its Planning and Finance Departments. Since the inception of the CPA Program in 2004, the Community Preservation Committee has recommended and Town Meeting has appropriated 5% of the CPA revenues for these support functions. To continue these services I request that once again 5% of the CPA revenues available for spending at the 2017 Annual Town Meeting be appropriated to pay the Town of Acton for administrative and program support.

It is anticipated that the requested funding at the maximum allowed 5% level may be somewhat above the previous year's number (\$56,732). Attached please find the Town's details for supporting the CPA program documenting a total cost of \$ [redacted]. The money directly supports staffing in the Planning and Finance Departments, which are the two principal entities burdened with the administrative responsibilities of CPA in Acton.

**Comment [k1]:** Waiting for updates from managers and finance depts.

Cc: Board of Selectmen  
Steve Barrett

**Town of Acton - Oct. 30, 2016 estimated annual CPA support costs**  
(hourly rates include salary and benefits)

**Planning Department**

Planning Director	hrs	charges
approx. 8 CPC meetings/year	20	
room arrangements & scheduling	1	
meeting preparation/follow-up	8	
committee e-mail & phone	5	
project proponents interface (town & citizens)	5	
website updates	1	
documents/record maintenance	2	
recapture/budget reviews	4	
town meeting prep. (publicity, articles, presentations)	40	
award letters	4	
annual CP plan	4	
annual public hearing prep. & ad	1	
project reviews/coordination with town counsel	3	
oversight - non-town projects	30	
<b>Total Hours</b>	<b>128</b>	
Rate - \$/hr	71.25	\$ 9,120.58

Assistant Planner	hrs	charges
approx. 8 CPC meetings/year	20	
room arrangements & scheduling	1	
meeting preparation/follow-up	8	
committee e-mail & phone	5	
project proponents interface (town & citizens)	5	
website updates	5	
documents/record maintenance	2	
recapture/budget reviews	20	
town meeting prep. (publicity, articles, presentations)	32	
award letters	8	
annual CP Plan	22	
annual public hearing prep. & ad	0	
project reviews/coordination with town counsel	8	
<b>Total Hours</b>	<b>136</b>	
Rate - \$/hr	46.34	\$ 6,302.53

Planning Admin. Assistant	hrs	charges
approx. 8 CPC meetings/year	0	
room arrangements & scheduling	5	
meeting preparation/follow-up	18	
committee e-mail & phone	3	
project proponents interface (town & citizens)	2	
website updates	0	
documents/record maintenance	10	
recapture/budget reviews	0	
town meeting prep. (articles, presentations)	0	
award letters	2	
annual CP Plan	0	
annual public hearing prep. & ad	1	
project reviews/coordination with town counsel	0	
<b>Total Hours</b>	<b>41</b>	
Rate - \$/hr	33.98	\$ 1,392.99

<b>Total Charges - Planning</b>		<b>\$ 16,816.10</b>
COLA 2018	0.02	\$ 17,152.42
Combined Total Charges - Town staff services		\$ 66,419.63
Town Counsel (total billed, CPA w/o AU litigation 10/1/15-9/30/16)		\$ 21,500.00
<b>Total CPA program support</b>		<b>\$ 87,919.63</b>

**Town Manager's Office**

Town Manager	hrs	charges
Review Items - Compliance	5	
Review Annual Warrant Article	10	
General Oversight - Projects	40	
Monitoring/Compliance - Projects	5	
<b>Total Hours</b>	<b>60</b>	
Rate - \$/hr	109.53	\$ 6,571.80
<b>Assistant Town Manager</b>		
Review, Annual Town meeting	20	
<b>Total Hours</b>	<b>20</b>	
Rate - \$/hr	82.84	\$ 1,656.80
<b>Town Manager Secretary</b>		
Administrative Support	10	
<b>Total Hours</b>	<b>10</b>	
Rate - \$/hr	32.16	\$ 321.60

<b>Total Charges - Town Manager</b>		<b>\$ 8,550.20</b>
COLA 2018	0.02	\$ 8,721.20

**Finance Department**

Principal Clerk - Collection	hrs	charges
collection	500	
Bill Run 4Xyear	40	
refunds	80	
Tax takings	80	
<b>Total Hours</b>	<b>700</b>	
Rate - \$/hr	37.67	\$ 26,371.02
<b>Town Accountant</b>		
Gatewayreporting CP1, CP2, Comb	5	
Annual Fund review	40	
<b>Total Hours</b>	<b>50</b>	
Rate - \$/hr	64.15	\$ 3,207.50
<b>Assistant Town Accountant</b>		
Monthly reconciliation	24	
monthly departmental reports	20	
<b>Total Hours</b>	<b>44</b>	
Rate - \$/hr	9.52	\$ 2,179.04
<b>Principal Clerk - Assessor Div.</b>		
Abatement process and review		
<b>Total Hours</b>		
Rate - \$/hr		7,993.44

<b>Total Charges - Finance</b>		<b>\$ 39,750.99</b>
COLA 2018	0.02	\$ 40,546.01

Waiting for Update

Waiting for Update

# PROJECT APPLICATION FORM – 2017

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**Applicant:** Town of Acton

**Submission due date:** November 14, 2016

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**Applicant's Address:**

Acton Town Hall  
472 Main Street  
Acton, MA 01720

**Phone Number:** 978-929-6631

**E-mail:** [Planning@acton-ma.gov](mailto:Planning@acton-ma.gov)

**Purpose: (Please select all that apply)**

- Open Space
- Community Housing
  
- Historic Preservation
- Recreation

**Town Committee (if applicable):** Town of Acton - Planning Department

**Project Name:** Housing Services

**Project Location/Address:** N/A

**Amount Requested:** \$50,000.00 (FUNDS TWO YEAR OF MEMBERSHIP)

**Project Summary:** In the space below, provide a brief summary of the project.

The Town of Acton requests funding to continue participation in the Regional Housing Services Office (RSHO) for the next two years. The Town is currently a member of the RSHO with the Towns of Bedford, Burlington, Concord, Lexington, Sudbury, and Weston. This service is authorized through Inter-Municipal Agreements among the member towns. Acton's current membership in the RSHO is funded with CPA grants. It was originally funded in 2012 for two years (FY's 2013 & 14) and in 2014 for FY2015 & 16, and renewed again for membership during FY2017. The RSHO has proven to fill a much needed gap in housing services for the Town of Acton by providing approximately 350 hours of service each year. The Town submits this request to continue CPA funding for the following core community housing support services for the Town over the next two years:

**Fulfill State and agency reporting and requirements (approximately 53% of hours):**

- Monitor database of 559 deed restricted units;
- Monitor regulatory agreements;
- Send and compile self-declaration reports for 61 ownership units;
- Maintain RSHO public website and provide members only portal;
- Prepare and submit certification reports to DHCD;
- Prepare and submit subsidized housing inventory reports to DHCD.

**Carry out local responsibilities (approximately 47% of hours):**

- Share information with lottery agents;
- Assist with Capital Improvement Grants program;
- Update the Town's assessed value of deed restricted properties;
- Provide educational workshops for affordable owners;
- General local support and housing program administration to the Acton Community Housing Corporation (ACHC) and the Planning Department.
  - Give technical assistance to ACHC when reviewing 40B developments
  - Assist in the Implementation of the Housing Production Plan approved by the Board of Selectmen and Planning Board in 2015

Prior to the Town receiving CPA funds to join the Regional Housing Services Office, members of the ACHC tried their best to do what they could on their own volunteer time. As the volume of work and statutory responsibility increased and grew more complex over the years, several of the tasks listed above could not be completed due to both a lack of staffing and focused expertise in the field of affordable housing. In the past four + years the RHSO has helped Acton fulfill State and agency requirements as well as become more knowledgeable in determining local needs.

The RHSO has worked diligently to track regulatory agreements and deed restrictions. Homeownership and rental unit monitoring is a very time consuming charge that requires experience and expertise; but, is a requirement of the Regulatory Agreements between the state housing agencies and the Town. Prior to Acton's membership in the RHSO, this requirement along with other services were not being fulfilled on a regular basis. The Town believes it is in its best interest to continue funding these services in order to keep the program strong and fulfill the Town's monitoring obligations.

Monitoring affordable units is extremely important in order for the Town to preserve its affordable housing stock on the State's Subsidized Housing Inventory but more meaningfully, to provide diversity of housing options. The monitoring program also helps with identifying owners who have deed restriction violations such as an unapproved refinancing – leading to underwater mortgages which put affordable units at risk. This funding will continue to provide monitoring services to prevent the loss of affordable units.

