TECHNICAL PROPOSAL REPORT

Agreement: E02327 **Project Specific** **Active**

Name: SR 1018 Messinger Street Bridge

Selection Process: Modified
Initiating Org: Engineering District 5-0

Part 1 - Final Design - SR 1018-02B Messinger Street Bridge

Description

Final Design - MPMS 12097 SR 1018-02B Messinger Street Bridge

Task 1 - Project Management/Administration

Objective:

2.1.1 - Project Management/Administration
This task consists of the administrative effort required by principals, project manager, and involved personnel to complete the project on time and within budget, and to provide a quality product.

2.1.1.1 - Meetings
This task includes meeting preparation, attendance and documentation in the form of minutes. This includes Project Status, Design Review and Special Purpose Meetings.

2.1.1.2 - Coordinate Value Engineering
This task consists of the effort needed to coordinate the design value engineering review procedures.

2.1.1.3 - Quality Control/Quality Assurance
This task consists of the effort to administer the QC/QA policies and procedures.

2.1.1.4 - Preliminary Cost Estimates/PMC Approvals
This task involves the preparation of preliminary cost estimates for the project and all steps necessary to obtain PMC approval.

2.1.1.5 - Project Schedule Development and Maintenance
The purpose of this task is to prepare and maintain a design schedule that ranges from Scoping Field View to Contract Award.

2.1.1.7 - Project Reporting
This task consists of periodically reporting project schedule and budget progress.

2.1.1.8.4 - Traffic Signal/Lighting Maintenance Agreement
This task is the development of the traffic signal maintenance agreement.

2.1.1.9 - MPO/LDD Coordination
This task consists of the time required for coordination with the appropriate Metropolitan Planning Organization (MPO) or Local Development District (LDD) in the project area.

2.1.1.10 - Consultations
This task involves the consultation with various in-house departments or personnel.

2.1.1.11 - FHWA Coordination
This task includes all coordination efforts (communication, meetings, obtaining clearances and approvals) with FHWA.

2.1.1.12 - Inter/Intra Agency Coordination
This task includes the coordination of project activities with all of the regulatory/resource agencies.

Scope:

2.1.1 - Project Management/Administration
Project Management involves the planning, scheduling, organizing and controlling of resources to achieve specific objectives within established schedule, budget and quality standards. The Project Manager is responsible for the tasks outlined in the Department Detail.

2.1.1.1 - Meetings
Attend all project meetings as necessary, including meeting preparation and minutes. Meetings will include but will not be limited to:

Project Status Meetings
Design Review Meetings
Special Purpose Meetings (e.g., Kick-off Meeting, Design Field View, etc.)
Public Meetings

Preparation for the meetings will include an agenda and any visuals necessary to conduct the meeting.

Meeting minutes will be prepared in a timely and accurate manner.

2.1.1.2 - Coordinate Value Engineering
The procedures for Value Engineering are found in Design Manual 1A.

The following items require coordination:

1. Selection of 5 man Value Engineering Team
2. Conducting the review
3. Preparation of the formal Value Engineering Report
4. Implementation of Value Engineering Review recommendation

2.1.1.3 - Quality Control/Quality Assurance
Quality Control and Quality Assurance practices and procedures need to be incorporated and administered.

PennDOT has implemented procedures to place additional responsibilities on consultants for quality of work. The consultants will be required to submit a corporate quality plan and submit job specific Quality Development plans for PennDOT approval. As part of quality reviews, process reviews, and IAPs, these plans and the consultants conformance to them will be monitored, evaluated and documented.

Design Manual Part 1A can be used as a source of information to develop QC/QA policies and procedures.

2.1.1.4 - Preliminary Cost Estimates/PMC Approvals
Develop a preliminary cost estimate based on the best available information. The cost estimate should include all anticipated costs including design, right-of-way acquisition, utilities, construction, etc.

2.1.1.5 - Project Schedule Development and Maintenance
Guidance:
- Publication 615, Scheduling Manual
- All applicable strike-off-letters
- ECMS (Project Management Homepage)

Scope:
1. Develop a design schedule utilizing Deltek's Open Plan software. The design schedule will be developed in accordance with Publication 615 using the Department's PDSPRJ and PDSMASTER templates.

2. Maintain the design schedule utilizing Deltek's WelcomHome software.

3. Document all schedule issues to ensure that the project is let on time.

Scope Subtasks:
1. Coordinate the schedule development with the entire project team. The project team includes but is not limited to the District Portfolio Manager, the District Project Manager, various District functional units, the Bureau of Design, the Federal Highways Administration and various environmental agencies. Development of the schedule will consist of reviewing the schedule to ensure it contains the appropriate activities. There may be the need to add or delete activities to make the schedule specific to a given project. The review and modification of durations or relationships should also be performed to ensure that the schedule is setup to meet the desired completion date.

2. Prepare a draft of the design schedule that will be reviewed by the project team either in conjunction with a project status meeting or offline depending on the frequency of these meetings. The draft will, if approved, become the initial project schedule and be maintained through the remainder of the project.

3. Monthly progress of the design schedule activities will be input into Deltek's WelcomHome software. The schedule update day of the month will be specified by the District Project Manager to ensure that they have appropriate time to review proposed schedule changes prior to acceptance.

4. In the event that a major change in schedule occurs the Department will provide an Open Plan backup file (bk3) so that revisions can be made and resubmitted to the Department. Re-submittal shall follow the same process as the initial schedule development.

Scope Deliverables:
1. Provide the project team a draft design schedule in portable document format (PDF) and/or hard copy. The draft will contain relationships and durations so that they can be reviewed along with the activities that are included in the schedule. Schedules provided in portable document format (PDF) shall be submitted either by email or CD-ROM.

2. Upon acceptance of the schedule by the project team an Open Plan backup file (bk3) shall be provided to the District Project Manager either by email or CD-ROM.

3. Resubmit major revisions to the design schedule, as an Open Plan backup file (bk3), to the District Project Manager either by email or CD-ROM.

4. All schedule documentation shall be provided in MS Word compatible format to the District Project Manager either by email or CD-ROM.

2.1.1.7 - Project Reporting
On a regular basis (i.e., monthly or as necessary) prepare a project status report of which should address the current status of the project schedule and budget. Note any areas of concern such as delays in the project schedule or potential cost overruns.

2.1.1.8.4 - Traffic Signal/Lighting Maintenance Agreement
1. Obtain a standard traffic signal maintenance agreement and modify for the municipalities involved.

2. Coordinate with the municipalities for signatures on the agreement and on the signal permit plans

2.1.1.9 - MPO/LDD Coordination
Notify the appropriate MPO/LDD about any public meetings for which an environmental document is prepared.

2.1.1.10 - Consultations
Meetings with in-house departments or personnel should be conducted on a regular basis or as needed. Document all meetings in the form of meeting minutes for the project file.

2.1.1.11 - FHWA Coordination
Coordination with the appropriate FHWA representative will be required throughout the entire design phase of the project. This will include correspondence, attendance at meetings, formal submissions, etc. FHWA participation in Scoping Field View should be in accordance with Publication 10/10A, Design Manual Part 1/1A.

2.1.1.12 - Inter/Intra Agency Coordination
1. Invite all regulatory/resource agencies to scoping field view meetings in accordance with Publication 10/10A, Design Manual Part 1/1A.

2. Discuss methodologies for identifying and analyzing environmental impacts with the regulatory/resource agencies and ask for their input.

3. Request regulatory/resource agencies attendance at any project meetings/hearings.

Detail Task 1 - Project Management/Administration

Department Details:

1. Monitor design team performance and project development.
2. Control project costs.
3. Coordinate the flow of information concerning the project.

1. While the core activities within the PDSPRJ and PDSMASTER templates are required for all Open Plan design schedules the District has modified these standard templates to include additional activities. Therefore, always use the most current approved version of these template files. These templates can be obtained from either from the District Portfolio Manager or the District Project Manager.

2. The consultant must maintain an up to date electronic copy of the project's Open Plan schedule using the Department approved version of the Deltek's Open Plan software. This will allow the consultant the ability to address what if scenarios related to any necessary recovery plans, since the modification of relationships is not a functionality of WelcomHome.

3. After the District Project Manager has performed initial setup of the WelcomHome project the remainder of the project team will need added to the WelcomHome project by the District Project Manager. This will be accomplished utilizing the WelcomHome project administrative functions.No details are necessaryThis is not required for 100% State funded projects.Conduct status meetings to identify project and scope.The regulatory/resource agencies will vary from project to project.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. All work will be coordinated between PennDOT's designated Project Manager and AECOM’s Project Manager to maintain the highest quality assurance and response. AECOM will strive to meet the primary objectives to complete this task in a timely manner, within budget constraints, and provide quality products and work processes as established by our Quality Assurance Program.

This task consists of:
- The administrative effort required by principals, project manager, and involved personnel to complete the project on time and within budget, and to provide a quality product.
- Meeting preparation, attendance and documentation in the form of minutes.
- The effort to administer the QC/QA policies and procedures.
- The preparation of the project design schedule, identification of major milestones, and the critical path.

AECOM, along with our subconsultants, will coordinate the planning, scheduling, organizing and controlling of resources to achieve specific objectives within established schedule, budget and quality standards.

Meetings will include but will not be limited to:
Project Status Meetings
Design Review Meetings
Special Purpose Meetings
Stakeholder Meetings

AECOM will coordinate all preparation for the meetings, including an agenda and any visuals necessary to conduct the meeting.

AECOM will prepare meeting minutes in a timely and accurate manner.

AECOM will develop an Open-Plan schedule that will include Final Design and Construction.

AECOM will submit a corporate quality plan and Project Specific Quality Assurance Plan for PennDOT approval.

AECOM will prepare a project status report of which will address the current status of the project schedule and budget. AECOM will proactively coordinate any areas of concern such as delays in the project schedule or potential cost overruns.

AECOM, in coordination with our Team, will estimate construction, utility, right-of-way, and railroad costs at the beginning of final design and provided as monthly updates.

Revise / update and maintain the project schedule using Welcom Open Plan software including PennDOT developed/approved templates. The District will provide the original base template upon NTP of agreement. The schedule and its monthly updates shall be prepared as follows:

1. The initial schedule will be developed using the most recent PennDOT approved version of Welcom Open plan software including PennDOT developed/approved templates. Schedule will include “Responsible Party”, WBS and OBS field information. Schedule will be submitted to PennDOT Portfolio Manager via email in back-up (“.bk3”) format for loading.
2. Schedule, if accepted, will be loaded into Welcom Home by District. All future schedule updating/progressing will be handled through Welcom Home.
3. All progress updates must be input/submitted via Welcom Home by the 1st of each month.
4. Recovery plans must be submitted to Project Manager by the 1st of each month for any project were the overall schedule is more then 15 days behind schedule.

We will limit attendees at meetings to only those needed to provide input and make decisions. We will verify attendees with District prior to each meeting.

Complete bicycle and pedestrian checklist per DM1A, community context audit, and community impact assessment per SOL 438-03-04.

Provide electronic deliverables in compatible formats (Microsoft or Microstation) for completed preliminary engineering and/or final design documents.

Provide cost containment information per DM1A at the start of the preliminary engineering phase and the 30% complete (DFV) stage. Justify cost increases when PMC approved costs are exceeded by 15%.

For Final Design:
Maintain the project schedule using Welcom Open Plan software including PennDOT developed/approved templates, and continue updates/progressing in Welcom Home.

Limit attendees at meetings to only those needed to provide input and make decisions. Verify attendees with District prior to each meeting.

Continue evaluation of bicycle and pedestrian checklist per DM1A, community context audit, and community impact assessment per SOL 438-03-04.

Provide electronic deliverables in compatible formats (Microsoft or Microstation) for completed final design documents.

Provide cost containment information per DM1A during final design (75% complete); or annually (whichever comes first); at the PS&E stage (95%). Provide a detailed cost justification for cost increases when PMC approved costs are exceeded by 15%.

In the technical approach, specify any Other Costs which are not standard costs so that extraneous other costs items can be reviewed before submitting Price Proposal.

Submit all design final invoices within sixty days of the construction notice to proceed.

Complete environmental due diligence for clean fill determinations for design in accordance to SOL 401-04-03.

Value Engineering is not anticipated and has not been included in this Technical Proposal.

AECOM anticipates that this will be a PennDOT Oversight project and that FHWA coordination will be limited.

Task 2 - Public Involvement

Objective:

2.1.3 - Public Involvement
This task includes the attendance and preparation of informational materials to be viewed and/or distributed to the general public at public meetings. This task may also include the preparation of newsletters, public announcements and all other aspects of public involvement as outlined in Publication 295.

Scope:

2.1.3 - Public Involvement
1. Obtain approval from PMC to proceed with public involvement activities.

2. Prepare announcement for public meeting.

3. Prepare visual materials and/or flyers for general public meetings.

4. Attend all public meetings and address comments made at the meeting.

5. Prepare minutes to the meeting and submit to the Project Manager for review. Revise if necessary.

Detail Task 1 - Public Involvement

Department Details:

Assume 2 Formal Public Meetings
Assume 2 Meetings with the Municipal Officials

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

We will provide Department with information, graphs, sketches, renderings, plans, drawings and any other display and presentation items as well as technical expertise as it relates to the project. Including but not limited to manpower and specific staff such as Bridge Engineers and qualified staff to handle community relations and Context Sensitive solutions as they will be utilized on the project. It will also include meetings held with local and state elected officials. We will coordinate with the municipalities involved with the project regarding the time and place for the Public Information Meeting. The meeting should be incorporated into a regularly scheduled municipality meeting if at all possible. We will coordinate with District Press Office.

We will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations.

We will limit attendees at meetings to only those needed to provide input and make decisions. We will verify attendees with District prior to each meeting.

We will arrange for two (2) open house meetings with Borough of Bangor and adjoining communities.

A District PMC packet will be prepared in advance to secure approval prior to placing advertisement, securing meeting location and production of handouts and presentation boards. We will conduct a PMC packet / dry run meeting at the District office.

We will include costs for advertising and for facility rental.

In addition, we will hold a public officials meeting on the same day of the Open House and scheduled a few hours prior to the Open House to the public.

Task 3 - Coordinate Constructability Review

Objective:

2.1.2 - Coordinate Constructability Review
This task is the coordination of the constructibility review team throughout design development.

Scope:

2.1.2 - Coordinate Constructability Review
The constructibility review team will be established at the beginning of the project. Constructibility reviews will be conducted periodically throughout the design process. The reviews will be preformed to identify potential construction problem areas, possible cost savings, means to expedite

construction, and alternate methodologies. The review will focus on the following issues:

* Evaluate MPT vs. Construction Sequence
* Set mandatory sequence logic where necessary
* Detect potential problem areas
* Avoid ambiguities
* Limit inefficient and impractical design features
* Evaluate coordination between design sections, where applicable
* Avoid omissions and overlaps by reviewing specifications vs. plan and plan vs. plan

Detail Task 1 - Constructability Review

Department Details:

As Indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

We will ensure that construction staging can be completed in an acceptable manner in coordination with District Plans, Traffic and Construction Units.

We anticipate one field meeting and one office meeting.

We will determine the effects of the project on adjoining property owners (especially those who will not be right of way claimants) to ensure coordination prior to construction.

The Constructability Review Submission will include the Construction Plan (with ALSO plan sets), Proposal Report (with special provisions), Construction Cost Estimate, and Pre-Bid Construction Schedule. We anticipate that the CS-101 and Trainee Forms will be completed with the Constructability Review.

Task 4 - Streams and Waterways

Objective:

2.2.13 - Streams and Waterways
This task is the identification, inventory, classification and analysis of the physical and biological elements of streams and waterways within the project study area and the quantification of potential stream impacts.

2.2.13.2 - Stream and Waterways Mitigation

Coordinate with the PADEP, ACOE, Pennsylvania Fish & Boat Commission (PFBC), and the U.S. Fish and Wildlife Service (USFWS) to discuss an appropriate method of mitigation of unavoidable stream impacts. A conceptual mitigation plan will be prepared for review by the agencies.

Scope:

2.2.13 - Streams and Waterways
Needs completed.

2.2.13.2 - Stream and Waterways Mitigation
1. Coordinate with the agencies to determine the expected mitigation measures and site locations for the project.

2. Prepare a conceptual mitigation plan based on the information obtained from the agencies and site visits. The conceptual plan may include a narrative discussing the rationale for the plan.

3. Submit the conceptual plan to PennDOT for review and comment. Revise and submit to the agencies for review and comment.

4. Prepare the final mitigation plan construction documents, incorporating any comments from the agencies

Detail Task 1 - Streams and Waterways

Department Details:

Coordinate with PennDOT and the agencies to develop the mitigation plan in accordance with the preliminary plan included in the approved CEE document

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

This task includes the coordination and development of appropriate stream bank stabilization methodologies and structures to address the agencies concerns identified during preliminary engineering. Agency personnel attending a March 7, 2008 Pre-Application Meeting for the project identified an area of existing bank undercutting to be stabilized. The stream bank stabilization includes development of both horizontal and vertical alignments/cross sections along a proposed 167 feet of the western bank of Martins Creek, beginning approximately 86 feet upstream of the existing Pier 1 located on the bank.

- Perform an existing condition site assessment on this portion of streambed to assess the stream pattern, profile, dimensions and existing riparian area and to verify the limits of the stream bank stabilization.
- Determine if in-stream log/rock vanes are necessary and utilize appropriately.
- The stream bank stabilization design, including but not limited to the final horizontal and vertical alignments will be completed using the reference design developed during preliminary engineering for the project site.
- Verification of the structure type(s), material(s) and installation procedures will be requested from the Pennsylvania Fish and Boat Commission and Pennsylvania Department of Environmental Protection.

- A restoration/stabilization plan for the stream segment within the project area will be developed for inclusion in the Section 404/Chapter 105 permit application.

No additional areas of stream mitigation are proposed as part of this project.

Task 5 - Design Field View

Objective:

2.4.10 - Design Field View
This task consists of the development, submission and approval of the Design Field View submission.

2.4.10.1 - Submission Development
This task consists of the assembly of the Design Field View submission. Reference Publication 10/10A, Design Manual Part 1/1A.

2.4.10.2 - Design Field View Approval
This task is the preparation of the design field view submission based on the selected alignments, attendance at the design field view, preparing meeting minutes and responding to District's comments.

2.4.10.4 - Design Exceptions
This task consists of preparing a draft design exception report in accordance with Strike-off-Letter 430-93-40 and Publication 10A, Design Manual Part 1A.

2.4.10.5 - Preliminary Erosion and Sedimentation Pollution Control Plan/NPDES Permit
This task is the preparation of preliminary erosion and sedimentation control plans and application for all NPDES permits (Chapter 102, Earth Disturbance Permits).

2.4.10.6 - Preliminary Roadside Development Plan
This task is the preparation of a preliminary roadside planting design conforming to the AASHTO "A Guide for Transportation Landscape and Environmental Design".

Scope:

2.4.10 - Design Field View
1. Conduct design field view at the end of the preliminary engineering and within several weeks of the Design Field View Submission.
2. Evaluate the proposed alternatives under field conditions.
3. Solicit comments from review agencies for further project development.
4. Determine the preferred alternative if applicable.

2.4.10.1 - Submission Development
Upon receipt of NEPA Clearance/Design Approval, the drawings will be further refined and developed to prepare a submission for the Design Field View.

The submission will include the following:
1. Line and Grade
2. Alternate Interchange Schematics
3. Rough preliminary signing layout including the type of sign supports, paint markings, and other traffic control devices to determine if the project is operational and can be signed.
4. Typical sections
5. Structure locations
6. Approximate pavement depth
7. Mass diagrams of grading quantities
8. Draft of Soils and Geological Engineering Report and Profile.
9. Traffic Control Plan
10. Drainage and Preliminary Hydraulic studies
11. Service road justification
12. Utilities
13. Preliminary traffic signals plan
14. Comments from the District Safety Review Committee
15. Agreements with Cities and other Political Subdivisions

2.4.10.2 - Design Field View Approval
1. Secure design field view approval for the preferred alternative developed during preliminary engineering.
2. Obtain written approval from the agency of authority to advance to final design.

2.4.10.4 - Design Exceptions
Prepare the Design Exception Submission after the approval of the proposed design exception(s) by the District Safety Review Committee. Include this report in the Design Field View Submission. Address the following items as applicable:

* Provide project identification information
* Describe proposed work, design criteria, include typical sections
* Provide traffic information
* Identify substandard design elements
* Provide cost information with and without design exception
* Provide justification for retention of the design exception
* Evaluate accident history
* Describe remediation
* Provide collision diagrams and/or accident cluster diagrams
* Compare accident rates to statewide averages
* Describe mitigation measures
* Describe date and type of future upgrades
* Describe advantages and disadvantages of meeting full criteria

Complete the "Design Exception Data Checklist" Design Manual 1A. Include the following in the submission:

* Project location map
* Scoping field view minutes
* Accident analysis with collision diagrams
* Letter of recommendation from Safety Review Committee
* Plan, profiles, cross sections, typical sections if not previously included in the Design Field View Submission
* Bridge sufficiency rating and letter from District Bridge Engineer (if applicable)
* Ramp design sheet (Publication 13M, Design Manual Part 2), if applicable
* Photographs of existing conditions, if applicable

2.4.10.5 - Preliminary Erosion and Sedimentation Pollution Control Plan/NPDES Permit
Preliminary Erosion and Sedimentation Control Plan includes the preliminary sizing and placement of major sediment control facilities (e.g. sediment basins). This effort must correspond with the stormwater management design to use the stormwater basins for erosion and sediment control during construction. Right-of-way requirements must be considered for sediment traps, collection ditches and drainage easements.

This task also includes the coordination with the County Conservation Districts and/or PADEP to review the conceptual approach to the erosion and sediment control design and permitting.

2.4.10.6 - Preliminary Roadside Development Plan
Prepare a lump sum cost estimate for landscaping if landscaping is part of the project. Include this estimate in the Design Field View Submission.

Landscaping plans are not required as part of the Design Field View Submission.

Detail Task 1 - Design Field View

Department Details:

Review the currently proposed Line and Grade to determine if a lateral shift in alignment (approx 5- 10 feet) would prevent the taking of any existing privately owned structures. Present this determination to the District within 45 days of NTP. As part of this determination consider the following: approximate demolition and relocation costs of existing businesses and other R/W costs, relocation and of existing or currently proposed drainage facilities and utilities, agency permitting, ability to meet the Department’s Let date and overall project costs including Construction, Right of Way and Utility relocation.

Review and complete the line and grade, safety review and design field view report and plans in accordance with the scope above.

Show preliminary sizing of sediment basins and right-of-way requirements.

Coordination may be needed with the agencies on the approach and permitting..

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

AECOM will review the currently proposed Line and Grade to determine if a lateral shift in alignment (approximately 5- 10 feet) would prevent the taking of any existing privately owned structures. We will present this determination to the District within 45 days of notice-to-proceed. As part of this determination we will consider the following:
- approximate demolition and relocation costs of existing businesses;
- other R/W costs;
- relocation of existing or currently proposed drainage facilities and utilities;
- agency permitting;
- ability to meet the Department's Let date; and,
- overall project costs including Construction, Right of Way and Utility relocation.

Subsequent to Department review and acceptance of the Line and Grade developed above, AECOM will review and complete the line and grade, safety review and design field view report and plans.

The task includes the development of the roadway design for SR 1018 which is an arterial roadway with a design speed of 25mph. The roadway profile of SR 1018 (Messinger Street) will be set to meet the overhead bridge clearance requirements over the railroad. The approach roadway will be designed to match the existing conditions as a minimum. (An at grade intersection alternative with the Norfolk Southern Railroad line which was discarded under the previous contract and will not be reconsidered.)

It is anticipated that a formal design exception request/"Design Exception Data Checklist" will not be required. The project is considered a Bridge Replacement Contract and as such does not require formal design exception approval for any substandard features in accordance with Publication 10X Appendix P. The project will be designed so that any substandard roadway features are not any worse than the existing condition.

Borton Lawson on behalf of Bangor Borough has prepared a study of the culvert that currently discharges into Martins Creek beneath the bridge. The 2400' stormwater culvert is owned and maintained by Bangor Borough. It is assumed that a 325' section of the culvert which parallels the Messinger Street Bridge will be need to replaced to accommodate construction of the bridge associated with this contract. AECOM will utilize the applicable sections of the culvert study performed by Borton Lawson and coordinate the size of the culvert with the Borough.

Preliminary E&S Plans will be prepared. The plans will consist of contour grading and drainage and appropriate E&S details. A pre-application meeting will be scheduled with Northampton County Conservation District to review the concepts and determine the level of permit required for the earth disturbance. It is anticipated that there will be a reduction in impervious area and that permanent stormwater management facilities will not be required.

A roadside development plan will not be prepared. Planting and seeding will be included with the erosion and sediment pollution control plan.

The location and limits of the E&S facilities will be considered when defining the right-of-way requirements. The Final E&S Plans / NPDES Permit will be covered under Task 22.

Task 6 - Final Geotechnical Engineering Report

Objective:

2.5.3 - Final Geotechnical Engineering Report
This task is the preparation of the Final Geotechnical Engineering Report in accordance with Publication 10A, Design Manual Part 1A.

2.5.3.1 - Soil Profile
This task is the preparation of the final soil profile in accordance with Publication 10A, Design Manual Part 1A.

Scope:

2.5.3 - Final Geotechnical Engineering Report
This task consists of the development of the Final Geotechnical Engineering Report (GER) presenting final geotechnical design and construction recommendations for the project, along with supporting documentation, based on the subsurface conditions determined from the Final Design roadway investigations and any previous project geotechnical investigations. It also includes preparation of geotechnical reports for Structure TS&L Submissions (Reconnaissance Soils and Geological Engineering Reports) and Structure Foundation Submissions (Geotechnical Engineering Reports for Structures). Previous geotechnical investigations may include: Phase I Preliminary Design GER (prepared during EIS Step 4), Phase II Preliminary Design GER (prepared during EIS Step 5 or EA alternatives analysis), and Pre-Final Design GER (prepared for the Design Field View Submission).

The following work elements are required for the successful completion of this task:

1. Coordinate the geotechnical effort in Final Design. Coordinate with the District Geotechnical Engineer (DGE), BOCM Chief Geotechnical Engineer (CGE), District Bridge Engineer (DBE), BOD Bridge Quality Assurance Division (BQAD), and other disciplines involved in design. Attend meetings necessary for the design process. Perform QA/QC on all subtasks and deliverables.

2. Perform an office investigation. Review background geological information and maps, boring logs, project files and reports, environmental documents, and R/W plans to describe the soil/rock/hydrologic setting.

3. Visit the site, interviewing local residents and engineers. Perform a detailed field reconnaissance and refine the soil/rock/hydrologic setting description.

4. Prepare the Problem Statement and Draft Exploration Plan (PSDEP) for the project in accordance with Publication 293. Determine the field and laboratory investigation needs. Assemble a soil/rock boring and testing plan, water/soil-sediment sampling and testing plan, a field instrument plan and a geophysical investigation plan based on project needs.

5. Prepare a Reconnaissance Soils and Geological Engineering Report (RSGER) for each TS&L submission, in accordance with Publication 15M, Design Manual Part 4.

6. Perform the soil/rock boring investigation. Notify the affected public. Locate the borings in the field. Assemble, advertise, award and administer the test boring contract in accordance with Publication 222M.

7. Administer the soil/rock testing program. Perform the water/soil sediment sampling and testing.

8. Collect readings and present reduced data from field instruments. Perform the geophysical investigation.

9. Perform analysis and design associated with embankment and cut slope construction, storm water management facilities, culverts and conduits,

retaining structures, bridges, other structures, pavements, unsuitable materials, special geotechnical treatments, benching and transition zones, and geotechnical instrumentation for construction control. Develop recommendations for use by the design team and special provisions and details for construction.