The Regional Housing Services Office website (<http://www.rsohousing.org/>) has continued to provide a variety of information designed to help local officials, current and prospective residents. From April 2016 to July 2016 there have been 2100 web sessions. On average web sessions have increased by 20% each quarter. Phase 2, the secure access section for RHSO and town staff, is now active. This portal provides easy access to unit level data for ownership units with purchase information and contact history, and key project documents (Permits, Regulatory Agreements, Deeds) for projects and owners. This has given each participating town staff on-line access to the confidential information the RHSO staff maintains.

The Regional Housing Services Office continues to hold informational workshops. The RHSO held two training sessions in June: "Post-purchase Homeowner training," presented by Community Teamworks and, "Fair Housing—Best Practices in Fair Housing", presented by Suffolk Law School's Housing Discrimination—Project Housing Discrimination Testing Program.

The Town envisions the program to function similarly to the past four+ years; the Board of Selectmen and the Town Manager would renew the established Inter-municipal agreement for FY18 and the subsequent term. The Selectmen would sign the agreement. During the term of the agreement, core housing services would be provided with an allocation of approximately 320 hours under the direct supervision of the Planning Department.

As a participating municipality, Acton will continue to proportionally share the total costs of operating regional housing services. The proportional share is determined based on the percentage of hours planned to support each municipality for core services as represented in the fee schedule. Supplemental services proposed throughout the year will be invoiced outside of this agreement for payment for additional hours in excess of the allotted hours. If there are unused hours at the end of the second year they will be refunded to the community. The expected funds would be processed in the same manner as the past years, with the funding to

be held by the Town with payments made to the regional housing service provider by the Town on an annual basis.

**Estimated Date for Commencement of Project:** FY2018

**Estimated Date for Completion of Project:** This request will fund services through FY2020.



**Planning Department**

**TOWN OF ACTON**  
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Acton, Massachusetts 01720  
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[planning@acton-ma.gov](mailto:planning@acton-ma.gov)  
[www.acton-ma.gov](http://www.acton-ma.gov)

November 25, 2016

M. Walter Foster, Chair  
Community Preservation Committee  
c/o Planning Department  
Acton Town Hall  
472 Main Street  
Acton, MA 01720

**RE: Community Preservation Plan Project Application Form:  
Bruce Freeman Rail Trail (BFRT) – Phase 2B**

Dear Chairman Foster and Members of the Acton Community Preservation Committee:

On behalf of the Town of Acton, the Acton Planning Department hereby submits the attached project application form to request funding for the completion of the design, included related work items, of the Acton portion of the Bruce Freeman Rail Trail Phase 2B.

The Planning Department thanks you for your consideration and looks forward to working with the Community Preservation Committee in advancing this phase of the Bruce Freeman Rail Trail at the April 2017 Town Meeting.

Sincerely,

Roland Bartl, AICP  
Planning Director

# PROJECT APPLICATION FORM – 2017

Due Date: November 14, 2016

**Applicant:** Town of Acton **Submission Date:** November 14, 2016

**Applicant's Address:**

472 Main Street, Acton, MA 01720

(Planning Department)

**Phone Number:** (978) 929-6631

**E-mail:** planning@acton-ma.gov

**Purpose: (Please select all that apply)**

- Open Space
- Community Housing
- Historic Preservation
- Recreation

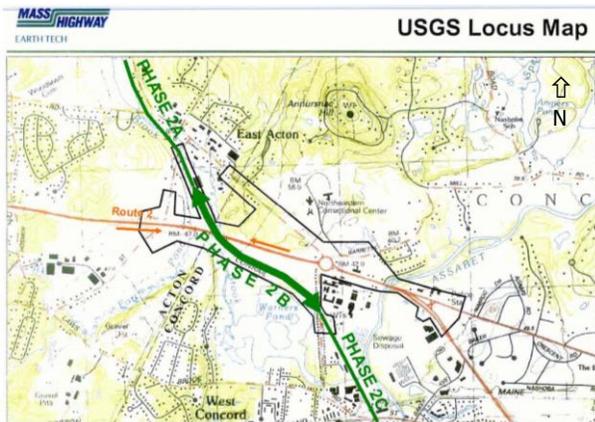
**Town Committee (if applicable):** \_\_\_\_\_

**Project Name:** Bruce Freeman Rail Trail (BFRT) – Phase 2B (Acton portion)

**Project Location/Address:** East Acton to Route 2

**Amount Requested:** \$ 170,000

**Project Summary:** In the space below, provide a brief summary of the project.



The BFRT Phase 2B extends on the former Old Colony Railroad R.O.W. (now owned by MassDOT Rail) from East Acton (rear of Teamworks) over Route 2 to Commonwealth Avenue in West Concord. It connects Acton's Phase 2A with Concord's Phase 2C. 2A is projected for completion in autumn 2017; 2C is approximately one year behind. 2B was once part of the Concord rotary project, which is now scrapped. This left 2B much behind schedule, and funding for completing design, acquisitions, etc. as Concord's and Acton's responsibility. MassDOT had paid for the 25% design, which is near completion. The MassDOT design public hearing is scheduled for November 17, 2016.

This funding request is for Acton's portion of the 100% design/PS&E work needed to bring Phase 2B to construction readiness, including any related environmental and geotechnical work, work related to permitting at the local, State and Federal levels, and construction engineering services. The attached MassDOT standard scope of work and work hour estimate forms document this work. They cover engineering services from the completed 25% design stage to the 100% design completion and include engineering services through the construction phase. BFRT Phase 2B is partly in Acton and partly in Concord. I attached the entire scope of work, and the cost break outs for Acton and Concord. Concord's share is significantly larger due to the design of the Route 2 bridge, which is in Concord. Acton's engineering services cost is estimated to be \$149,100. Concord has approached the Planning Department informally regarding a greater cost sharing by Acton. This inquiry was referred to the Manager's office.

To the Acton engineering cost estimate I added +/- \$20,900 for legal work, appraisals, and acquisition. We expect acquisition costs to be low. Legal cost should be rather modest. But, at this point we just do not know the extent or details of what exactly will be needed on these items. This is my best estimate that should avoid having to come back for additional funding requests.

The previous appropriations for BFRT Phase 2A still have \$131,287.28 combined standing account balance. We request to keep this amount available for another year as insurance against contingencies during the construction phase.

**Estimated Date of Commencement of Project**      **Summer 2017** \_\_\_\_\_

**Estimated Date for Completion of Project**      **Summer 2019** \_\_\_\_\_

DRAFT for Selectmen Meeting

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION  
10 Park Plaza, Boston, MA**

**STANDARDIZED  
SCOPE OF SERVICES GUIDANCE  
FOR PREPARING  
WORK HOUR ESTIMATE FORMS  
FOR CONSULTANT SERVICES**

**BRUCE FREEMAN RAIL TRAIL PHASE 2B**

**Acton, MA and Concord, MA**

Prepared by

**GPI**

Greenman-Pedersen, Inc.  
181 Ballardvale Street Suite 202  
Wilmington, MA 01887  
978-570-2999

October 21, 2016

**REVISED NOVEMBER OF 2013 – PRESENTED TO DESIGNERS JANUARY 21, 2014**

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

**PROJECT DESCRIPTION**

The project consists of the construction of Phase 2B of the Bruce Freeman Rail Trail (BFRT). The project begins in the north at the terminus of Phase 2A near Teamworks Acton, continues in a southerly direction approximately 4,675 feet to the northerly terminus of Phase 2C just approximately 380 feet north of Commonwealth Avenue. Approximately 1,450 feet of the trail are in Acton and 3,225 feet of the trail are in Concord. The proposed rail trail will run in a north-south direction and crosses over Route 2 just after crossing the Acton/Concord town line and crosses Nashoba Brook just south of Route 2.

The 25% submission including sketch plans for Bridges C-19-039 (BUJ) (BFRT over Route 2), C-19-037 (BF4) BFRT over Nashoba Brook and C-19-040 (BUK) (Route 2 over Wildlife Crossing) was submitted and approved by MassDOT. The Design Public Hearing was held on November 17, 2016.

The project involves two bridge structures, associated retaining walls, and one buried culvert to convey the Bruce Freeman Rail Trail Phase 2B in the vicinity of Route 2.

The largest crossing is envisioned as a horizontally curved two span continuous steel girder bridge with reinforced concrete deck. Mechanically stabilized earth (MSE) walls are anticipated parallel to the trail to achieve the grade separation over Route 2. The abutments are detailed on the sketch plans as cast in place concrete abutments supported on spread footings. The pier is a concrete hammerhead style pier, also supported on a spread footing.

A second bridge crossing is located immediately south of Route 2 and provides passage of the rail trail over Nashoba Brook. The existing steel girder bridge at this location will be removed to allow for a new steel girder bridge to be constructed at a higher elevation to meet the grades of the new bridge over Route 2. The sketch plans detail a single span structure supported by concrete abutments that are supported by micropiles that are installed behind, or through, the existing granite block abutments that are to remain.