10. Prepare a Geotechnical Engineering Report for foundations at each structure in accordance with Design Manual Part 4.

11. Prepare the GER for Final Design, presenting the recommendations and providing supporting documentation and following the outline in Publication 293. Prepare the "Subsurface Profile" in accordance with the requirements of Publication 14M, Design Manual Part 3. Submit both a draft (95%) and a final (100%) version of the GER to the DGE and CGE.

12. Review the plans, specifications and estimates for construction of the project, to verify proper implementation of the geotechnical recommendations and incorporation of the special provisions and details.

2.5.3.1 - Soil Profile
This task consists of development of the soil profile plans which are submitted with the Final Geotechnical Engineering Report (GER) and Construction Plans for the project.

The following work elements are required for the successful completion of this task:

1. Coordinate the effort with the District Geotechnical Engineer and the other engineering disciplines involved. Perform QA/QC on the plans prior to delivery.

2. Gather the information and materials necessary to assemble the plan. Obtain plan and profile sheets for the approved alignment from the design team. Collate logs for the roadway borings. Tabulate soil test results. Obtain approval of the proposed graphics layout, scales and symbology.

3. Prepare the cover sheet and index sheet.

4. Develop graphic logs of the borings.

5. Prepare the profile sheets, showing the graphic boring logs and test results.

6. Assemble the cover, index and profile sheets and submit a copy for review and approval. This typically is included as part of the draft GER submission.

7. Upon approval, sign and seal the Soil Profile Plans as required, retain one half-sized set for submission with the Final GER, and forward the originals to the project engineer for inclusion with the PS&E Submission.

Detail Task 1 - Final Geotechnical Engineering Report

Department Details:

Borings must be performed by an approved drilling contractor. Installation of field instrumentation may be included with that contract. The engineer

should review the environmental documents to determine if a Health and Safety Plan (HASP) is required as part of the drilling contract. The District should alert the engineer if other environmental constraints potentially could impact field operations.

Maintenance and protection of traffic for the drilling program should be in accordance with Publication 203M. A formal Traffic Control Plan (TCP) is required. Notify the affected public prior to performing the work, or any other special requirements are necessary.

Laboratory soil testing must be performed by an AMRL-accredited facility, and should not be a part of the drilling subcontract.

Emphasis is on modifications to geotechnical roadway recommendations resulting from changes during final design, implementation of design guidance, and finalization of special provisions and details for construction.

The Soil Profile is not required.

Assume one RSGER for the project

Provide 3 copies of each submission.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant Geo-Explorers with oversight by AECOM.

This task consists of:

A Problem Statement and Draft Exploration Plan (PSDEP) is not required since the roadway borings will be drilled under the structure boring contract according to Department Details for Task 7. Roadway boring and testing programs will be incorporated in the Reconnaissance Soils and Geological Engineering Report (RSGER) for the retaining walls.

The proposed approach embankments will be supported on new fill. We will investigate long-term settlement and stability of the “roadway on fill” and develop necessary recommendations, construction details and special provisions. A separate Geotechnical Engineering Report (GER) will not be prepared for the “roadway on fill” and necessary geotechnical recommendations for the “roadway on fill” will be incorporated in the foundation reports for the retaining walls.

This project includes a total of five structures (one bridge replacement and four new retaining walls) and the “roadway on fill.” It is assumed that one RSGER will be prepared for the entire project which will include all five structures plus the “roadway on fill.”

The combined RSGER will be prepared in accordance with Publication 15M, Design Manual Part 4, Vol. 1, Part A, Chapter 6. The RSGER will summarize the results of bibliographic search and visual site inspection. It will include the following: proposed construction, physiographic setting, identification of geologic formation and soil types, site investigation, foundation exploration plan, and geotechnical recommendations.

Bibliographic Search
Available published and unpublished information will be reviewed, including: the preliminary RSGER, as-built plans of the bridge, bridge inspection

reports, geologic maps, topographic maps, soil survey maps, subsidence data, previous geotechnical explorations in the vicinity of the structure, and logs of existing borings and water wells.

Visual Site Inspection
A site visit will be conducted to perform a detailed field reconnaissance, including consultation with local residents and engineers. The following conditions will be observed: condition of the existing structure, surface soils, topography, vegetation, drainage features, utility locations, rock outcrop, excavation, sinkholes and karst features, slope conditions and other potential problem areas.

Foundation Exploration Plan
The foundation exploration plan will include: number and location of test borings, discussion of subsurface concerns, and recommended methods of subsurface exploration and laboratory testing. If needed, we will meet with the District Bridge and Geotechnical Engineers to discuss details of the proposed subsurface exploration program.

A Soil Profile will not be prepared.

Task 7 - Structure Boring

Objective:

2.5.4 - Structure Boring
This task is the performance of core borings for structures by an approved test boring contractor in accordance with Publication 15M, Design Manual Part 4, Publication 293 and Publication 222M.

Scope:

2.5.4 - Structure Boring
The following work elements are required for completion of this task:

1. Coordinate the effort with the District Geotechnical Engineer (DGE), District Bridge Engineer, BOD Bridge Quality Assurance Division (BQAD), and the other engineering disciplines involved. Perform QA/QC on work processes and products. Verify that roadway alignment and structure TS&L have not changed since approval of the Reconnaissance Soils and Geological Engineering Report (RSGER).

2. Advertise and receive bids on a contract for performance of the test borings in accordance with Publication 222M, based on the boring program in the approved TS&L for the structure.

3. Submit a summary of the bids to the District for approval to award the contract and proceed with the work.

4. Upon notice to proceed, notify the affected public, and award and administer the test boring contract in accordance with Publication 222M.

5. Provide PennDOT-certified inspectors to oversee the field operations and to prepare the field logs of the borings as they are drilled.

6. Prepare water testing required to allow analysis of foiundation conditions. Tabulate the results of the testing

7. Upon completion of the field work, verify contract terms have been met, close out the subcontract, and prepare and submit the subcontractor evaluation form.

8. Prepare a record copy of the engineer's logs for the borings for submission with the Foundation Report for the structure.

Detail Task 1 - Structure Boring

Department Details:

TS&L approval is required for the bridge and culvert prior to performance of this task. All structures and roadway borings should be drilled under one contract. This will require coordination with the drilling contractor, as not all structure approvals will be issued simultaneously.

The engineer should review the environmental documents to determine if a Health and Safety Plan (HASP) is required as part of the drilling contract. The District should alert the engineer if other environmental constraints potentially could impact field operations.

Maintenance and protection of traffic should be in accordance with Publication 203M. A formal Traffic Control Plan (TCP) is required. Notify the affected public prior to performing the work, or any other special requirements are necessary.

Assume one pre-subsurface exploration meeting.

Assume 14 structure borings and 10 roadway borings

Provide the assumed number of borings and length and testing in the technical proposal.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant Geo-Explorers with oversight by AECOM.

This task consists of:

This task involves the awarding of a boring contract to a PennDOT pre-qualified drilling contractor in accordance with Publication 15M, Design Manual Part 4, and Publications 293 and 222. After the approval of the RSGERs, Geo-Explorers will prepare, advertise for bid, award and administer a subsurface boring, sampling and testing contract. A project specific Health and Safety Plan (HASP) will be prepared for subsurface exploration near those properties that have been identified as having a potential for contamination as listed in the Phase I Environmental Site Assessment. The boring contract will incorporate all structure and roadway borings. It will also include excavation of test pits to conduct soil infiltration testing at two potential basin locations. The boring contract process is summarized below:
1. Prepare and coordinate the boring contract with AECOM and the District Geotechnical Engineer (DGE).
2. Prepare and incorporate the project specific HASP into the core boring contract.
3. Prepare and submit to the DGE the necessary documents for letting a core boring contract.
4. Maintenance and Protection of Traffic plans for drilling borings on the existing roadway will be developed by Geo-Explorers and submitted to the District Traffic Unit for review and approval. The plans will comply with Publication 213, Work Zone Traffic Control. The District Traffic Unit will be contacted to determine work time restrictions.
5. With District approval, solicit bids from PennDOT approved boring contractors. Documents to be submitted to potential interested bidders

include: core boring proposal, location map of the project, location map of proposed test borings, and other necessary information such as depth and method of sampling. Geo-Explorers will obtain from AECOM copies of the Intent-to-Enter letters sent to all landowners within the project area.
6. Conduct a pre-bid meeting at the project site with prospective bidders and the DGE.
7. On the prescribed date, open bids at District 5-0 office with the DGE.
8. Review bids for completeness and obtain approval of the low bid from the DGE.
9. Procure from the approved low bidder the necessary contract documentation, including bonds and insurance certificates; award contract and issue notice-to-proceed.
10. Before drilling starts, ensure the driller completes Pennsylvania One-call in order to identify the public utilities. The Press Office and Traffic Unit will be notified when there are shoulder/lane restrictions.
11. Provide full-time PennDOT certified inspectors to inspect and log the borings to ensure compliance with the contract requirements and specifications. The borings will be logged in accordance with PennDOT guidelines. All soil and rock samples will be checked by a geologist and/or geotechnical engineer and classified in accordance with BC-795M.
12. Appropriate soil and rock samples will be selected for laboratory analysis. The laboratory testing assignment will be forwarded to the DGE for concurrence. All testing will be performed at an AMRL accredited facility.
13. As the soils and geological investigation proceeds, provide status reports simultaneously to AECOM and the DGE. The reports will include Inspector's Daily Reports and Drilling Quantity Summary sheets as required by the Standard Specifications. Copies of field logs will be forwarded to AECOM and the DGE with immediate notification given of any unforeseen problems of a non-routine nature.
14. Prepare typed engineer's boring logs in accordance with Publication 222. Update boring logs with laboratory test results. Submit final typed logs to AECOM and the DGE.
15. When the boring contract terms are met, and all soil/rock samples have been delivered to the PennDOT District 5-0 storage facility, the Performance Report for the Drilling Contractor will be completed and forwarded to the DGE.

In preparation of the proposal, Geo-Explorers conducted a water well research which shows wide variation in depth to bedrock, ranging from approximately 30 to over 250 ft. The average depth to bedrock for the nearby SR 0191-01B Ackermanville Bridge (located approximately 1.5 miles from the Messinger Street Bridge) is 50 ft and the site is underlain by the same rock formation as the Messinger Street Viaduct. We believe that the boring depths reported in the preliminary RSGER (2008) are underestimated. Therefore, an average depth to bedrock of 50 ft has been used to estimate boring depth for this project.

Accordingly, the structure boring task is based on the following assumptions:
- Advance the bridge borings 20 ft into rock in order to achieve acceptable core recovery and RQD and to ensure that the increase in vertical stress complies with the requirements of Publication 293. i.e., 6 borings @ 70 LF = 420 LF
- Advance the retaining wall borings to 50 ft or 5 ft into bedrock (to satisfy Publication 293 requirement of advancing borings 0.75 to 1.5 times the height below BOF). Assume 6 borings for the flanking retaining walls to the bridge abutments (1 each at the NW and SW walls and 2 each at the NE and SE walls). In addition, assume 2 contingency borings at the wall locations for a total of 8 borings. i.e., 8 borings @ 50 LF = 400 LF
- Advance the borings for "roadway on fill" to 50 ft or 5 ft into rock. i.e., 3 boring @ 50 LF = 150 LF
- Pavement borings will be 10 ft each. i.e., 2 borings @ 10 LF = 20 LF
- It is assumed that the culvert relocation will be a roadway item not subject to foundation design. Assume 3 roadway borings (20 ft depth with soil sampling only) for the relocated culvert to assess the location of rock and general properties of the soil material along the proposed culvert alignment (2 borings at the railroad crossing and 1 boring at the bend).
- Total 22 borings totaling 1,050 LF

Anticipated laboratory soil/rock testing will consist of:

Moisture Content 44
Sieve Analysis 44
Atterberg Limits 44
USCS/AASHTO Designation 44
Remolded Direct Shear 12
Consolidation 8
Soil Corrosivity 6
Rock Compression 22
Standard Proctor 2
CBR 2

Regarding Scope of Work bullet point 6, we will provide "soil/rock/water testing" rather than "water testing".

All boring locations will be surveyed and staked out by Susquehanna Civil.

Task 8 - Final Type, Size & Location (TS&L) Report

Objective:

2.7.3 - Final Type, Size & Location (TS&L) Report
This task consists of the assembly of Type, Size and Location studies and development of recommendations for proposed structures within the project. Publication 15M, Design Manual Part 4 apply to this task.

Scope:

2.7.3 - Final Type, Size & Location (TS&L) Report
Review any previous studies or preliminary designs with respect to the selection of structure type, span arrangements, horizontal and vertical clearances, design controls and typical section. Coordinate with the District on the logical selection of span arrangements, types of piers, and structure types suitable at each location.

The preliminary structure designs will be performed at a stage when the highway alignment and profile are well defined. Review structure requirements with the District prior to Design Field View (Line and Grade) submission and approval.

The following work elements are required for the successful completion of this task:
1. Develop a location plan showing the feature to be crossed or retained, design controls and regulated areas
2. Identify possible pier and abutment locations
3. Evaluate geotechnical conditions to identify potential foundation types
4. Recommend locations for structure foundation borings
5. Evaluate constructibility, vertical and horizontal clearances and site constraint issues in determining the most suitable structure design for the particular location
6. Prepare cost estimates for alternative structure designs
7. Prepare justification for recommended alternative
8. Prepare transmittal letter, plans and report for TS&L Submission

Detail Task 1 - Final Type, Size & Location (TS&L) Report

Department Details:

Prepare the Final TS&L reports (Bridge and Culvert) based on the existing preliminary design information and any changes or modifications made during the design process.

Submit 4 copies of the final report

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

We will review the existing preliminary design information for the bridge, the culvert, and retaining walls.

An in-depth inspection of the existing structure is not anticipated however AECOM anticipates performing a minimum of one (1) site visit to verify existing conditions and obtain field measurements.

We anticipate performing modifications to the configuration of the bridge and retaining walls as currently designed to ensure the most cost-effective structures are proposed and to minimize any impacts to the adjoining properties.