A culvert crossing under Route 2 is provided for wildlife passage. The sketch plans depict a reinforced concrete box with internal dimensions of 7 feet wide and 5 feet tall. The culvert is located approximately 3 feet below the existing roadway grade of Route 2. The crossing is perpendicular to Route 2 and consists of flared wingwalls at each opening. Construction is shown to occur through open excavation across Route 2 that will require traffic shifts along Route 2 during three stages of construction. The culvert is anticipated to be founded on gravel borrow on natural site materials.

This scope and associated fee includes bringing the project to the PS&E Design level, which shall include, but not be limited to project development (schedules), preparation of all contract documents, preliminary right-of-way plans, a construction cost estimate and specifications. Project includes final bridge design for Bridges C-19-039 (BUJ), C-119-027 (BF4) and C-19-040 (BUK).

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

**ASSUMPTIONS**

1. All current property owner information, layout lines, property lines, and easement lines are shown on the baseplan.
2. ROW research (layout plans, property plans, deeds, easements) will be supplied electronically so that the baseplan information can be reviewed and checked. No additional research will be required.
3. Survey field notes (traverse and benchrun notes, and traverse tie sketches) will be supplied.
4. Initial review of the plans indicates encroachments into the existing Commonwealth of Massachusetts Executive Office of Transportation Right-of-Way. GPI is not aware whether easements have been granted for these encroachments. Preparation of easement plans to formalize use of the right-of-way is not included in this scope.
5. Wetland Delineation is included in the scope and fee.
6. With regard to Environmental Permitting:
  - Notices of Intent will be required in both Acton and Concord
  - No hours have been included for Army Corps permitting
  - It is assumed that wetland impacts will not exceed 5,000 square feet and the Order of Conditions will serve as the Water Quality Certification
  - One (1) Environmental Notification Form (ENF) will be filed for both communities.
7. Supplemental survey will be required to pick up the resource area delineation flags only. No other supplemental survey will be required.
8. Direct expenses have been included for the preparation of a Construction Contract Time Determination.
9. No additional public meetings will be required with the exception of the Notice of Intent hearings.
10. Direct expenses for test pits (for leaching catch basins) and additional geotechnical investigation have been included but may not be required.
11. Hours have been included for Incentives/Disincentives have been included based on District comments regarding the proposed cross over.

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

**PART B – TASK DESCRIPTIONS**

The following information provides a comprehensive description of tasks that may be required to design a MassDOT project. It is understood that certain projects may have specific circumstances that will require that additional tasks be defined and negotiated. Additional tasks shall be numbered consistent with the appropriate Section and added to the Work Hour Estimate Form.

**SECTION 100 PROJECT DEVELOPMENT ENGINEERING**

**105 Project Design Schedule Development and Monthly Updates**

Develop and submit for approval a project design schedule in accordance with the requirements of Division I, Section 4.01 as amended by the language included above.

**SECTION 150 ENVIRONMENTAL**

**155 Project Development Meetings and Public Hearings**

Prepare for and hold public meetings and public hearing(s) as agreed upon by MassDOT and the Consultant.

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

Prepare a Categorical Exclusion (CE) Determination Checklist for Federal-Aid Actions in accordance with the *Programmatic Agreement For Approval Of Categorical Exclusions Between The Federal Highway Administration And The Massachusetts Highway Department*, dated May 17, 2005, and Federal Highway Administration Regulation 23 CFR § 771.117 (1987).

Typically, the NEPA and MEPA Environmental Documents for major projects are prepared jointly, that is, as either an EA/EIR or as an EIS/EIR. In some cases, the NEPA and MEPA documents are prepared and processed separately. The Consultant shall perform the tasks described in Sections 155 through 158 and 161 through 163, as agreed upon by MassDOT and the Consultant.

**163 MEPA – Environmental Notification Form (ENF)**

Prepare an ENF and associated correspondence to various agencies, as necessary, in accordance with the Massachusetts Environmental Policy Act and MEPA Regulations 301 CMR 11.00. Prepare associated filing attachments, such as a distribution list and public notice; responses to comments, as necessary; and attend public meetings.

**176 Wetland Resource Area Delineation**

Conduct wetland resource area delineation in accordance with the Massachusetts Wetlands Protection Act (WPA), the Federal Clean Water Act, the *Corps of Engineers Wetlands*

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

*Delineation Manual (1987 edition)*, and guidance in *Clarification and Interpretation of the 1987 Manual*, dated March 6, 1992. Include all field time associated with delineating the wetland boundaries and time attending local, state, and federal site meetings to review and verify wetland boundary lines. If applicable, documentation must be provided on state Appendix G Wetland Delineation Forms or US Army Corps Wetland Determination Forms for submittal to regulatory agencies.

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

Prepare and submit an NOI to the local conservation commission in accordance with the WPA. Tasks include preparation of all associated forms and backup documentation; permit plans, coordination during review, site walks, and attending conservation commission hearings.

**181 Chapter 91 License/Permit Application**

Prepare an application for a Chapter 91 License or a Chapter 91 Permit in accordance with the Massachusetts Chapter 91 Waterways Act. Tasks include preparation of the application form, backup documentation, and plans/Mylars in accordance with Chapter 91 submission requirements.

**187 Impaired Waterbody Assessment and Water Quality Data Form**

Determine if there are Impaired Waterbodies, as evaluated per the requirements of Section 303(d) of the Federal Clean Water Act, affected by highway runoff generated in the project area by completing the 25% Design portion of the Water Quality Data Form. Document the incorporation of Best Management Practices (BMPs) in the stormwater management system by completing the 75% Design portion of the Water Quality Data Form.

**SECTION 300 25% HIGHWAY DESIGN SUBMISSION**

**303 Survey Coordination and Controls**

Coordinate ground survey effort, review survey controls and closures, baseline ties and overall quality of survey.

**SECTION 400 75% HIGHWAY DESIGN SUBMISSION**

**401 Response to 25% Comments**

Prepare a formal written response to all comments received regarding the 25% review and address revisions stemming from the Design Public Hearing that MassDOT and the Consultant deem necessary.

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

**402 Field Reconnaissance**

Conduct a field review of the proposed project interface with adjacent properties, streets, drives, drainage, utilities, wetlands, etc. Define additional survey needs, if needed.

**403 Meetings Liaison and Coordination**

Attend meetings and provide the liaison necessary to advance the design of a project. Coordinate and attend meetings with MassDOT's Boston and District Offices, community representatives, planning agencies, as determined in the project scoping process. Provide MassDOT with minutes of the meetings.

**404 Utility Coordination**

Contact 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 publicly owned utility work that is to be performed by the construction contractor.

**405 Final Horizontal Design Geometrics**

Adjust the horizontal geometry based on the 25% review comments and comments stemming from the Design Public Hearing. Plans must clearly show all aspects of the horizontal geometry, including curve components such as Point of Curvature (PC), Radius (R), DELTA, Length of Curve (L), Tangent (T) and Point of Tangency (PT) along with a description of roadway widths, station equations and horizontal offsets between survey baseline and design centerline.

**406 Final Vertical Design Geometrics**

Adjust vertical geometry based on 25% review comments and comments stemming from the Design Public Hearing. Plans must clearly show all pertinent aspects of the vertical geometry including Stopping Sight Distance (SSD), Passing Sight Distance (PSD), Grade 1 (G1), Grade 2 (G2), Length of Vertical Curve (L), K (factor), station and elevation of Point of Vertical Curvature (PVC), Point of Vertical Tangency (PVT) and Point of Vertical Intersection (PVI). Profiles are to be prepared in accordance with the Guidebook.

**407 Pavement Design**

Respond to Pavement Design Engineer's review comments and prepare a detailed pavement design with updated data sheets, per the Guidebook. For bridge R&R projects refer to the 11/12/09 MassDOT Memorandum on standard bridge deck pavements.

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

**408 Typical Cross Sections**

Finalize the typical cross sections ensuring that materials and dimensions are clearly labeled in accordance with the proposed pavement structure approved by the Pavement Management Section.

**409 Plot Cross Sections**

Adjust cross sections to ensure that the slope limits and treatments of each cross section are crafted to suit the specific site locations. Individual cross sections should be evaluated regarding guardrail locations, gravel box detail, pay limits, and the need for subdrains and retaining walls.

**410 Plot Proposed Layout and Easements**

Adjust the plans based on the limits established by the final cross sections to ensure that adequate right of way is available to perform the work. Existing layout lines, proposed alterations and any temporary or permanent easements must be clearly labeled.

**411 Construction Plans**

Prepare the Construction Plans in accordance with the Guidebook. Each item of work within the project limits must be clearly labeled. Drawings must be formatted as described in the Guidebook.