In addition to investigating the bridge and retaining walls currently proposed, we will investigate two (2) three-span alternatives (one (1) structural steel alternative, and one (1) prestressed concrete alternative) to reduce the length of retaining walls currently proposed. Also, we will investigate the minor shifting of the proposed alignment to the north to avoid conflicts with the existing structure south of the proposed bridge.

A maximum of two alternatives for the retaining walls will be considered.

We will also consider relocating the sidewalk to the north side of the proposed bridge (currently shown on the south side).

We will examine the need to provide bridge lighting.

The proposed culvert runaround (from Main Street intersection) will be advanced as currently shown on the preliminary plans. We will review alternative relocations of the culvert.

AECOM anticipates conducting one (1) Pro-Team session to be held with District personnel to discuss the current design approach. The meeting will be scheduled after AECOM has examined available structure alternatives.

AECOM will provide a Type, Size, & Location submission for the bridge, the culvert and four (4) retaining walls.

Task 9 - Final Structure Foundation Report

Objective:

2.5.5 - Final Structure Foundation Report
This task includes all items necessary to prepare the Final Structure Foundation Report in accordance with Publication 15M, Design Manual Part 4.

Scope:

2.5.5 - Final Structure Foundation Report
This task consists of the development of a Final Structure Foundation Report for each structure in the project. The report presents recommendations for design and construction of the structure foundations, and provides geotechnical data in support of the recommendations.

The following work elements are required for completion of this task:

1. Coordinate the effort with the District Geotechnical Engineer (DGE), District Bridge Engineer, BOD Bridge Quality Assurance Division (BQAD), and the other engineering disciplines involved. Perform QA/QC on work processes and products.

2. Perform an office investigation, reviewing available geotechnical reports for the project including the Reconnaissance Soils and Geological Engineering Report (RSGER) for the specific structure. Review the Preliminary Foundation Report. Obtain the record copy of the engineers logs for the borings drilled for the
structure.

3. Perform the soil, rock, and water testing required to allow analysis of foundation conditions. Tabulate the results of the testing.

4. Perform analyses to determine the preferred foundation for the structure, and document the rationale for the preference. Include cost comparisons for foundation alternatives. Prepare a tabular summary of the site conditions and foundation recommendations at each substructure location.

5. Identify and address special site conditions through appropriate design. Develop foundation notes, construction details, and special provisions as warranted.

6. Prepare plotted boring log sheets for the core borings used in foundation analysis and design.

7. Prepare the Final Foundation Report for the structure, presenting the information required in Design Manual Part 4, with the tabular summary of foundation recommendations, foundation notes, construction details, special provisions, and plotted boring log sheets appended. Submit the report, with the other documentation required by Design Manual Part 4, for approval.

8. Prepare quality assurance (QA) form for foundations.

Detail Task 1 - Final Structure Foundation Report

Department Details:

Structure Boring Task must be completed prior to this task, unless the District determines sufficient information is available from the RSGER to determine the structure foundation.

The plotted structure boring log sheets become part of the structure plans after approval.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant Geo-Explorers with oversight by AECOM.

This task consists of:

One foundation report will be prepared for each structure. The Foundation Reports will be prepared in accordance with PennDOT Publication 15M, Design Manual Part 4 using the Load and Resistance Factor Design (LRFD) method. This task will be performed in accordance with the Department's Scope of Work. Following completion of the core boring operations, Geo-Explorers will prepare the following items to be provided for the foundation report submissions:

- Typed logs, boring layout and log tracings
- Site description and history, surface features, and geological formation
- Soil and rock design parameters
- AMRL accredited laboratory test results
- Discussions of foundation alternates and justification for recommended foundation type
- Quality Assurance (QA) form for foundations

Foundation notes and construction details for special site conditions will be developed, as warranted. Special Provisions will be prepared for design items that are not covered in Publication 408. Geo-Explorers will coordinate with AECOM and the District Geotechnical and Bridge Units, keeping them informed so that the recommendations for design and construction of the structure foundations are in agreement with all concerned.

Long-term settlement and geotechnical stability will be investigated for the "roadway on fill" and necessary construction details, sequencing, and special provisions will be developed to address stability and settlement issues. Geotechnical recommendations for the "roadway on fill" will be incorporated in the foundation reports for the retaining walls.

To support the pavement design, two bag samples will be collected to conduct necessary testing to determine pavement design parameters. A brief letter report will be prepared and submitted to AECOM summarizing the field and laboratory investigation, and provide recommendations for pavement design.

Task 10 - Waterway Permits

Objective:

2.7.4 - Waterway Permits
This task is the coordination with the appropriate environmental agencies and the preparation of permit applications.

2.7.4.1 - 105 Permit Application/401 Water Quality Certification (WQC)
This task includes the preparation of the Chapter 105 Permit application package.

2.7.4.2 - 105 Permit Approval
This task includes the coordination with the PADEP to obtain approval of the permit.

Scope:

2.7.4 - Waterway Permits
Needs completed.

2.7.4.1 - 105 Permit Application/401 Water Quality Certification (WQC)
1. Coordinate with the PADEP to present the water obstructions and encroachments associated with the project. Determine any specific information requirements that will be needed for the Chapter 105 permit review.

2. Prepare a summary of the information requirements needed for the permit review.

3. Prepare the Chapter 105 Permit Application package using the PENNDOT JPA Expert System. This will include, but not limited to: the General Information Form, Chapter 105 Application (signed and notarized), location map, Act 14 Notification Letters with return receipts, floodplain and stormwater management consistency letters, Environmental Assessment Form, H&H reports, E&S approval letter, etc.

4. Provide written responses to any PADEP comments received on the permit package.

2.7.4.2 - 105 Permit Approval
Coordinate any additional information requirements with the PADEP and PennDOT. The 401 WQC will be issued by the PADEP with the Chapter 105 Permit.

Detail Task 1 - Waterway Permits

Department Details:

Determine the information requirements for the Chapter 105 Application.
Coordinate with the PADEP.
Prepare the information requirements for the 401 WQC, Section 404 Permit and the Environmental Assessment Form.

Submit a request for the 401 WQC.Determine the information requirements for the Chapter 105 Application. Coordinate with the PADEP.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

AECOM will use the Joint Permit Application and accompanying documents developed under the previous contract as basis for the joint permit submission using the JPA/Expert system.

The permit documents submitted with the previous contract will be updated as necessary and submitted with this contract. The Act 14/67/68/127 notification, PNDI notification letters, EA form will be updated and resubmitted.

Task 11 - Final Structure Plans

Objective:

2.10.13 - Final Structure Plans
This task is the development of the final structure plans.

Scope:

2.10.13 - Final Structure Plans
1. Complete final engineering design(s) for structures on the project based upon the approved type, size and location (TS&L) plans and approved foundation recommendations. Prepare design calculations, construction documents and QA/QC forms in accordance with the Department's Design Manuals as amended by current strike-off letters.

2. Provide pay items and special provisions for design alternate bidding.

3. Provide plan details and special provisions as required for support of excavation and for construction phasing.

4. Provide special provisions for items not covered by Department specifications. Obtain current standard special provisions list from District and utilize standard special provisions whenever possible. Write project specific special provisions, if needed.

5. Prepare cost estimate for each structure based upon estimated quantities and historical data for similar structures in the project region. Consider access, phasing, and relative difficulty of construction in establishing unit prices.

6. Make a pre-final submission to the Department of completed plans, special provisions, quantity estimates, cost estimates, QA/QC forms and computations.

7. Revise the previously submitted documents as required to address the Department's comments thereon. Document responses to comments in writing.

8. Submit the final plans, special provisions, quantity estimates, cost estimates, QA/QC forms and computations properly signed and sealed and in the form described in Publication 15M, Design Manual Part 4.

Detail Task 1 - Final Structure Plans

Department Details:

The following elements should be included as applicable:
- Seismic design requirements
- Construction phasing
- Additional review submissions or progress submissions
- Restrictions on permitted alternates

- Special considerations such as historic or environmentally sensitive sites which may impact design and construction
- Co-ordination of highway and structural design if not all being performed by same consultant.

NOTE - Task will be defered until sufficient funding is available. Pending no changes to structure type and current assumptions, the negotiated manhours (3129) will be supplemented when additional funding is available. Assume 0 hours for current task

Approach:

NOTE - We understand that this task will be deferred until sufficient funding is available. Pending no changes to structure type and current assumptions, the negotiated manhours (3129) will be supplemented when additional funding is available. We will assume 0 hours for current task.

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

The final engineering design for the structures will be based upon the approved TS&L and approved foundation recommendations.

We will prepare design calculations, final structure plans, construction documents, and QA/QC forms in accordance with the Department’s Design Manuals as amended by current strike-off letters.

We will prepare one (1) pre-final submission of the final structure plans for each structure. The completion level of the plans at this submission will be 90 percent. At this time the progress submission will also be provided to Norfolk Southern for review and comment.

We will revise the submitted documents as required to address the Department’s comments. We will document responses to comments in writing.

Seismic evaluation of the proposed bridge will be performed. It is anticipated that this structure will be evaluated for Seismic Zone 1 requirements.

With respect to culvert relocation, staged construction will be given consideration. It is expected that the existing bridge will be replaced under detour. Therefore no consideration of staged construction for the bridge or retaining walls will be given.

We will perform internal constructability reviews of the final plans for each structure at the 30 percent, 90 percent, and 100 percent completion levels.

With the final structure plan submission, we will submit the original final plans, special provisions, pay items, quantity estimates, cost estimates, QA/QC forms, and computations properly signed and sealed and in the form described in Design Manual 4.

Task 12 - Supplemental Surveys

Objective:

2.10.3 - Supplemental Surveys
This task includes all survey required to supplement the original roadway survey or Photogrammetric mapping performed in Preliminary Design.

Scope:

2.10.3 - Supplemental Surveys
Guidance:
- Publication 122M, Surveying and Mapping Manual
- Strike Off Letter 430-99-20, QA/QC Control Checklist for Right-of-Way and Construction Plans
- Publication 213, Work Zone Traffic Control Manual
- Form D-428, Field Book

Scope:

The Quality Assurance/Quality Control Checklist will be completed and discussed with the District Chief of Survey for all final design survey work.

Prior to initiating surveys, develop a Traffic Control Plan in accordance with Publication 213 for implementation during surveys within existing transportation facilities.

Detail Task 1 - Supplemental Surveys

Department Details:

Update property owners names and addresses and resubmit Notice of Intent to Enter Letters in accordance with SOL 430-91-94.

Update the previous survey as required to complete the Final Right of Way Plans, borings, utilities, railroad coordination and fianl roadway plans.

Monument the Right of Way. Assume 8 points to be monumented.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant Susquehanna Civil with oversight by AECOM.

Susquehanna Civil will review the mapping and Right-of-Way information completed during Preliminary Engineering (provided by AECOM). Prior to any fieldwork, as part of our Right-of-Way task, Susquehanna Civil will obtain from the Northampton Co. Courthouse the property owner’s names, addresses, and copies of deeds and tax maps for each parcel, which may be affected. Ownership information will be used to generate Letters of Intent-to-Enter on Department Stationary and sent by certified mail to each owner. The field surveys will be initiated 10 days after submission of the letters of intent.

Letters of intent will be redistributed at 6-month intervals as needed by regular mail. Susquehanna Civil will notify the property owners before major entries such as surveys and core borings, at least two days before entry. Copies of the letters of intent will be submitted by AECOM to District 5-0.

This work will encompass field surveys by conventional and GPS survey methods (i.e., three-dimensional). Included within this task are the following: recovery of any horizontal and vertical control benchmarks; establishment of a vertical control network by setting benchmarks within the

project area through differential leveling; and recording of level loops in a Form D-428 field book. This survey work will be in accordance with Publication 122M and Strike Off Letter 430-99-20. New survey references will be documented in accordance with Form D-428. The survey work required for the project will be performed under the direction of our professional land surveyor.

Survey data will be obtained through the use of GPS, 3-D laser scanning, or total station equipped with data collector. Horizontal control will be based on the PA State Plane Coordinate System (North Zone) NAD '83; vertical control will be NAVD 1988 (GEOID 09). The traverse control will be tied to two points, which will be established by Susquehanna Civil beyond the project limits but near the proposed construction. All points located during the survey will have an associated elevation. Particular attention will be paid to the location and elevations of utilities and topography on adjoining properties. All visible utilities will be located. Inverts and sizes will be measured on all storm sewers and pipe culverts. The field data will be downloaded from a data collector and plotted in 3D CADD Microstation format in accordance with Design Manual Part 3. Downloaded data and finalized plots will be electronically forwarded to AECOM for review. Standard field books will be maintained for the duration of the surveys.

Recover Control and Field Edit Existing Mapping
Susquehanna Civil will begin field work by first attempting to recover traverse points and benchmarks set by the previous survey consultant. The mapping from preliminary design will be field edited and brought up to date. We estimate that the existing mapping is about 4 years old and will require at least some updates.

Supplemental Surveys/References/Benchmarks
Susquehanna Civil will perform supplemental surveys to add clarification to key areas, expand mapping, and account for changes in the field during the Final Design phase. This could include additional stream and/or rail surveys.

We will prepare reference circles for the entire alignment and provide vertical benchmarks for construction outside the limits of work and within the legal right-of-way.

Boring Stakeouts
Susquehanna Civil will perform boring stakeouts and provide AECOM with elevations. We anticipate and additional trip to the site to record the "as-drilled" locations.

ROW Surveys & Stakeouts
Susquehanna Civil will search for property corners to support the Final ROW plans activities. We anticipate multiple requests to stake out any required right of way take (temporary or permanent).

Susquehanna Civil will perform the final alignment stake out for construction and right of way.

Field Survey will be within the limits of work. All work will be in accordance with Pub. 122, Department Survey Manual.

Follow current Department procedures regarding Notice of Intent to Enter letters, Strike Off Letter 430-91-94 dated September 6, 1991. Contact each property owner at least 48 hours prior to entering their property for survey and any other task.