**412 Grading and Tie Plans**

Prepare grading and tie plans as applicable showing detailed information regarding proposed curve geometry and grades.

**413 Drainage and Water Supply Details**

Clearly show all existing and proposed drainage and water supply installations. The drainage and water supply design must address all work required to accommodate the proposed roadway improvements.

During the Project's design development, the plan presentation of proposed drainage facilities will show rim and invert elevations. These will be included in a separate CADD layer, so that they can be frozen off in the PS&E documents. These elevations shall not be shown on the final plans.

**414 Traffic Signs**

Identify locations for all warning, regulatory and route marker signs. Indicate on the construction plans the status of existing sign structures.

**MASSACHUSETTS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION**

**417 Pavement Markings and Plan Preparation**

Design and layout the roadway pavement markings, stop lines, cross walks, gore markings, etc. Prepare pavement marking plans.

**418 Traffic Management**

Finalize the construction staging. Prepare the temporary traffic control construction plans in accordance with the MUTCD such that sufficient information is provided to demonstrate a feasible means of constructing the project. The level of detail shall recognize that the actual traffic management plan implemented by the contractor may vary from that shown on the plans. A more definitive estimate for the use of police/flaggers will be made based on the finalization of the traffic control plans/traffic management plans.

**420 Landscaping and Plan Preparation**

Finalize planting locations and species based on review comments. Develop planting schedules and tabulate relevant data.

**421 Erosion Control**

Detail the sequencing, material placement and measures to control the potential damage to adjacent properties, wetlands, bodies of water, etc. Include erosion control measures in the plans.

**422 Miscellaneous Contract Plans**

Prepare miscellaneous full size drawings for presentation of the proposed project. These shall include the following miscellaneous contract plans, as required: Title Sheet, Index, Key Plan, Boring Plans, Boring Logs, Typical Sections, and Special Details.

**423 Quantity & Cost Estimate (Weighted Average Bid Application)**

Prepare a detailed estimate using MassDOT's Weighted Average Bid Application (WABA). Also prepare a calculation book based on the latest edition of the Standard Nomenclature. Check that every item of work shown on the plans has a pay item.

Provide tracking of significant changes (greater than 10%) since the 25% estimate.

**424 Special Provisions**

Prepare draft special provisions based on the latest edition of the Standard Specifications for Highways and Bridges and Supplemental Specifications, and verify that every item in the estimate that is listed in the Standard Nomenclature with an asterisk (\*) has a special provision. Ensure that special provisions are drafted only when absolutely necessary to describe a specific or unique activity to be performed by the contractor.

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HIGHWAY DIVISION**

**425 Constructability and Quality Control (QC) Reviews**

Perform an independent review of the project using an experienced engineer, who is not directly involved in the preparation of the contract documents. The review shall focus on the practicality of constructing the project based on access to site, equipment needs, material properties, etc. Also provide an overall review of the plans, specifications and estimate for conformity to the Guidebook, 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.

**426 Submission Check List**

Prepare and submit the 75% Design Check List.

**428 Construction Contract Time Determination**

This language applies to all Projects with Project Utility Coordination Form and/or Incentives/Disincentives.

The Consultant shall prepare a Construction Contract Time Determination (CCTD) Schedule which sets forth an estimate for a reasonable duration of the construction contract, utilizing the details of the estimate for all projects that involve a Project Utility Coordination Form or Incentives/Disincentives that MassDOT chooses to offer the Contractors.

The CCTD Schedules at the 75% (INITIAL), 100% (UPDATED) and PS&E (UPDATED) design stages provide MassDOT with a basis to determine whether the Construction Contract Duration represents a reasonable approach to constructing the Project, to allow constructability issues to be addressed prior to design completion, to assist the Consultant with the requirements to validate that the contract plans/documents support a constructible approach, and to assist MassDOT in the review of the Contractor's Baseline Schedule Submission.

The Consultant shall employ an experienced construction scheduler to prepare construction schedules at the 75%, 100% and PS&E design stages. The Scheduler must have a minimum of 5 years construction scheduling experience, and may be an employee of the Consultant.

**a) Critical Path Method Scheduling**

The CCTD Schedule shall use a Critical Path Method (CPM) and shall be developed and maintained using software approved by MassDOT (Primavera is preferred for consistency with MassDOT's construction specifications and master schedule). An evaluation of critical resources, shift differential, overtime, proposed methods, and all limitations of operations shall be included in the CCTD Schedule.

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Based upon consultation with MassDOT the Consultant will be required to respond to any comments and update, explain or incorporate any MassDOT provided data, such as production factors, and/or revise the CCTD Schedule, as MassDOT determines necessary.

The Consultant shall submit a CCTD schedule following the 75%, 100% & PS&E submission of each construction cost estimate. The CCTD schedule submission will be due three (3) weeks after the construction cost estimates have been approved by MassDOT.

If required, the data from the bottoms up cost estimate for Lump Sum items (e.g., crews, equipment, production rates, quantities, construction sequence), must be used in the development of the CCTD Schedule. The Scheduler shall develop the logic (activity relationships) and activity durations using data from the estimate. Production rates and labor hours shall be used to develop reasonable crew hours based upon a reasonable crew composition. This evaluation shall also consider the intended construction sequence, construction seasons, and other construction time related aspects, such as any requirements to relocate utilities and Incentive/Disincentive provisions.

**b) Milestones and Access Restraints**

The Consultant shall develop Contract Milestones and Access Restraints (to the Project site) including those identified to support the utility coordination developed as part of the Project Utilities Coordination Form and those needed to support the implementation of Incentives and Disincentives that should be included in the construction contract provisions, and shall include them in the CCTD schedule.

**c) Limitations of Operations – Construction Constraints**

The Consultant shall identify significant implications of construction constraints as may be determinable, and reflect them in the cost estimate and schedule, including, but not limited to restrictions from temperature, noise, vibration, permitting, approved materials, emergency response and community events, as part of the Project Utility Coordination form. The Consultant shall include all of the resulting PUC form information in their CCTD and shall provide MassDOT a furnished PUC form in the Contract Documents. This effort also includes the development of access restraints (restrictions that clearly define when the contractor can start work in a specific area allowing for the third-party Utility to complete their work) into the Contract Documents. The Consultant shall identify any early utility work, permitting or Right of Way activities that must be performed prior to the Contractor N.T.P. These early coordination activities shall be identified and included in the CCTD updates. If some construction activities are to be performed during the winter months (grouting of precast units; placing of closure pour slabs; etc.) make sure those tasks are identified and appropriate language is added to Subsections 8.03 and 8.10.

**d) Elements**

The Consultant shall include the following time (contract duration) related elements are included in the CCTD Schedule:

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- 1) Preparation of a work plan and mobilization prior to starting physical work;
- 2) Preparation of critical submittals;
- 3) Review of critical submittals by the Consultant (MassDOT will provide standard submittal review durations to be used in the CCTD schedules);
- 4) Procurement/ordering of materials;
- 5) Fabrication and delivery of long-lead items;
- 6) Time necessary to complete each activity, as itemized in the Construction cost estimate;
- 7) Testing;
- 8) Commissioning (moveable drawbridges only);
- 9) Winter restrictions;
- 10) Environmental permitting or landowner restrictions;
- 11) Agency/utility/city restrictions;
- 12) Sequencing/logic required to complete the work;
- 13) Utility restraints and utility relocation milestones; and
- 14) Early/Critical coordination activities
  - A. Early Utilities
  - B. Remaining Right of Way
  - C. Permits that the Contractor must obtain

**e) Quality Control Procedures**

The Consultant shall submit its Quality Control (QC) procedures for the performance of CCTD to MassDOT for review and approval prior to commencing work on the Project. As a minimum requirement, the Consultant shall detail the roles of each individual performing the planning schedule (utilization of estimating information, logic, durations, constructability, means-and-methods), and provide a description of how the schedule will be developed, monitored and approved by the Consultant.

**429 Incentives/Disincentives with Road User Calculation**

Refer to Standard Task Description 331 (Incentives/Disincentives) which details the effort involved in this task for the 25%, 75%, 100% and PS&E Submissions.

**SECTION 450 100% HIGHWAY DESIGN SUBMISSION**

**451 Respond to 75% Comments**

Prepare a formal written response to all comments received regarding the 75% review. Resolve any further review comments.

**452 Finalize Plans**

Prepare a set of plans addressing all comments received from the 75% review. Ensure that the plans are clear and are prepared in accordance with Chapter 2 of the Guidebook.

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**453 Finalize Special Provisions**

Review the special provisions to ensure that the special provisions do not duplicate those with respect to Division I of the Standard Specifications. Review the Method of Measurement and Basis of Payment for every item in order to ensure that the special provisions are clearly defined and not ambiguous.