Survey and stake the construction centerline and other baselines. Establish all control points including PIs, PCs, and PTs. The centerline will be stationed at 50-foot intervals on tangent and 25-foot intervals on curves. Roadway cross sections will be taken at 25-foot intervals within the project limits.

Give written notification or e-mail the project and survey managers to have the District Survey Unit to field inspect the alignment.

Establish permanent benchmarks along the proposed alignment, but placed outside the limits of construction. The benchmarks will be based on the USC&GS vertical datum.

The plan scale will be 1” = 25’ on 22” x 34” plan sheets. The plan will show all topographic features such as pavement edges, inlets, headwalls, pipes, utilities, guide rail, fences, buildings, signs, sidewalks, trees and property corners which could affect the proposed design or the estimating of quantities. Apparent property lines will be shown together with the owner's name where right-of-way takes are anticipated. The plan will be consistent with the requirements of Design Manual, Part 3.

All survey plans and associated data will adhere to the Quality Assurance/Quality Control Procedures and Guidelines as outlined in Strike-Off Letter 430-99-20, dated March 16, 1999. Attached hereto and incorporated into this Scope of Work are the Quality Assurance/Quality Control Procedures and Guidelines Checklist. All survey plans and data must adhere to all guidelines and procedures contained therein except those specifically removed from the Checklist for this project by the District Chief of Survey.

Susquehanna Civil will perform survey of utility facilities and utility line clearances as required to facilitate relocation.

Furnish a hard copy and electronic files for all traverse points used to produce alignments in compliance with Strike-Off Letter 430-98-12.

Furnish electronic files on CD-ROM with the original 3 dimensional terrain and proposed alignments in accordance with Strike-Off Letter 430-98-12.

Task 13 - Roadway

Objective:

2.10.2 - Roadway
This task includes survey, roadway, pavement and drainage design, plans, cross sections, soil profile, final design office meeting, draft special provisions and final design field view.

2.10.2.1 - Final Drainage Design
This task includes the design of roadway drainage items. Publication 13M, Design Manual Part 2 applies to this task.

2.10.2.2 - Final Pavement Design
This task is the preparation of the final pavement design.

2.10.2.3 - Roadway Plan
This task includes the preparation of the final roadway plans and profiles in accordance with Publication 10A, Design Manual Part 1A.

2.10.2.4 - Final Design Office Meeting
This task is the review of the final roadway plans and draft special provisions in accordance with Publication 10A, Design Manual 1A.

2.10.2.4.1 - Plans

This task is the review of the final roadway plans in accordance with Publication 10A, Design Manual Part 1A.

2.10.2.4.2 - Draft Special Provisions
This task is the review of the draft special provisions in accordance with Publication 10A, Design Manual 1A.

2.10.2.5 - Final Design Field View
This task is the actual field view of the project with the final roadway plans.

2.10.2.6 - Permit Approvals
This task is the time required to receive permits for NPDES, Waste/Borrow, Coast Guard and other permits not received during Preliminary Design.

2.10.2.6.1 - Waste/Borrow Areas
This task is the time required to receive the Waste/Borrow permit.

2.10.2.6.3 - Other
This task is the time required to receive any other permits not previously covered.

Scope:

2.10.2 - Roadway
Needs completed.

2.10.2.1 - Final Drainage Design
One copy of the plan depicting the drainage design and the hydraulic design computations for roadway drainage structures shall be submitted to the appropriate District Office for review and comment by the Project Manager or designated drainage engineer. As directed by the District, one additional copy of the drainage submission shall be sent to Central Office, Bureau of Design for quality assurance review.

The following work elements are required for the successful completion of this task:

1. Develop a drainage design that provides the proper capacity, spacing, size and type of drainage facility (existing and proposed) for each drainage area, location, fill height, roadway type and environmental condition including all inlets, pipes, culverts, ditches and base drains.

2. Prepare hydraulic design computations using appropriate methodologies for all roadway drainage structures. Include energy grade line and hydraulic grade line computations for existing and proposed systems.

3. Develop alternate pipe designs as required with corresponding hydraulic computations for each alternate. Provide "For Information Only" quantities for each pipe type and alternate as well as minimum and maximum fill heights as required.

4. Verify that downstream drainage capacity is sufficient for the proposed design. Conform to local municipal storm water requirements, if a local storm water ordinance exists.

5. Show all existing and proposed drainage facilities on construction cross sections and profiles.

6. Prepare transmittal letter to include, plans showing drainage design and hydraulic design computations. Provide PE seal on all plans and

computations.

2.10.2.2 - Final Pavement Design
Follow Publication 13M, Design Manual Part 2, which refers to Publication 242, Pavement Policy Manual for the preparation of final pavement design.

2.10.2.3 - Roadway Plan
The submission will include the completion of the following work items:

1. Interchange Design

2. Intersection Design - Prepare pavement elevation plans to describe the horizontal and vertical geometry that cross sections cannot describe.

3. Airport Clearances - Review Part 77 of the Federal Aviation Regulations and adjust the design accordingly when the project is within 2 (3.2 km) miles of an operating airport. If the project is within 2 (3.2 km) miles of an operating airport, an Airport Clearance Submission to the FAA is required.

Prepare all the following work elements:
(Note: Plans listed below are highway design plans only and do not include also plans.)

1. Title sheet
2. Index/General Note Sheet
3. Typical Section Sheet (Location Map and General Notes)
4. Summary of Quantities Sheets
5. Tabulation of Quantities Sheets
6. Detail Plan Sheets
7. Profile Sheets
8. Contour, Grading, and Drainage Plans
9. Landscaping Plans
10. Cross Sections
11. Special Detail Sheets
12. Required Forms, Special Provisions and Estimates

2.10.2.4 - Final Design Office Meeting
1. Conduct the Final Design Office Meeting as early as possible and always prior to the final construction plan check.

2. The Final Design Office Meeting should be held when the following conditions are met:

* Approvals are obtained as indicated in Design Manual Part 1A
* Planning and coordination is completed for all major utility relocations as defined in Publication 16M, Design Manual Part 5.
* TS&L drawings are approved according to Design Manual Part 1A.
* A draft of all major special provisions describing their intended purpose.

3. A report on required agreements with municipalities or other local political subdivisions is required for the Final Design Office Meeting.

4. Two (2) sets of prints are required showing all corrections made based on comments received with appropriate approvals from the project□s Safety Review and indicating FHWA□s participation limits, if applicable.

5. District transmits copies of meeting minutes to those in attendance.

6. Bureau of Design transmits the official meeting minutes to FHWA, if applicable.

2.10.2.4.1 - Plans
The Engineer will submit 90% plans and specifications for review by the District, Central Office and FHWA. The final design office review must be performed prior to the final plan check.

The Final Design Office Meeting is held to review project development after the following design issues are approved and the plan has been developed to a 90% level of completion:

- Typical sections
- Pavement design
- Service road justification
- Interchange geometrics
- Hydraulic computations
- Addenda (if required) to the draft Soils and Geological Engineering Report
- Final Traffic Control Plan (TCP)
- Erosion and Sedimentation (E&S) Control Plan
- Hydraulic design of structures
- Final Lighting Plans
- Final Signing Plans
- Final Traffic Signal Plans
- Special Provisions
- Planning and coordination of all major utility relocations
- Structural drawings

2.10.2.4.2 - Draft Special Provisions
1. If changes are necessary to a standard special provision then write an individual special provision.
2. Obtain review and approval of proprietary and experimental items in special provisions.
3. Make special provisions available for review by Department offices, municipalities, utilities and others in authority as appropriate.
4. All reviews and issues are to be resolved prior to the PS&E

2.10.2.5 - Final Design Field View
1. Conduct final design field view early in final design (about 35% completion level).

2. Evaluate the proposed design under field conditions.

3. Solicit comments from review agencies for further project development

4. Obtain acceptance of the Final Design Field View Submission and approval to proceed with final design.

5. Prepare the Final Design Field View Submission (two copies) for reviewing agencies at least several weeks prior to the Final Design Field View. Include the following:

* Plans
* Profiles
* Typical Sections
* Cross Sections

6. Prepare Final Design Field View Minutes which serve as official record of key decisions. Include the following:

* Project Index Map
* Location Map
* Typical Section
* Updated Cost Estimate

2.10.2.6 - Permit Approvals
null

2.10.2.6.1 - Waste/Borrow Areas
Perform the following tasks:

1. Identify areas to be used for excess excavation or to obtain borrow material, as needed.

2. Meet to discuss the sites identified and evaluate which sites are appropriate to carry forward for environmental clearance.

3. Conduct the appropriate environmental studies to obtain environmental clearance for the selected site(s).

4. Prepare environmental document and submit for review/approval.

2.10.2.6.3 - Other
Perform the following tasks:

1. Coordinate any additional permits or approvals needed to commence construction with the appropriate agency or responsible party. Prepare applications or supporting documentation to obtain permits/approvals.

2. Submit for review/comments.

3. Revise as necessary.

4. Submit permits or supporting documentation to responsible agency/party for review/approval.

Detail Task 1 - Roadway

Department Details:

As indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

AECOM will provide final roadway plans specifications and a cost estimate for the replacement of the Messinger Street Bridge. It is assumed that the work will be limited to the section of SR 1018 (Messinger Street) between SR 191 (First Street) to the west and Main Street to the east.

Interchange Design and Airport clearance are not necessary and will not be provided. Intersection design is limited to the tie-ins of Messinger Street to Main Street, First Street, and Murray Street.

Work on First Street, Murray Street, and Main Street will be limited to the pavement replacement required to tie in the intersections to Messinger Street.

The 2300’ long existing culvert owned and maintained by Bangor Borough will only be replaced for the 325’ which parallels Messinger Street. The hydraulic analysis from the Messenger Street Culvert Study prepared by Borton Lawson for Bangor Borough will be used to size the proposed culvert. A separate culvert analysis will not be performed.

Pavement will be designated based on the thickness of the existing pavement and the traffic characteristics.

Two representatives from AECOM will attend and document one final design office meeting and one final design field view.

A waste of borrow permit is the responsibility of the contractor and will not be obtained for the project. A summation of the waste or borrow required for the project will be provided in the earthwork data summary.

The scope of work for the preparation of an NPDES permit and Chapter 105/Section 404 is detailed under Task 10 and Task 22 of this proposal. No other permits are anticipated or will be prepared.

Task 14 - Cross Sections

Objective:

2.10.4 - Cross Sections
This task is the preparation of final cross sections in accordance with Publication 10A, Design Manual Part 1A.

Scope:

2.10.4 - Cross Sections
The cross sections will be based on the vertical and horizontal alignments and will be plotted at an approprate vertical and horizontal scale.

Cross section intervals should be taken at a distance that clarifies the existing conditions not to exceed 50 feet. Shorter intervals should be considered for walls and other permanent structures or special conditions. Develop a half - section at each driveway location without prepared profiles.

The following work elements are required for the successful completion of this task:

1. Cross sections at selected intervals.

2. Cross section title sheet providing number of cross section sheets in the package, break-down of each alignment with stations and related sheet numbers.

3. Cross section reference sheet at all interchanges and complex intersections

4. Develop earthwork quantities for each section and place on sheet.

5. Submit cross sections in accordance with Publication 14M, Design Manual Part 3.

Detail Task 1 - Cross Sections

Department Details:

The following items may require an adjustment:

1. Show areas of environmental contamination on the affected sections
2. For rehabilitation sections, show existing pavement depths
3. For complex erosion control plans show proposed sedimentation control devices such as sediment basins
4. For projects with "tight" right of way show required right of way and easement lines

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

Up to thirty (30) Cross Sections of SR 1018 (Messinger Street) will be provided. Cross sections will not be provided for Main Street, First Street or Murray Street.

Task 15 - Gap ROW Plan

Objective:

2.6.2 - Gap ROW Plan
This task is the preparation of a right-of way plan to expedite early acquisition of certain properties within a projects overall required right-of-way corridor.

Scope:

2.6.2 - Gap ROW Plan
When determined that the projects property takings will require relocation of people, or businesses, or hardship circumstances, the Department may direct the preparation of a GAP Right-of-Way Plan. A GAP Right-of-Way Plan provides authorization to acquire right-of-way to allow the Department to expedite claim settlement and facilitate early relocations of owners, tenants, and/or businesses.

The GAP Right-of-Way Plan will be prepared in the same format and content requirements of a Final
Right-of-Way Plan, except that the plans and profiles sheet coverage and property plots, when directed by the District, need only to be included for the area(s) where the GAP Plan taking claim(s) are applicable.

Detail Task 1 - Gap ROW Plan

Department Details:

Assume one (1) property take as part of the Gap Right of Way Plan

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant Susquehanna Civil with oversight by AECOM.

We will perform research and prepare a separate Final ROW plan in order to facilitate early action regarding one critical property (Merry Maids) that appears to encroach the public Right-of-Way.

We will verify and reissue intent to enter letters, as applicable.

Based on Design Field View approval and preliminary Right-of-Way plans, we will prepare the Gap Right-of-Way Plan showing all topography, property lines, legal and required right-of-way lines, utilities, relocated utilities, easements and takes.

We will prepare property plats for all parcels involved in a take. Plats should show all buildings and other structures or shrubbery, which may affect

the value of the property.

Verify all information at courthouses prior to submission for plan check.

We will submit three (3) full size sets of plans to the District for Gap Right-of-Way plan check.

We will send copies of the gap right-of-way plans to the District Utility Unit upon request and, after clearance by the Department, send copies to the utility companies as needed.

Task 16 - Final Right-of-Way Plan

Objective:

2.10.5 - Final Right-of-Way Plan
This task includes all work necessary to prepare the final R/W plan in accordance with Publication 14M, Design Manual Part 3.

Scope:

2.10.5 - Final Right-of-Way Plan
Right-of-Way Plans, when specified in the project scope of work, will be the basis for determining all property damages which are involved in the construction requirements of a highway project. They will also serve as the legal record of the location, the extent, and the character of any acquisition of Right-of-Way, Permanent Easements, and Temporary Easements by the Commonwealth.

The Right of Way Plan presentation format will be as specified in the project scope of work. The Right-of-Way Plan format could be either, or a combination of the following:

A. Standard Right-of-Way Plan - For the authorization of acquisition of both total take and partial take property, for both Free Access and Limited Access highways.

B. Final Plan - Reestablishes and/or authorizes the GAP Plan right-of-way, if necessary, and establishes right-of-way and authorizes acquisition of property requirements that were not included under the GAP Plan.

~~C. Combination Plan - This plan combines both the Right-of-Way and Construction requirements on the drawings. This plan shall be acceptable only for small Federal Aid and 100% state-financed projects involving few properties with no relocation problems.~~

~~D. Simplified Right-of-Way Plan - This plan is a simple one (1) or two (2) sheet Right-of-Way Plan, applicable to small projects, where construction is primarily within existing legal right-of-way where only a few properties are involved and the area of taking is minor.~~

The following are general tasks and their description for Right-of-Way Plan preparation:
1. Current Property Owner Record Research
2. Deed Plotting
3. Composite Deed Plot Matrix Map
4. Property Owner Name
5. Parcel Numbers

6. Right-of-Way Plan Preparation

The following are the basic requirements comprising Right-of-Way Plan preparations:
1. Title Sheet
2. Index Sheet
3. Location Map, General Notes, Etc., Sheets
4. Typical Sections
5. Summary of Project Coordinates
6. Summary of Required Right-of-Way Line Coordinates
7. Detail Plan Sheets
8. Profile Sheets
9. Property Plats
10. Right-of-Way Plan Revisions

Detail Task 1 - Final Right-of-Way Plan

Department Details:

Prepare the Final Right of Way plans based on the Gap Right of Way Plans and the preliminary Right of Way Plans and as indicated.

Assume 6 partial takes and 6 easements, including an aerial easement over the Norfolk Southern Railroad.

Property Plats are required for all takes.

Verify ownership within 30 days of the Final Plan Submission

Submit 2 full size and 2 half scale sets with each submission. Mylars are required for the Final Submission.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant Susquehanna Civil with oversight by AECOM.

As the first step, Susquehanna Civil will collect existing tax maps and deed information from the Northampton County Recorder of Deeds Office in order to determine and verify current property owners as well as to identify locations of existing property lines. The municipality and District 5-0 will also be contacted to obtain right-of-way information.

The Final Right-of-Way Plans along with all pertinent deeds and backup will be submitted to the District Utility Engineer for review. The plans will be reviewed in detail to assure all utility easements, right-of-ways and utility relocations are properly indicated on the drawings. Upon approval of the District Utility Engineer, the final Right-of-Way Plans will be transmitted to the utility companies for review. Any comments obtained from these

reviews will be discussed in detail with the Project Manager and the District Utility Engineer. The resolution of these comments between the District and the commenting agency will be incorporated into the final Right-of-Way Plans prior to submission to the District for review and approval. Comment resolution memos will be prepared to address any District comments.

Thirty days prior to the submission of the final right-of-way plans, Susquehanna Civil will reestablish the legal right-of-way. Property ownership will be verified within one week of the Final Submission. Copies of new deeds will be obtained on parcels with change in ownership. The final plan set will be plotted and sealed by our licensed surveyor.

We anticipate 6 partial acquisitions and 6 easements, including several residential properties and an aerial easement over Norfolk Southern. We anticipate additional research regarding ownership and rights of the existing pedestrian bridge connecting the Messinger Street Bridge to the 2nd floor of the light industrial/commercial building to confirm that the property owner does not have legal right to maintain the pedestrian bridge. An easement for the existing billboard located on the east side of the light industry/commercial building will also be researched. We also anticipate additional research to determine ownership of 2 properties that were identified in the PE phase as unknown.

We will verify and reissue intent to enter letters, as applicable.

Based on Design Field View approval, Preliminary Right-of-Way Plan, and Gap Right-of-Way Plan, we will prepare 1” = 25’ scale ROW Plans showing all topography, property lines, legal and required right-of-way lines, utilities, relocated utilities, easements and takes.

We will prepare property plats for all parcels involved in a take. Plats should show all buildings and other structures or shrubbery, which may affect the value of the property.

Verify all information at courthouses prior to submission for plan check.

We will submit three (3) full size sets of plans to the District for Final Right-of-Way plan check.

We will send copies of the final right-of-way plans to the District Utility Unit upon request and, after clearance by the Department, send copies to the utility companies as needed.

Task 17 - Utilities

Objective:

2.9.1 - Utilities
This task involves project specific work requirements for utility relocation engineering activities.

2.9.1.1 - Utility Location Verification
This task is the verification of existing aerial and underground utility locations.

2.9.1.2 - One Call
This task is the compliance with the PA One-Call System design call requirements.

2.9.1.3 - Existing Utility Location Plan

This task is the compilation of the existing utility location plan for design/coordination purposes.

2.9.1.4 - Preliminary Utility Impact Assessment
This task is the assessments of potential conflicts by the project designs with existing utilities, and preliminary determination for utility relocations requirements.

Scope:

2.9.1 - Utilities
Guidance:
- Publication 16M, Design Manual Part 5, Utility Relocation

PennDOT projects which involve public utilities must include all necessary provisions for the safety and protection of both existing and any required relocation of utilities.

Coordination efforts will be maintained with the utility throughout the project design process to allow amicable solutions for known and potential utility/highway project conflicts.

2.9.1.1 - Utility Location Verification
The scope of work will include the following activities:

1. Invite District Utility Unit representatives to the project Design Field View meeting.

2. Initiate contact with all utilities in the vicinity of project by project notification letter.

3. Formally solicit copies of existing facility location records for underground installations from the utility company.

4. Subsequent to plotting the existing utility locations on the Department's right-of-way plan, submit plan copies to each company and request their verification, or revision, of the type, size, and location of their facilities.

Scope Deliverables:

1. It is the responsibility of the designer to prepare project base mapping showing all existing utility facilities.
a. Aerial and surface utility data will be obtained by conventional survey.
b. Underground utility data may be obtained from utility owner as-built plans and maps and/or test pits or non-destructive probe methods.

2. The existing utility location plan compilation will include the appropriate label and number, as applicable, for each facility.
- For all existing underground utility installations, the locations will be supplemented with profiles and/or cross sections.

3. Once the utility location plan is compiled, the designer will submit copies of the plan to each utility owner on the project with a formal request for their verification of the facilities data depicted.
- The designer will incorporate all revisions, additions, or deletions resulting from the verification comments received from the owners.

2.9.1.2 - One Call
Guidance:
- PA Act 287 of 1974, as amended (73 P.S. § 176, et seq.)

The scope of work will include the following activities:

1. The project designer, and/or survey party chief shall contact the PA One-Call System for the design call not less than 10 working days and no more than 90 working days prior to the final P.S. & E. submission to the District.

2. The project designer, and/or survey party chief must request underground utility line delineations by the utility owner prior to making field survey acquisitions of utility locations.

Scope Deliverable:
The design firm will add the one call serial numbers and the 1-800-242-1776 number to the plan prior to forwarding the plan to facility owners.

2.9.1.3 - Existing Utility Location Plan
Scope:

Preparation of this plan is based on project mapping including field data and the verified facility location as received from the utility companies.

The scope of work will include the following activity:

After a response from the facility owner, the designer will add their existing facility information to the drawing prior to the final P.S. & E. submission to the District.

Scope Deliverables:

The design engineer will prepare a master Existing Utility Location Plan using as a base the construction plan sheets.

2.9.1.4 - Preliminary Utility Impact Assessment
Scope:

When the existing utility location plan has been developed and verified, the proposed project preliminary designs will be investigated for utility impact potentials.

Scope Deliverables:

Conduct a preliminary impact assessment study and provide a report listing known and potential utility conflicts.
a. The project designer will complete a preliminary impact assessment study and report with coordination efforts from the utility owner. This information shall be presented in text and to clearly indicate the location and nature of the conflicts along with the preliminary cost comparisons and conclusions and recommendations for the relocation of the utility facility versus possible project design modifications that would allow the facility to remain at its existing location.
Where utility conflicts are discovered, or other utility problems are anticipated on the project, a preliminary impact assessment study and report will be completed by the project designer, with coordination efforts from the utility owner.

b. The preliminary utility impact assessment report will be submitted to the Department for review, approval and/or conflict resolution decision.

Detail Task 1 - Utilities

Department Details:

As indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

AECOM will perform a One-Call once during design and once prior to construction. AECOM will coordinate with the utility companies to obtain the locations of all overhead and underground lines and will depict the existing lines on the plans.

Susquehanna Civil will obtain utility data by conventional survey as required.

The locations of the existing utility facilities will be shown on the Design Field View Plans for the purpose of verification with the utility facility owners. The existing utilities and relocations will then be incorporated into the Final Roadway Plans. A separate set of plans will not be provided.

The preliminary utility impact assessment report will be developed and submitted to the Department for review and approval.

We will contact the Recorder of Deeds in the Northampton County to obtain a copy of the list of utilities that operate within the project area. We will forward a copy of a Type 10 Map and a U.S.G.S. quadrangle that shows the project area and a brief narrative of the project scope of each utility listed. All firms will be required to respond as to whether or not they have facilities within the project limits.

Utilizing information received from the utility companies, we will map all facilities or preliminary plans and forward a copy to each utility present and identify all possible areas of conflict.

As more detailed roadway and right-of-way plans are developed, we will forward them to utility companies upon request. In addition, we will maintain close contact with the affected company, trough the District's Utility Unit, to ensure accuracy of plans.

Subsurface utility exploration is not anticipated and is not included in this Technical Proposal.

Attendance at utility coordination meetings is covered under Task 18 Utility Engineering.

Task 18 - Utility Engineering

Objective:

2.10.8 - Utility Engineering
This task consists of engineering for utility relocation.

2.10.8.1 - Utility Coordination
This task consists of the coordination of all project utility relocation activities.

Scope:

2.10.8 - Utility Engineering
Guidance:
- Publication 16M, Design Manual Part 5, Utility Relocation

Solicit the utilities requirements for the design and construction of the relocations as soon as possible to determine if:
- work will be done by utility staff and forces,
- work will be done by utility consultant and contractor,
- work will be requested to be done by PennDOTs project designer and contractor, or any combinations of the above.

All utility related formal requests for agreements, permits and occupancy applications must be in accordance with the applicable policies and procedures of Design Manual Part 5.

Authorization to perform preliminary and final utility engineering will be provided in writing by the Department.

2.10.8.1 - Utility Coordination
Guidance:
- Publication 16M, Design Manual Part 5, Utility Relocation
- Form D4181, Utility Relocation Questionnaire and Permit Application
- Form D4181UC, Utility Relocation Clearance Report
- Form D4181A, Utility Relocation Estimates Relocation Plans & Supporting Data
- Cost Sharing Request Information, DM5

The scope of work will include the following activities:

1. Schedule and facilitate an Initial Utility Design Stage meeting to explain the project improvement goals, schedules, and targeted utility clearance dates.

2. Transmit copies of the Department's right-of-way plans, profiles and cross sections along with forms D4181, D4181UC, and D4181A to the utility companies for their relocation engineering design and cost estimates.

3. Delineate the type, size and location utility information verified by the utility company onto the project plans, profiles and cross sections.

4. Upon receipt of utility relocation alignment plans, establish and delineate the substitute right-of-way, or reserved easements, corridor for the utility relocation on the project Right-of-Way Plan.

5. Solicit utility company input relative to project design/utility conflicts, and potential need for substitute right-of-way corridors for utility relocations.

6. Schedule and conduct a utility meeting to review the proposed utility relocations and to resolve any outstanding issues with the individual affected utilities, as needed.

7. Schedule and facilitate the Final Utility Design Stage meeting to discuss and resolve utility/design conflicts and concerns, including substitute right-of-way, when required.

8. Keep utility companies informed of all design changes that could impact existing or planned utility facilities.

9. Ensure the following items are made part of the P.S.&E. package:
a. Utility relocation, abandonment and removal information onto the roadway construction plans, based on plans and information received from the utility company.
b. Incorporated utility work to be performed by the PennDOT contractor, as ALSO Plans, or other approved procedures, into the project construction contract documents.
c. Obtain the restrictive, prior, concurrent, and coordinated calendar work day estimates from the utility companies for work to be performed by their own forces. The utility relocation construction duration time and schedule restrictions must be incorporated into the overall project construction schedule.

10. Invite District Utility Unit representative to attend the Final Design Stage Meeting, pre-bid, pre-construction, and all construction status meetings.

Scope Deliverables:

Document and distribute all meeting minutes, correspondence, memorandums and telephone conversations regarding project related utility issues.

Detail Task 1 - Utility Engineering

Department Details:

Unless specified otherwise in the project scope of work, all project related Utility Agreements and utility authorizations will be the responsibility of the District Utility Unit.

Approach:
We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

AECOM anticipates the participation in two (2) utility coordination meetings. We anticipate that two (2) project employees will attend each meeting to discuss the status of the design and the design intent. AECOM anticipates that the overhead utilities on the nouth side of the Bridge will need to be relocated as part of the project.

We will utilize all information received from all affected utility companies during the preliminary engineering part.

We will notify each utility company that our Team will be completing the final design for this project.

As more detailed roadway and right-of-way plans are developed, we will forward them to the utility companies upon their request. In addition, we will maintain close contact with the affected utility company, through the District Utility Unit, to ensure accuracy of plans.

We will complete the requirements of Act 38; plotting existing utilities on plans, cross sections, profiles, and other drawings; attending all necessary meetings and performing design functions necessary to accommodate existing and relocated utilities.

The Right-of-Way Plans, Pre-Bid Construction Schedule, PA One Call receipts, completed D4181 forms, and utility tracking spreadsheet will be submitted to the District Utility Unit.

Task 19 - Traffic Control Plan

Objective:
2.10.14 - Traffic Control Plan
This task is the development of the final traffic control plan. Publication 14M, Design Manual 3; the MUTCD and Publication 213 apply to this task.

Scope:

2.10.14 - Traffic Control Plan
Phasing schemes, sign messages, and approximate locations of signs and traffic control devices should be approved at the Design Field View stage, prior to the development of the final plans.