**454 Finalize Quantity and Cost Estimate (W.A.B.A. & Calculation Book)**

Prepare Detail Sheets, Quantity Sheets, and a Cost Summary Sheet. Finalize calculation book in accordance with Chapter 18 of the Guidebook. Prepare calculations for all items of work that have a pay item. Identify any non-participating work. The estimate submitted shall be prepared using MassDOT's Weighted Average Bid Application (WABA).

Provide tracking of significant changes (greater than 10%) since the 75% estimate.

**455 Quality Control (QC) Review**

Perform an independent review of the project using an experienced engineer, who is not directly involved in the preparation of the contract documents to perform an independent review of the project. Refer to the MassDOT web site for the latest edition of all reference documents, Engineering Directives and Policy Directives. Verify that the plans, specifications and estimate are prepared in accordance with these documents.

**456 Submission Check List**

Prepare and submit the 100% Highway Design Check List.

**458 Construction Contract Time Determination**

Refer to Standard Task Description 428 (Construction Contract Time Determination) which details the effort involved in this task for the 75%, 100% and PS&E Submissions.

**459 Incentives/Disincentives**

Refer to Standard Task Description 331 (Incentives/Disincentives) which details the effort involved in this task for the 25%, 75%, 100% and PS&E Submissions.

**SECTION 500 RIGHT OF WAY**

**501 Preliminary Right of Way Plans**

Review the relationship between the limits of work necessary to satisfactorily construct the proposed improvements and the existing layout. Determine appropriate limits of alterations

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to existing layouts, takings, permanent easements, temporary easements, etc. Prepare Preliminary Right of Way Plans in accordance with Chapter 18 of the Guidebook. The Right of Way Plans include Title Sheet, Typical Sections, Parcel Summary Sheet, Location Maps and Property Plan Sheets.

**502 Layout Plans and Order of Taking**

Prepare Layout Plans based on the approved Preliminary Right of Way Plans. Show lengths and bearings of all lines and calculate areas. The Layout Plans shall be prepared in accordance with Chapter 18 of the Guidebook and shall 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. The preparation of a Decree Plan shall be included, if required.

**503 Written Instrument**

The Written Instrument for the Layout and Order of Taking shall be prepared in accordance with MassDOT Policy. The Written Instrument shall be carefully checked against the Layout Plan.

**504 Final Right of Way Plans**

After the FHWA has granted authority to the State and approved Federal participating funds to acquire the right of way takings and/or 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.

**SECTION 750 FINAL BRIDGE DESIGN**

**751 Structural Design – Superstructure**

Prepare the design calculations, and perform an independent design check of the calculations for all superstructure components in accordance with the MassDOT Bridge Manual.

**752 Structural Design – Substructure**

Prepare the design calculations and perform an independent design check of the calculations for all substructure components, including any cofferdams and permanent excavation support system requirements in accordance with the MassDOT Bridge Manual.

**753 Bridge Layout Geometrics**

Prepare the design calculations and perform an independent design check of the bridge geometric calculations, including framing, layout, critical clearance and elevation of footings, layout and ties, etc.

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**754 Contract Drawings**

Prepare the structural drawings in accordance with the MassDOT Bridge Manual and check the drawings for content and accuracy.

**755 First Review Submission**

Prepare and submit the bridge design plans for MassDOT review and subsequent resolution of the comments and recommendations received from MassDOT.

**756 Quantity Cost Estimates**

Prepare the quantity calculations, and perform an independent check of the quantity calculations of the bridge items and related cost estimates.

**757 Special Provisions**

Prepare the bridge special provisions in accordance with the MassDOT Bridge Manual.

**758 Second Review Submission**

Prepare and submit updated final bridge designs plans for MassDOT review and subsequent resolution of MassDOT comments and recommendations.

**760 Meetings and Liaison**

Participate in meetings and coordinate in scheduling and advancing the bridge design.

**761 Constructability and Quality Control (QC) Review**

Perform an independent review of the project by an experienced engineer who is not directly involved in the preparation of the contract documents. Review shall focus on the practicality of constructing the structure based on access to site, equipment needs, material properties, etc. Provide an overall review of the plans, specifications and estimate for conformity to the Guidebook, 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.

**762 Submission Check List**

Prepare and submit Bridge Section Check list.

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**SECTION 800 PS&E SUBMISSION**

Upon approval of the plans submitted for the preliminary design submission, the Consultant shall proceed with the preparation of the contract plans and documents in accordance with the relevant guidelines set forth in the Guidebook, the Bridge Manual, the Standard Specifications for Highways and Bridges, and other related publications as listed in Division I.

**801 Respond to 100% Comments**

Prepare a formal written response to all comments received regarding the 100% review.

**802 Finalize Plans, Specifications and Estimate**

Ensure that all comments from 100% review are addressed and reflected in the contract documents.

**803 Prepare Detail Sheets**

Prepare Detail Sheets in accordance with Chapter 13 of the Guidebook. All items of work not adequately reflected on the plans are to be described in the Detail Sheets.

**804 Combine Highway and Bridge**

Ensure that the highway plans accurately depict the approved bridge design and that the index correctly identifies the page numbering of the bridge plans. Combine Special Provisions and Estimate into one package that eliminates redundancy and ambiguity.

**805 Quality Control (QC) Review**

Have an experienced engineer who is not directly involved in the preparation of the contract documents perform an independent review of the project. Log on to the MassDOT website for the latest reference documents such as Engineering Directives and Policy Directives, and verify that the Plans, Specifications and Estimate are prepared in accordance with these documents. Review all environmental permits and ensure that the contract documents provide a means of compensating the construction contractor for performing work described in the permits.

**807 Finalize Construction Contract Time Determination**

Refer to Standard Task Description 428 (Construction Contract Time Determination) which details the effort involved in this task for the 75%, 100% and PS&E Submissions.

**808 Finalize Incentives/Disincentives**

*Refer to Standard Task Description 331 (Incentives/Disincentives) which details the effort involved in this task for the 25%, 75%, 100% and PS&E Submissions.*

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**SECTION 900 CONSTRUCTION ENGINEERING**

**901 Pre-Bid Services**

Review and respond to inquiries from MassDOT related to the bid documents. Participate in Pre-Bid Conference. Provide written responses to contractor's questions.

**902 Pre-Construction Conference**

Attend the Pre-Construction Conference. Answer questions and prepare the minutes of the meeting.

**903 Highway Shop Drawings and Signal Permit**

Review lighting, traffic signals, and sign shop drawings, including foundations and supports; and perform an operational site inspection. Prepare a signal permit based on as-built conditions.

**904 Bridge and Wall Shop Drawings**

Review and approve or take other appropriate action upon structural shop drawings for conformance with the contract documents.

**905 Bridge Construction Procedures**

Review and approve or take other appropriate action according to the Bridge Manual regarding the conformance of the bridge demolition and erection procedures to the contract documents.

**906 Furnishing Advice and Field Visits**

Provide assistance to MassDOT in interpreting the contract documents. Conduct field visits to the project site during construction as requested by the Engineer to provide consultation on design intent, assistance in addressing unforeseen conditions and /or similar matters, as requested by the Engineer. Attend periodic status and coordination meetings as determined by complexity of the project.

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**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Acton, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective		ProjInfo No.:	<b>606233</b>					
<b>SECTION 100</b>								
<b>PROJECT DEVELOPMENT ENGINEERING</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
101	Project Concept Preparation (Development of Purpose and Need)							
102	Preliminary Project Area Analysis							
103	Reasonable Alternative(s) Identification							
104	Alternatives Analysis & Report Preparation							
105	Project Design Schedule Development and Monthly Updates		4		16			20
	<b>SUBTOTAL</b>		4		16			20
<b>SECTION 150</b>								
<b>ENVIRONMENTAL</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
151	Early Environmental Coordination Design Submission Checklist							
152	Hist/Arch. - Federal Section Section 106 and State Chapter 254							
153	Reserved							
154	<b>Hazardous Materials Research/Review</b>							
155	Project Development Meetings and Hearings		8	4	8			20
156	NEPA/MEPA Determination							
157	NEPA - Categorical Exclusion (CE)		1	4	8	2		15
158	NEPA - Environmental Assessment (EA)							
159	NEPA - Draft Environmental Impact Statement (EIS)							
160	NEPA - Final Environmental Impact Statement (EIS)							
161	NEPA - Supplemental Environmental Impact Statement (EIS)							
162	NEPA - Reevaluation							
163	MEPA - Environmental Notification Form (ENF)		4	4	20	6	4	38
164	MEPA - Draft Environmental Impact Report (DEIR)							
165	MEPA - Final Environmental Impact Report (FEIR)							
166	MEPA - Notice of Project Change (NOPC)							
167	MEPA - Supplemental Environmental Impact Report (SEIR)							
168	Reserved							
169	Reserved							
170	USACE Section 404 General Permit (PGP)							
171	USACE Individual Section 404 Permit							
172	U.S. Coast Guard Bridge Permit							
173	Programmatic Section 4(f) Evaluation							
174	Draft Individual Section 4(f) Evaluation							
175	Final Individual Section 4(f) Evaluation							
176	Wetland Resource Area Delineation		2		4	10		16
177	WPA Abbr. Notice of Resource Area Determination (ANRAD)							
178	WPA Request for Determination of Applicability (RDA)							
179	WPA Notice of Intent (NOI)		8	16	50	12	4	90
180	WPA Variance							
181	Chapter 91 License/Permit Application							
182	Water Quality Certification							
183	Coastal Zone Management Consistency Review							
184	Wildlife/Rare Species Assessment							
185	Essential Fish Habitat Assessment							
186	Reserved							
187	Impaired Waterbody Assessment and Water Quality Data Form		2		6			8
	<b>SUBTOTAL</b>		25	28	96	30	8	187