The Traffic Control Plan will be a stand-alone plan and will include the following:
- Title sheet with general notes, location map, and pay item quantities,
- Tabulation of Traffic Control Devices,
- Typical-sections
- Narrative describing each stage and phase by stating the work to be performed and the traffic control to be implemented
- General plan layout
- Temporary road plan, typical-section and profile (if necessary)

- Temporary signal plan (if necessary)
- Temporary Highway Lighting (if necessary)
- Special Sign Details (if necessary)

The plan will also include, but will not be limited to, sign messages, sign sizes, general sign locations, tapers lengths, barricades, channelizing devices, impact attenuators, temporary pavement markings, temporary roadway locations, temporary highway lighting locations, detours, portable changeable message signs, and arrow boards. Detail of temporary roads cross-section and profile will be included as well as other details as appropriate.

If detours are necessary, the detour route(s) will be identified and driven to determine general safety issues and restrictions. State roads requiring a detour will utilize other State owned roadways. If detour routes formed from State owned roads are found to be unacceptable because of length or other reasons, then agreements between the State and municipalities will need to be developed to utilize local roadways. This scope does not include support activities needed to develop agreements between the State and municipalities.

In locations where pedestrian movements are prominent, either safe passage or restrictions will be addressed. Scope associated with construction temporary pedestrian structures and signals will be included in either the Amendments to the Standard Scope of Work or the Detailed Project Approach.

Provide temporary highway lighting for limited access crossovers and at locations as directed by the District. Contact the Highway Lighting Unit in Harrisburg for design requirements. Submit the lighting design to the Highway Lighting Unit for approval prior to the release of the Traffic Control Plans to the District for PS&E Development.

This scope of work does not provide for a temporary traffic signal plan. If the implementation of the traffic control plan impacts a signalized intersection such that a temporary signal design is necessitated, the temporary signal plan will be incorporated into the traffic control plan. However, the scope of work for the temporary signal design will be provided in the Detailed Project Approach or in the Amendments to the Standard Scope of Work.

Specifications will include the description of the construction staging and phasing. Special provisions will also be written for traffic control devices outside the scope of the specifications included in the Publication 408M.

If required for boring and drilling work associated with geotechnical studies, the subconsultant will develop traffic control plans. Details of the design for these plans will be provided in the Detailed Project Approach.

Detail Task 1 - Traffic Control Plan

Department Details:

Comply with the appropriate sections of Publication 46, including but not limited to Section 6.14.4 and Publication 10C, Chapter 3, Section 3.3.B13 and Figure 3.1.

Temporary traffic signals and traffic analyses and modeling are not anticipated.

Provide "special business signing" as required

A Traffic Management Plan is not required

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant L&V Engineering (L&V) with oversight by AECOM.

L&V will design the final traffic control plan required to maintain traffic through the work zone.

Base mapping obtained from AECOM will be used to develop the plans at an appropriate scale.

Detour plans will be developed in accordance with the District's Scope of Work. Tasks will include plan preparation, calculation of quantities, development of cost estimates and project specifications.

Due to right-of-way constraints along Messinger Street, staged construction of the bridge replacement is not feasible. The implementation of westbound (WB) and eastbound (EB) detour routes using state roadways for maintenance and protection of traffic during construction will be required. The WB detour route is approximately 1 mile in length and the EB detour is approximately 9 miles in length. The WB detour route follows the existing truck detour routes imposed with the posted weight restriction on the existing structure. WB and EB pedestrian movements will utilize the sidewalks along the WB detour route.

Alternatives to the preliminary detour routes will be explored and concurrence obtained prior to advancing the plans. The selected detour routes will be evaluated for constraints and to confirm there are no concurrent PennDOT projects resulting in overlapping detour routes. The final proposed detour routes will be coordinated with emergency services and the school district.

Final Traffic Control Plans will be developed and submitted to the Department for review and approval.

Task 20 - Traffic Signal Timings and Plan

Objective:

2.10.15 - Traffic Signal Timings and Plan
This task is the development of the traffic signal timings and final signal plans.

Scope:

2.10.15 - Traffic Signal Timings and Plan
Prepare a traffic signal construction plan in accordance with Publication 14M, Design Manual Part 3,
Publication 148, Traffic Standards (TC-7800), and Publication 149, Traffic Signal Design Handbook. The
Traffic Signal Construction Plan shall include a Title Sheet, an Index Sheet, a Summary of Quantities Sheet, a Traffic Signal Plan Sheet, a Tabulation of Quantities Sheet, and Special Provisions.

In event of overhead street name signs, supply type II (sign fabrication) drawings as per Design Manual Part 3.

When the Traffic Signal Construction Plan is included in a Construction Plans Package as a Supplemental Plan, the Title Sheet, the Index Sheet, and the Summary of Quantities Sheet shall be omitted from the plan.
If the traffic signal is a part of a coordinated network, a Network Coordination Chart identifying the coordination scenarios and the signal offsets for each of the individual traffic signals shall be developed and included on the Traffic Signal Plan Sheet.

A Tabulation of Quantities Sheet shall be prepared. Individual tabulation of quantities shall be made for the following items.
- Signs,
- Traffic Signal Supports,
- Electrical Distribution (Conduit, Trench, Cable, Junction Boxes, Electrical Service).
- Detectors.
- Pavement Markings.
- Miscellaneous Equipment (Controller Assemblies, Systems and Communications Equipment, Signal Heads).

- A detail sheet showing non-standard items, including, but not limited to, items such as mast arm details with W3-03 flashing lights.

Special Provisions need to be developed when issues pertaining to Items of Work, Materials, Requirements, or Instructions are not contained on the drawings, are not in the specifications, apply only to the project under consideration, and are considered essential to the satisfactory completion of the contract within its intended scope. Special Provisions shall be submitted with the Traffic Signal Plan as a separate entity in themselves.

Submit full size drawings of the Traffic Signal Construction Plan to the District Traffic Engineer with copy to the project manager or directly to the project manager at the completion of the 60% and 90% project completion levels for review and comment. Meet with the District Traffic Engineer or his assigns to discuss the review comments before advancing the design. Submit copies of the Special Provisions at the 90% project completion level.

The Final Traffic Signal Construction Plan shall be originated and stored in a digital format. Digital and printed copies shall be provided to the Districts Project Manager. Final copies of drawings, design calculations, and Special Provisions shall be delivered in the format and quantities specified in the Engineering Agreement.

Prepare a Traffic Signal Permit plan by modifying the Traffic Signal Plan Sheet to reflect the final permitted operation of the traffic signal. Notes specific to the signal construction shall be removed and notes identifying the Permittees responsibilities shall be added. Add a permit issue block to the upper right hand corner of the plan sheet.

Submit the Traffic Signal Permit Plan along with the completed signal permit application and a copy of the municipalitys legally adopted resolution prior to the PS&E submission.

Perform the following for final traffic signal timings:

1. Use the latest version computer software, which is based upon the Federal Highway Administrations 1997 Highway Capacity Manual, to evaluate the traffic capacity of the intersections. Identify an initial optimized timing and phasing operation for each individual intersection.

2. Prepare design calculations for cycle lengths, green splits, actuation timings, pedestrian intervals, change and clearance intervals, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

3. Compile all traffic analysis and original checked work sheets into a bound document. Submit this document to the District Traffic Engineer at the 90% project completion level. Submit vehicle turning analysis with data.

Detail Task 1 - Traffic Signal Timings and Plan

Department Details:

Assume traffic counts at one intersection.

Evaluate the Warrants for the existing signal at Messinger Street and Main Street. Also evaluate the Level Of Service and queing length under all-way stop control. For the purposes of this agreement assume the signal will be retained and develop plans in accordance with Publication 149, Traffic Signals Design Handbook.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant L&V Engineering (L&V) with oversight by AECOM.

L&V will prepare the traffic signal submission in accordance with the following documents:
- Pennsylvania Department of Transportation's Design Manual Part 3: Plans Presentation (Publication 14M), Chapter 10 - Traffic Signal Plans
- Pennsylvania Department of Transportation's Traffic Engineering Manual (Publication 46)
- Pennsylvania Department of Transportation's Traffic Control Pavement Markings and Signing Standards TC-8600 and TC-8700, (Publication 111M)
- Pennsylvania Department of Transportation's Traffic Standards (TC-8600 Series) Signals (Publication 148)
- Pennsylvania Department of Transportation's Traffic Signal Design Handbook (Publication 149)
- Pennsylvania Department of Transportation's 2006 Official Traffic Control Devices (Publication 212)
- Pennsylvania Department of Transportation's Handbook of Approved Signs (Publication 236M)
- Pennsylvania Department of Transportation's Highway Specifications (Publication 408)
- Federal Highway Administration’s Manual on Uniform Traffic Control Devices (MUTCD 2009 Edition)

Data Collection
Automatic traffic recorder (ATR) data will be collected for a one-week period at the following locations:
• SR 1018 (Messinger Street) on the existing bridge
• SR 1015 (South Main Street) south of the intersection with SR 1018 (Messinger Street)
• SR 1018 (Messinger Street) east of the intersection with SR 1015 (South Main Street)

Existing peak traffic periods will be identified from the ATR data.

Manual turning movement counts, including heavy vehicles and pedestrians, will be performed on an average weekday during the morning and afternoon peak periods at the intersection of SR 1018 (Messinger Street) and SR 1015 (South Main Street).

Existing weekday A.M. and P.M. peak hours will be identified from the manual turning movement count data.

Analysis
Historical crash data for the most recent five years will be obtained from PennDOT. Incidents will be plotted on crash diagrams and the data will be evaluated for patterns or characteristics indicating inadequate geometry, or other safety concerns within the project area.

The weekday A.M. and P.M. peak hour traffic count data will be escalated to anticipated construction completion year 2014 and design year 2034 conditions using PennDOT growth factors. Information regarding planned developments or transportation projects expected to have an impact within the study area will also be included. We expect to obtain this information from PennDOT and/or the municipality.

Traffic signal warrant analysis will be performed in accordance with the Manual on Uniform Traffic Control Devices (MUTCD 2009 Edition, Federal Highway Administration) at the intersection of SR 1018 (Messinger Street) and SR 1015 (South Main Street).

For the purposes of this proposal, a traffic signal will be assumed warranted. L&V will perform turn lane warrant and storage length calculations, phasing analysis, and Level of Service and queue analysis for the intersection for anticipated construction completion year conditions and design year conditions. Synchro and SimTraffic software will be utilized for signal timing optimization. A design document will be submitted that contains analyses and calculations associated with the final traffic signal design. Level of Service and queuing will also be evaluated with all-way stop control.

Plans
L&V will coordinate with AECOM for incorporation into the signal plans of the roadway, drainage and sidewalk construction, including ADA compliant access ramps at the proposed signalized intersections. If appropriate, L&V will provide input for final right-of-way on traffic signal easements for maintenance. Upon approval of the construction plans, L&V will modify the plans to create traffic signal permit plans.

L&V will generate traffic signal construction plans and submit them for review and approval at an appropriate stage of preliminary completion. Upon approval, the plans will be developed into final construction plans, including tabulations of quantities.

Municipal Coordination
L&V will coordinate with Bangor Borough to obtain signatures for the traffic signal plans and maintenance agreement. The Borough will be contacted early in the final design process to determine if there are special requirements or preferences.

The potential for inclusion of emergency preemption will be investigated with the Borough and local emergency services.

Specifications and Estimate
Construction cost estimates will be prepared and special provisions will be prepared in accordance with Pennsylvania Department of Transportation's Highway Specifications (Publication 408) and submitted to PennDOT for review and approval.

Task 21 - Pavement Marking Plan

Objective:

2.10.16 - Pavement Marking Plan

This task is the development of the pavement marking plan.

Scope:

2.10.16 - Pavement Marking Plan
The final submission will include:
- General Plans
- Special Details
- Delineator Spacing Tables
- Delineator Mounting Details
- Quantities
- Specifications

For mainline roadway sections where markings and delineators are consistent and repetitive, typical details will be developed to eliminate unnecessary drafting and design sheets. The pavement marking and delineation plan for the interchange areas will detail all gore areas, islands and other special markings. Beginning and ending stations will be shown for longitudinal pavement markings and station locations will be identified for pavement legends.

Depending on the complexity of the project, the details of the plan and the total length of the project, the elements of the pavement marking and delineation plan may be incorporated with the signing plan.

Detail Task 1 - Pavement Marking Plan and Signing Plan

Department Details:

Include directional, regulatory and warning signs on the Pavement Marking and Signing Plan. Prior to the development of the final plans, sign messages, approximate locations, and sign types should be approved at the Design Field View stage.

Detail Sheets will include the sign messages, sign location, type of signs, and type of installation. All destinations, regulatory, warning and informational signs necessary to control and maintain traffic upon completion of construction will be included.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope. This task will be performed by our subconsultant L&V Engineering (L&V) with oversight by AECOM.

L&V will prepare final pavement marking plans in accordance with the following publications:
- Pennsylvania Department of Transportation's Design Manual Part 3: Plans Presentation (Publication 14M)
- Pennsylvania Department of Transportation's Traffic Control Pavement Markings and Signing Standards TC-8600 and TC-8700 (Publication 111M)
- Federal Highway Administration’s Manual on Uniform Traffic Control Devices (MUTCD 2009 Edition)

Plans will be presented at an appropriate scale and will depict final signs and pavement markings. The final pavement marking plans will be

prepared as a supplemental plan to the roadway construction plans. The pavement markings specified for intersection improvements may be placed on the traffic signal plan(s) and/or the signing plan. Quantities, special provisions and a construction cost estimate will be prepared.

Task 22 - Erosion and Sedimentation Control Plan / NPDES Permit

Objective:

2.10.25 - Erosion and Sedimentation Control Plan / NPDES Permit
This task is the development of the Erosion & Sedimentation Control Plan and submission of the NPDES Permit Application.

Scope:

2.10.25 - Erosion and Sedimentation Control Plan / NPDES Permit
The Erosion and Sediment Pollution Control Plans and supporting documentation shall be submitted to the applicable Engineering District for review and approval. Upon acceptance of the plans by the District, the submission will be forwarded to the County Conservation District for review and approval.