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City/Town	<b>Acton, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective:		ProjInfo No.:	<b>606233</b>					
<b>SECTION 200</b>								
<b>FUNCTIONAL DESIGN REPORT (FDR)</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
201	Establish Purpose and Need							
202	Public and Agency Outreach							
203	Evaluate Existing Conditions / Context							
204	Prepare Traffic Volumes							
205	Conduct Safety Analysis							
206	Evaluate Signal Warrants							
207	Operational Analysis for Existing Conditions							
208	Establishment of Basic Design Controls and Evaluation Criteria							
209	Development of Alternatives							
210	Operational Analysis for Future Conditions							
211	Preferred Alternative							
212	Complete Streets							
213	GreenDOT							
214	Traffic Management							
215	Construction Cost							
216	Conclusion and Recommendation							
217	Report Preparation							
SUBTOTAL								
<b>SECTION 220</b>								
<b>DESIGN EXCEPTION REPORT</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
221	Evaluate 13 Controlling Criteria							
222	Perform Incremental Evaluation							
223	Prepare Narrative/Report							
SUBTOTAL								
<b>SECTION 230</b>								
<b>INTERCHANGE JUSTIFICATION / MODIFICATION REPORT (IJR / IMR)</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
231	Prepare an IJR/IMR							
SUBTOTAL								
<b>SECTION 300</b>								
<b>25% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
301	Project Initiation and Data Compilation							
302	Utility Coordination							
303	Survey Coordination and Controls					4	4	8
304	Base Plans, Profiles and Typical Sections							
305	Field Reconnaissance							
306	Plot Existing Layout Lines							
307	Meetings and Liaison							
308	Determine Roadway Cross Section							
309	Preliminary Horizontal Geometry							
310	Preliminary Vertical Geometry							
311	Cross Section Studies							
312	Prepare Cross Sections							
313	Plot Proposed Layout and Easements							

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**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Acton, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective:		ProjInfo No.:	<b>606233</b>					
<b>SECTION 300 (Cont'd)</b>								
<b>25% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
314	Pavement Design							
315	Typical Sections							
316	Construction Details							
317	Hydrological Studies and Hydraulics Report							
318	Preliminary Drainage and Utility Studies							
319	Lane Configurations							
320	Traffic Signals							
321	Signs and Pavement Markings							
322	Traffic Management							
323	Reserved							
324	Constructability Review							
325	Quality Control (QC) Review							
326	Preliminary Construction Estimate							
327	Submission Checklists							
328	Modifications and Revisions							
329	Value Engineering (VE)							
330	Construction Contract Time Determination							
331	Incentives/Disincentives							
<b>SUBTOTAL</b>						4	4	8
<b>SECTION 350</b>								
<b>DESIGN PUBLIC HEARING</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
352	Hearing Preparation							
353	Design Public Hearing							
<b>SUBTOTAL</b>								
<b>SECTION 400</b>								
<b>75% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
401	Response to 25% Comments		4	6	6	6	4	26
402	Field Reconnaissance			3	3			6
403	Meetings, Liaison and Coordination		6	6	8			20
404	Utility Coordination		3	4	2	3		12
405	Final Horizontal Design Geometrics		3	4	6	3	2	18
406	Final Vertical Design Geometrics		2	2	6	2	2	14
407	Pavement Design		2	1	3			6
408	Typical Cross Sections		1	2	3	2	1	9
409	Plot Cross Section		1	2	8	6	3	20
410	Plot Proposed Layout and Easements		1	6	2			9
411	Construction Plans		2	3	10	6	2	23
412	Grading and Tie Plans		1	2	8	2		13
413	Drainage and Water Supply Details		1	8	10	6	3	28
414	Traffic Signs			3	6			9
415	Guide Sign Design & Overhead Directional (OD) Elevations							
416	Traffic Signals and Plan Preparation							
417	Pavement Markings and Plan Preparation		1	3	8	3	2	17
418	Traffic Management							
419	Highway Lighting Plans and Details							
420	Landscaping and Plan Preparation		3	4	3	10	3	23

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**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	Acton, MA	Contract No.:						
Location:	BFRT Phase 2B	Assignment No.:						
Revisions Effective:		ProjInfo No.:	606233					
<b>SECTION 400 (Cont'd)</b>								
<b>75% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
421	Erosion Control			2	4	3		9
422	Miscellaneous Contract Plans			1	8	3		12
423	Quantity & Cost Estimate (Weighted Average Bid Application)		2	8	16	10	6	42
424	Special Provisions		2	10	6			18
425	Constructability and Quality Control (QC) Review	3	8	6				17
426	Submission Checklist	1	2	3				6
427	Bottom Up Estimate and Reconciliation (if required)							
428	Construction Contract Time Determination		1		2			3
429	Incentives/Disincentives with Road User Calculation		1	6				7
	SUBTOTAL	4	47	95	128	65	28	367
<b>SECTION 450</b>								
<b>100% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
451	Respond to 75% Comments		3	8	8			19
452	Finalize Plans		8	24	38	24	12	106
453	Finalize Special Provisions		1	6	2			9
454	Finalize Quantity and Cost Estimate (W.A.B.A. & Calculation Book)		2	6	12	6		26
455	Quality Control (QC) Review	2	8	6				16
456	Submission Checklist	1	1	2				4
457	Bottom Up Estimate and Reconciliation (if required)							
458	Construction Contract Time Determination		1		2			3
459	Incentives/Disincentives		2	3				5
	SUBTOTAL	3	26	55	62	30	12	188
<b>SECTION 500</b>								
<b>RIGHT OF WAY</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
501	Preliminary Right of Way Plans	2	2			6	6	16
502	Alteration Plan and Order of Taking							
503	Easement Plan and Written Instrument	2	8			12	8	30
504	Final Right of Way Plans		1			1	2	4
	SUBTOTAL	4	11			19	16	50
<b>SECTION 600</b>								
<b>GEOTECHNICAL DESIGN</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
601	Research Available Subsurface Data							
602	Field Reconnaissance							
603	Subsurface Investigation Plan							
604	Subsurface Investigation Inspection							
605	Office Studies, Analysis and Testing							
606	Geotechnical Report							
607	Meetings, Reviews and Liaison							
608	Final Plans, Specifications and Estimates							
	SUBTOTAL							

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Acton, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective:		ProjInfo No.:	<b>606233</b>					
<b>SECTION 700</b>								
<b>PROJECT DEVELOPMENT - STRUCTURAL</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
701	Field Investigation							
702	Determine Bridge Configurations							
703	Preliminary Structural Analysis							
704	Comparative Design and Cost Analyses							
705	Preliminary Structures Report Preparation							
706	Bridge Type Selection Worksheet Preparation							
707	Meetings and Liaison							
708	Hydraulics Study and Report (Bridges over Water)							
		<b>SUBTOTAL</b>						
<b>SECTION 710</b>								
<b>SKETCH PLANS</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
711	Establish Boring Locations							
712	Reserved							
713	Sketch Plan Development							
714	Meetings, Coordination and Liaison							
715	Constructability Review							
716	Submission Checklist							
		<b>SUBTOTAL</b>						
<b>SECTION 750</b>								
<b>FINAL BRIDGE DESIGN</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
751	Structural Design - Superstructure							
752	Structural Design - Substructure							
753	Bridge Layout Geometries							
754	Contract Drawings							
755	First Review Submission							
756	Quantity Cost Estimates							
757	Special Provisions							
758	Second Review Submission							
759	FHWA Reviews							
760	Meetings and Liaison							
761	Constructability and Quality Control (QC) Review							
762	Submission Check List							
		<b>SUBTOTAL</b>						
<b>SECTION 800</b>								
<b>PS&amp;E SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
801	Respond to 100% Comments	2	4	8	6			20
802	Finalize Plans, Specifications and Estimate	2	6	11	24	20	8	71
803	Prepare Detail Sheets		1	2	8	6		17
804	Combine Highway and Bridge		2	6	8	8		24
805	Quality Control (QC) Review		8	6				17
806	Finalize Bottom Up Estimate and Estimate Reconciliation (if required)							
807	Finalize Construction Contract Time Determination		3		2			5
808	Finalize Incentives/Disincentives		1	2				3
		<b>SUBTOTAL</b>						
		7	25	35	48	34	8	157

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**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Acton, MA</b>	Contract No.:					
Location:	<b>BFRT Phase 2B</b>	Assignment No.:					
Revisions Effective		ProjInfo No.:	<b>606233</b>				
<b>SECTION 900</b>							
<b>CONSTRUCTION ENGINEERING</b>							
	PIC	PM	SE	Eng	AE	ET	TOTAL
901 Pre-Bid Services		6	12	8			26
902 Pre-Construction Conference		3	3	3			9
903 Highway Shop Drawings and Signal Permit		3	4	6			13
904 Bridge and Wall Shop Drawings							
905 Bridge Construction Procedures							
906 Furnishing Advice and Field Visits	3	18	24	38	24	12	119
907 Geotechnical Construction Evaluation							
908 Bridge Rating and Photographs							
	<b>SUBTOTAL</b>	<b>3</b>	<b>30</b>	<b>43</b>	<b>55</b>	<b>24</b>	<b>167</b>



# MassDOT - HIGHWAY DIVISION

## SCOPING WORKBOOK

Revisions Effective November 2013				
Contract No #		<b>EXHIBIT B</b>		
0		<b>BUDGET - COST PLUS</b>		
		PRELIMINARY ENGINEERING	CONSTRUCTION ENGINEERING	TOTALS
(a) Salary Costs		\$41,851.60	\$7,465.92	\$49,317.52
(b) Indirect Costs	155.00%	\$64,869.98	\$11,572.18	\$76,442.16
(c) Net Fee	10.00%	\$10,672.16	\$1,903.81	\$12,575.97
TOTAL LIMITING FEE		\$117,393.74	\$20,941.91	\$138,335.64
(d) Direct Costs		\$10,540.00	\$310.00	\$10,850.00
MAX PAYMENT AMOUNT		\$127,933.74	\$21,251.91	\$149,185.64
MAXIMUM OBLIGATION				
Direct Expense Breakdown				
		Design	Construction	TOTAL
Printing, Mailing		\$ 775.00	\$ 155.00	\$ 930.00
Travel		\$ 310.00	\$ 155.00	\$ 465.00
Test Pits/Supplemental Geotechnical		\$ 3,100.00		\$ 3,100.00
CTD		\$ 6,200.00		\$ 6,200.00
Police Details		\$ 155.00		\$ 155.00
GPI DIRECT EXP		\$ 10,540.00	\$ 310.00	\$ 10,850.00
TOTAL DIRECT EXPENSES		\$ 10,540.00	\$ 310.00	\$ 10,850.00

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	Concord, MA	Contract No.:						
Location:	BFRT Phase 2B	Assignment No.:						
Revisions Effective:		ProjInfo No.:						606233
<b>SECTION 100</b>								
<b>PROJECT DEVELOPMENT ENGINEERING</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
101	Project Concept Preparation (Development of Purpose and Need)							
102	Preliminary Project Area Analysis							
103	Reasonable Alternative(s) Identification							
104	Alternatives Analysis & Report Preparation							
105	Project Design Schedule Development and Monthly Updates		4		16			20
	SUBTOTAL		4		16			20
<b>SECTION 150</b>								
<b>ENVIRONMENTAL</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
151	Early Environmental Coordination Design Submission Checklist							
152	Hist./Arch - Federal Section Section 106 and State Chapter 254							
153	Reserved							
154	Hazardous Materials Research/Review							
155	Project Development Meetings and Hearings		8	4	8			20
156	NEPA/MEPA Determination							
157	NEPA - Categorical Exclusion (CE)		1	4	8	2		15
158	NEPA - Environmental Assessment (EA)							
159	NEPA - Draft Environmental Impact Statement (EIS)							
160	NEPA - Final Environmental Impact Statement (EIS)							
161	NEPA - Supplemental Environmental Impact Statement (EIS)							
162	NEPA - Reevaluation							
163	MEPA - Environmental Notification Form (ENF)		4	4	20	6	4	38
164	MEPA - Draft Environmental Impact Report (DEIR)							
165	MEPA - Final Environmental Impact Report (FEIR)							
166	MEPA - Notice of Project Change (NOPC)							
167	MEPA - Supplemental Environmental Impact Report (SEIR)							
168	Reserved							
169	Reserved							
170	USACE Section 404 General Permit (PGP)							
171	USACE Individual Section 404 Permit							
172	U.S. Coast Guard Bridge Permit							
173	Programmatic Section 4(f) Evaluation							
174	Draft Individual Section 4(f) Evaluation							
175	Final Individual Section 4(f) Evaluation							
176	Wetland Resource Area Delineation		2		4	10		16
177	WPA Abbr. Notice of Resource Area Determination (ANRAD)							
178	WPA Request for Determination of Applicability (RDA)							
179	WPA Notice of Intent (NOI)		8	16	50	12	4	90
180	WPA Variance							
181	Chapter 91 License/Permit Application		4	8	40	8	4	64
182	Water Quality Certification							
183	Coastal Zone Management Consistency Review							
184	Wildlife/Rare Species Assessment							
185	Essential Fish Habitat Assessment							
186	Reserved							
187	Impaired Waterbody Assessment and Water Quality Data Form		2		6			8
	SUBTOTAL		29	36	136	38	12	251

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Concord, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective:		ProjInfo No.:	<b>606233</b>					
<b>SECTION 200</b>								
<b>FUNCTIONAL DESIGN REPORT (FDR)</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
201	Establish Purpose and Need							
202	Public and Agency Outreach							
203	Evaluate Existing Conditions / Context							
204	Prepare Traffic Volumes							
205	Conduct Safety Analysis							
206	Evaluate Signal Warrants							
207	Operational Analysis for Existing Conditions							
208	Establishment of Basic Design Controls and Evaluation Criteria							
209	Development of Alternatives							
210	Operational Analysis for Future Conditions							
211	Preferred Alternative							
212	Complete Streets							
213	GreenDOT							
214	Traffic Management							
215	Construction Cost							
216	Conclusion and Recommendation							
217	Report Preparation							
	<b>SUBTOTAL</b>							
<b>SECTION 220</b>								
<b>DESIGN EXCEPTION REPORT</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
221	Evaluate 13 Controlling Criteria							
222	Perform Incremental Evaluation							
223	Prepare Narrative/Report							
	<b>SUBTOTAL</b>							
<b>SECTION 230</b>								
<b>INTERCHANGE JUSTIFICATION / MODIFICATION REPORT (IJR / IMR)</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
231	Prepare an IJR/IMR							
	<b>SUBTOTAL</b>							
<b>SECTION 300</b>								
<b>25% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
301	Project Initiation and Data Compilation							
302	Utility Coordination							
303	Survey Coordination and Controls					8	8	16
304	Base Plans, Profiles and Typical Sections							
305	Field Reconnaissance							
306	Plot Existing Layout Lines							
307	Meetings and Liaison							
308	Determine Roadway Cross Section							
309	Preliminary Horizontal Geometry							
310	Preliminary Vertical Geometry							
311	Cross Section Studies							
312	Prepare Cross Sections							
313	Plot Proposed Layout and Easements							

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Concord, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective:		ProjInfo No.:	<b>606233</b>					
<b>SECTION 300 (Cont'd)</b>								
<b>25% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
314	Pavement Design							
315	Typical Sections							
316	Construction Details							
317	Hydrological Studies and Hydraulics Report							
318	Preliminary Drainage and Utility Studies							
319	Lane Configurations							
320	<b>Traffic Signals</b>							
321	Signs and Pavement Markings							
322	Traffic Management							
323	Reserved							
324	Constructability Review							
325	Quality Control (QC) Review							
326	Preliminary Construction Estimate							
327	Submission Checklists							
328	<b>Modifications and Revisions</b>							
329	Value Engineering (VE)							
330	Construction Contract Time Determination							
331	Incentives/Disincentives							
	SUBTOTAL					8	8	16
<b>SECTION 350</b>								
<b>DESIGN PUBLIC HEARING</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
352	Hearing Preparation							
353	Design Public Hearing							
	SUBTOTAL							
<b>SECTION 400</b>								
<b>75% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
401	Response to 25% Comments		8	10	18	10	8	54
402	Field Reconnaissance			7	7			14
403	Meetings, Liaison and Coordination		10	10	24			44
404	Utility Coordination		5	8	2	5		20
405	Final Horizontal Design Geometrics		5	8	10	5	2	30
406	Final Vertical Design Geometrics		2	4	10	2	2	20
407	Pavement Design		2	1	5			8
408	Typical Cross Sections		1	2	5	2	1	11
409	Plot Cross Section		1	2	16	10	5	34
410	Plot Proposed Layout and Easements		1	10	2			13
411	Construction Plans		2	5	22	10	2	41
412	Grading and Tie Plans		1	2	16	6		25
413	Drainage and Water Supply Details		1	16	22	10	5	54
414	Traffic Signs			5	10			15
415	Guide Sign Design & Overhead Directional (OD) Elevations							
416	Traffic Signals and Plan Preparation							
417	Pavement Markings and Plan Preparation		1	5	16	5	2	29
418	Traffic Management		8	24	64	32	8	136
419	Highway Lighting Plans and Details							
420	Landscaping and Plan Preparation		5	8	5	22	5	45

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	Concord, MA	Contract No.:						
Location:	BFRT Phase 2B	Assignment No.:						
Revisions Effective		ProjInfo No.:	606233					
<b>SECTION 400 (Cont'd)</b>								
<b>75% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
421	Erosion Control			2	8	5		15
422	Miscellaneous Contract Plans			1	16	5		22
423	Quantity & Cost Estimate (Weighted Average Bid Application)		2	16	32	22	10	82
424	Special Provisions		2	22	10			34
425	Constructability and Quality Control (QC) Review	7	16	10				33
426	Submission Checklist	1	2	5				8
427	Bottom Up Estimate and Reconciliation (if required)							
428	Construction Contract Time Determination		1		4			5
429	Incentives/Disincentives with Road User Calculation		1	10				11
	SUBTOTAL	8	77	193	324	151	50	803
<b>SECTION 450</b>								
<b>100% HIGHWAY DESIGN SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
451	Respond to 75% Comments		5	16	16			37
452	Finalize Plans		16	56	82	56	28	238
453	Finalize Special Provisions		1	10	4			15
454	Finalize Quantity and Cost Estimate (W.A.B.A. & Calculation Book)		2	10	28	10		50
455	Quality Control (QC) Review	2	16	10				28
456	Submission Checklist	1	1	2				4
457	Bottom Up Estimate and Reconciliation (if required)							
458	Construction Contract Time Determination		1		4			5
459	Incentives/Disincentives		2	5				7
	SUBTOTAL	3	44	109	134	66	28	384
<b>SECTION 500</b>								
<b>RIGHT OF WAY</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
501	Preliminary Right of Way Plans	4	4			12	12	32
502	Alteration Plan and Order of Taking	6	12	8	12	12	12	62
503	Easement Plan and Written Instrument	2	16		16	16	16	66
504	Final Right of Way Plans		2			2	4	8
	SUBTOTAL	12	34	8	28	42	44	168
<b>SECTION 600</b>								
<b>GEOTECHNICAL DESIGN</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
601	Research Available Subsurface Data							
602	Field Reconnaissance							
603	Subsurface Investigation Plan							
604	Subsurface Investigation Inspection							
605	Office Studies, Analysis and Testing							
606	Geotechnical Report							
607	Meetings, Reviews and Liaison							
608	Final Plans, Specifications and Estimates							
	SUBTOTAL							

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Concord, MA</b>	Contract No.:						
Location:	<b>BFRT Phase 2B</b>	Assignment No.:						
Revisions Effective:		ProjInfo No.:	<b>606233</b>					
<b>SECTION 700</b>								
<b>PROJECT DEVELOPMENT - STRUCTURAL</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
701	Field Investigation							
702	Determine Bridge Configurations							
703	<b>Preliminary Structural Analysis</b>							
704	Comparative Design and Cost Analyses							
705	<b>Preliminary Structures Report Preparation</b>							
706	<b>Bridge Type Selection Worksheet Preparation</b>							
707	Meetings and Liaison							
708	<b>Hydraulics Study and Report (Bridges over Water)</b>							
SUBTOTAL								
<b>SECTION 710</b>								
<b>SKETCH PLANS</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
711	Establish Boring Locations							
712	Reserved							
713	Sketch Plan Development							
714	Meetings, Coordination and Liaison							
715	Constructability Review							
716	Submission Checklist							
SUBTOTAL								
<b>SECTION 750</b>								
<b>FINAL BRIDGE DESIGN</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
751	Structural Design - Superstructure	36	124	232	196	116	82	786
752	Structural Design - Substructure	34	106	218	180	108	72	718
753	Bridge Layout Geometrics	4	12	24	20	12	8	80
754	Contract Drawings	80	240	512	420	240	174	1666
755	First Review Submission	4	12	24	20	12	8	80
756	Quantity Cost Estimates	6	24	40	38	24	16	148
757	<b>Special Provisions</b>	4	16	36	24	16	8	104
758	Second Review Submission	4	12	20	16	8	4	64
759	FHWA Reviews							
760	Meetings and Liaison	4	12	12	12	4	4	48
761	Constructability and Quality Control (QC) Review	8	16	24	12	4	4	68
762	Submission Check List	6	4		6			16
SUBTOTAL		190	578	1142	944	544	380	3778
<b>SECTION 800</b>								
<b>PS&amp;E SUBMISSION</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
801	Respond to 100% Comments	2	8	16	10			36
802	<b>Finalize Plans, Specifications and Estimate</b>	4	14	23	56	44	16	157
803	<b>Prepare Detail Sheets</b>		1	2	16	10		29
804	Combine Highway and Bridge		2	10	16	16		44
805	Quality Control (QC) Review	5	16	10				31
806	Finalize Bottom Up Estimate and Estimate Reconciliation (if required)							
807	Finalize Construction Contract Time Determination		7		4			11
808	Finalize Incentives/Disincentives		1	4				5
SUBTOTAL		11	49	65	102	70	16	313

**MassDOT - HIGHWAY DIVISION**

**SCOPING WORKBOOK Form 1.3 Work Hour Estimate**

City/Town	<b>Concord, MA</b>		Contract No.:					
Location:	<b>BFRT Phase 2B</b>		Assignment No.:					
Revisions Effective:			ProjInfo No.:	<b>606233</b>				
<b>SECTION 900</b>								
<b>CONSTRUCTION ENGINEERING</b>								
		PIC	PM	SE	Eng	AE	ET	TOTAL
901	Pre-Bid Services		10	24	16			50
902	Pre-Construction Conference		5	5	5			15
903	Highway Shop Drawings and Signal Permit		5	8	14			27
904	Bridge and Wall Shop Drawings	24	84	180	240	64	48	640
905	Bridge Construction Procedures	16	36	56	32	24		164
906	Furnishing Advice and Field Visits	5	38	56	82	56	28	265
907	Geotechnical Construction Evaluation							
908	Bridge Rating and Photographs							
SUBTOTAL		45	178	329	389	144	76	1161



# MassDOT - HIGHWAY DIVISION

## SCOPING WORKBOOK

Revisions Effective November 2013				
<b>Contract No #</b>	<b>EXHIBIT B</b>			
0	<b>BUDGET - COST PLUS</b>			
		PRELIMINARY ENGINEERING	CONSTRUCTION ENGINEERING	TOTALS
(a) Salary Costs		\$252,312.74	\$52,558.88	\$304,871.62
(b) Indirect Costs	155.00%	\$391,084.75	\$81,466.26	\$472,551.01
(c) Net Fee	10.00%	\$64,339.75	\$13,402.51	\$77,742.26
TOTAL LIMITING FEE		\$707,737.24	\$147,427.66	\$855,164.89
(d) Direct Costs		\$43,460.00	\$690.00	\$44,150.00
MAX PAYMENT AMOUNT		\$751,197.24	\$148,117.66	\$899,314.89
MAXIMUM OBLIGATION				\$899,314.89
Direct Expense Breakdown				
		Design	Construction	TOTAL
Printing, Mailing		\$ 1,725.00	\$ 345.00	\$ 2,070.00
Travel		\$ 690.00	\$ 345.00	\$ 1,035.00
Test Pits/Supplemental Geotechnical		\$ 26,900.00		\$ 26,900.00
CTD		\$ 13,800.00		\$ 13,800.00
Police Details		\$ 345.00		\$ 345.00
GPI DIRECT EXP		\$ 43,460.00	\$ 690.00	\$ 44,150.00
TOTAL DIRECT EXPENSES		\$ 43,460.00	\$ 690.00	\$ 44,150.00