The following work elements are required for the successful completion of this task:

1. Develop Erosion and Sedimentation Control Plans to include:
- cover sheet
- location map
- topography of the area including watershed areas and watercourses receiving runoff from the project
- proposed alterations to the area
- limits of the project
- the location of all temporary and permanent erosion and sediment pollution control measures and facilities
- all pertinent erosion control and construction details

2. Develop a narrative report describing the project and indicating the purpose, the engineering assumptions, the specifications, and the calculations for erosion control measures and facilities. The narrative shall include a schedule of installation and removal of temporary and permanent erosion control measures and facilities as they relate to the various earthmoving operations and a maintenance program for each type of temporary and permanent erosion control measure and facility.

3. Provide detailed instructions relating to the sequence of construction on the plan and in the narrative. Include staging, sequencing and scheduling of earthmoving activities and installation and removal of erosion and sediment pollution control measures and facilities as required.

4. Provide a detailed description in the narrative report of all soil types located within the project limits including each soil type, depth, slope and resistance to erosion. The soil boundaries and a summary table of the soil types and limitations should also be included on the plans.

5. Provide all applicable construction schedules, maintenance programs (including the removal and disposal of accumulated soil materials).

6. Prepare transmittal letter, plans and narrative report for submission to the County Conservation District. If necessary, on large projects meet with the County Conservation District prior to submission to discuss submission requirements and review conceptual plan.

7. For projects exceeding 5 acres of earth disturbance or impacting High Quality/Exceptional Value (HQ/EV) waterways, prepare a Notice of Intent

(NOI) Application for an NPDES Storm Water Permit and a Preparedness, Prevention and Contingency (PPC) Plan (see below). The PPC plan should also be incorporated into the narrative report and the plans.

8. Address all applicable comments from the County Conservation District and/or PADEP and re-submit the revised package for approval.

The following tasks are required for the preparation of the NPDES permit application:

1. Develop an NPDES boundary map that includes the following information: limits of disturbance, highway alignment, cut & fill limits, ROW lines, contours, stations, location identifiers and, the permit boundary.

2. Complete the NPDES Permit Application. The application package will consist of the following items: Act 14 Notification, PNDI Form, location map, NPDES Application Form, Cultural Resources Notice (if involves a Special Protection Watershed), General Information Form (if project involves a Special Protection Watershed or an Individual NPDES Application), and the Erosion and Sediment Pollution Control Plan.

3. Submit NPDES Permit Application package to PennDOT for review. Revise as necessary. Obtain PennDOT's notarized signature on the application and make the designated amount of copies to submit to the County Conservation District and, if applicable, the PADEP.

4. Schedule review meetings with the agencies prior to submitting the NPDES permit package to expedite the permitting process.

5. Submit permit package to the Conservation District/PADEP.

Detail Task 1 - Erosion and Sedimentation Control Plan / NPDES Permit

Department Details:

As indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

Past contract correspondence indicates that there will be a reduction in impervious area and that an NPDES permit will not be required. AECOM will confirm with Northampton County Conservation District whether an NPDES Permit is required. If an NPDES permit is not required the Conservation District Application will be utilized. If an NPDES permit is required it will be prepared in accordance with the scope.

It is anticipated that the impervious area will be approximately the same as existing and that a stormwater basin will not be required. Permanent stormwater management facilities will be limited to BMPs listed in the level 1 toolbox and level 2 toolbox of Design Manual 2.

AECOM will prepare an application, grading plans, E&S details, and narrative report and submit them to Northampton County Conservation District.

AECOM will attend up to (2) pre-application meetings.

The following portion of this task will be performed by our subconsultant Geo-Explorers with oversight by AECOM. Soil infiltration testing will be conducted in accordance with the requirements of Appendix C of the Pennsylvania Stormwater Best Management Practices (BMP) Manual. The work will involve the following steps:

1. AECOM will select infiltration test locations. For the purpose of this proposal it is assumed that two locations will be investigated and two infiltration tests will be conducted at each location.
2. GE will conduct a field view to verify test locations and identify utilities, site access, and other constraints to excavation and testing. It is assumed that the locations of infiltration tests will be staked by others.
3. GE will subcontract the excavation of test pits to a contractor. It is assumed that the maximum depth of the test pits will be 6 ft. GE will prepare necessary specifications for excavation of the test pits.
4. GE will provide inspection of the test pits by a PennDOT certified inspector. The inspector will log the pits to identify soil type, texture, color, depth to water table, depth to bedrock, percentage of coarse fragments, presence of hardpan or limiting strata, etc.
5. Field infiltration testing will be conducted using a double ring infiltrometer in accordance with Appendix C of the PADEP Stormwater BMP Manual.
6. After completion of testing the test pits will be backfilled with excavated materials up to the existing ground surface; however, no ground restoration will be performed.
7. GE will prepare and submit a letter report to AECOM summarizing the procedure and results of the infiltration tests.

Task 23 - Final Plan Checks

Objective:

2.10.28 - Final Plan Checks
This task is the time required to attend/perform all final plan checks.

Scope:

2.10.28 - Final Plan Checks
The Final Plan Check is performed by representatives of: Bureau of Design - Field Liaison Engineer, District Engineer/Administrator, and Consultant.

The Field Liaison Engineer is in charge of the Final Plan Check and prepares a Plan Review Report on any items which are not correct a the time of the Final Plan Check.

The District Engineer/Administrator provides qualified personnel to perform all required design review; prepares Form 407, Form D-444D and a list of Structural Special Provisions, and notifies the Field Liaison Engineer when the plans will be ready for the Final Plan Check.

The Consultant is required to have the plans adequately checked prior to the Final Plan Check, and will have the Project Engineer and adequate design personnel to make any required corrections, present at the Final Plan Check. It is expected that all required corrections will be made by the Consultant prior to leaving the Final Plan Check.

Detail Task 1 - Final Plan Checks

Department Details:

Assume one meeting. Submit 2 sets full size and six sets half scale plans

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task is the time required to attend/perform all final plan checks.

AECOM will submit three (3) half size plan sets and one (1) full size plan set to the District. The submission will include the following:
- Construction Plan (and all ALSO plan sets)

All work will be back-checked for QA/QC compliance.

AECOM will have the Project Engineer and adequate design personnel available to make any required corrections, present at the Final Plan Check. AECOM will make all required corrections from the Final Plan Check as part of the Pre-PS&E Submission.

Task 24 - Assemble Final Project Documents for Contract Management

Objective:

2.10.29 - Assemble Final Project Documents for Contract Management
This task is the preparation of the PS&E submission to District contract management.

2.10.29.1 - Pre-Bid
This task includes all items necessary for the District to prepare the bid package for submission to Central Office.

2.10.29.2 - Finalize Pre-Bid Construction Schedule/Special Provisions
This task is to prepare the final pre-bid construction schedule/special provisions.

2.10.29.3 - Final Pre-Bid Constructability Review
This task is to perform the final constructability review.

2.10.29.4 - Final Bid Package Development
This task consists of preparing the bid proposal, engineers estimate, construction schedule, data entry into CMS and quality assurance.

2.10.29.5 - Bid Proposal
This task is the preparation of the bid proposal.

2.10.29.6 - Engineer□s Estimate
This task is the preparation of the engineer's estimate.

2.10.29.7 - Construction Schedule
This task is the preparation of the final construction schedule.

2.10.29.8 - Enter Project into CMS
This task consists of entering the data into CMS.

2.10.29.9 - QA Items of Work
This task consists of the final items of work quality assurance review.

2.10.29.13 - Pre-Bid Meetings
This task is the time required to prepare for and attend the pre-bid meeting.

2.10.29.14 - Addenda Development
This task is the time required to prepare addenda.

Scope:

2.10.29 - Assemble Final Project Documents for Contract Management
Before any attempt is made to develop and submit a proposal, it is very important to obtain all required documents, contract drawings, design estimates and supporting data. Supporting documents such as environmental clearances and re-evaluations, funding authorizations, PMC approvals, DEP and Corps of Engineer permits, utility and right-of-way clearances, agreements and related administrative requirements must be resolved. Missing supporting documents complicate the PS&E process, and may affect project advancement to letting.

Assemble all available information on the project from the designers, such as plans or sketches, permits, non-standard special provisions, agreements, construction trainee requirements, Utility Form D-419 clearance and right-of-way certification.

Contract proposals should appear as uniform as possible on a State-wide basis to assist prospective bidders as well as Department personnel who use the proposal. All proposals are to be prepared by utilizing the Contract Management System (CMS) automated bid proposal development software, in accordance with the principles in the current "CMS Users Manual."

Assemble project documents in accordance with requirements of Publication 51M, "Contract Proposal Preparation Guide."

2.10.29.1 - Pre-Bid
Prepare the Pre-Bid package in accordance with Publication 51M, Contract Proposal Preparation Guide.

2.10.29.2 - Finalize Pre-Bid Construction Schedule/Special Provisions
Provide provisions, requirements, or directions applying to the project, as set forth in the proposal, that are not contained in Publication 408M or its supplements. Generally, the design engineer will submit draft special provisions to be reviewed, finalized and incorporated into the Bid proposal by Contract Management.

2.10.29.3 - Final Pre-Bid Constructability Review
Submit plans to the District Construction Unit for review and comment prior to submission of PS&E to Contract Management.

2.10.29.4 - Final Bid Package Development
Prepare the Final Bid Package in accordance with Publication 51M, Contract Proposal Preparation Guide

2.10.29.5 - Bid Proposal
Bid Proposal (Publication 51M - Contract Proposal Preparation Guide)

Assemble the following contract proposal components:
* Title Page - Provide a contract title page

* Project Description - Provide a brief project description

* Project Schedule - Provide a project schedule in calendar days

* List of Special Provisions, Attachments and Supplemental Specifications, Structure Drawings, Purchasable Items - tabulate these items as they apply to the job

* Schedule of Prices - Tabulate Items Numbers with related prequalification work classification codes, Approximate Quantity, Item and contractor's Unit Price Bid and Item Total

* Bid Submission Forms - Identify and insert the applicable bid submission forms into the contract document

* Component Item Schedule - Provide for lump sum pay items

* Bidder Signature Pages - Provide standard signature pages for single bidder and second and third party joint venture bids

* Notice to Bidder

* Special Provisions - Modify and expand the Specifications (Publication 408M) to provide for requirements unique to a specific project.

* Index - Provide an index to the special provisions, schedule of prices and bid component schedule.

* Attachments - Assemble and provide contract attachments as indicated in Publication 51.

2.10.29.6 - Engineer□s Estimate
Prepare a detailed estimate, which will be used to verify funding requirements and to determine acceptability of bids, and submit with the PS&E to Contract Management.

2.10.29.7 - Construction Schedule

Prepare Form D476 & D476A, or CPM schedule, for construction of the project.

2.10.29.8 - Enter Project into CMS
Upon assembly of the bid proposal at the District, enter into CMS all pertinent project information (i.e.. Project identification numbers, special provisions, pay items, quantities, estimate, etc..)

2.10.29.9 - QA Items of Work
Identify and prepare form work as it relates to items that will require subsequent QA involvement.

2.10.29.13 - Pre-Bid Meetings
If a pre-bid meeting is requested by the District, provide pertinent information that is to be included in the proposal advertisement. Coordinate pre-bid meeting activity with the District Construction Unit in accordance with standard Department procedures.

2.10.29.14 - Addenda Development
Prepare and distribute addenda that are necessary to make changes to the contract documents after the bidders have secured plans and proposals in accordance with Publication 51M.

Addendum Preparation and Review - this activity is the responsibility of the District and CO Addendum Engineer and follows discovery of the need to issue an addendum. The output of this activity is an addendum request:

* District enters addendum contents and request into CMS, and mails or faxes hard copy to Addendum Engineer

* Addendum Engineer reviews addendums, consolidates, prepares FHWA approval request and mails or faxes request and hard copy attachments

Addendum Approval and Distribution - This activity is the responsibility of FHWA, the Chief Engineer and/or the BOD Data Center and follows the Addendum Request. The output of this activity is a revised contract proposal incorporating the addendum:

* FHWA reviews addendum and gives approval

* Chief Engineer or designee signs addendum

* Data Center updates estimates in CMS to incorporate addendum

* Data Center faxes addendums to plan holders

* BOD Data Center updates proposal in CMS to incorporate addendums

Detail Task 1 - Assemble Final Project Documents for Contract Management

Department Details:

As indicated and the following:

Prepare lump sum and individual item estimate justification
Attend a pre-bid estimate justification meeting

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task includes the following:
Providing assistance to the Department in maintaining copies of various approvals required for project letting. Upload these approvals into ECMS to assist in project letting.
- Preparation of the PS&E submission to District contract management.
- Preparation of items necessary for the District to prepare the bid package for submission to Central Office.
- Preparation of the final pre-bid construction schedule/special provisions.
- Performing the final constructability review.
- Preparing the bid proposal, engineers estimate, construction schedule, data entry into ECMS and quality assurance.

AECOM will provide provisions, requirements, or directions applying to the project, as set forth in the proposal, that are not contained in Publication 408 or its supplements. AECOM will submit draft special provisions to be reviewed, finalized and incorporated into the Bid proposal by Contract Management.

AECOM will submit plans to the District Construction Unit for review and comment prior to submission of PS&E to Contract Management.

AECOM will assist the District in assembling the following contract proposal components:
- Title Page
- Project Description
- Project Schedule (CPM) completed using Open Plan software
- List of Special Provisions, Attachments and Supplemental Specifications, Structure Drawings, and Purchasable Items - Tabulate these items as they apply to the job
- Schedule of Prices - Tabulate Items Numbers with related prequalification work classification codes, Approximate Quantity, Item and Contractor's Unit Price Bid and Item Total
- Component Item Schedule - Provide for lump sum pay items
- Special Provisions - Modify and expand the Specifications (Publication 408) to provide for requirements unique to the project.
- Attachments - Assemble and provide contract attachments as indicated in Publication 51.

AECOM will prepare a detailed estimate, which will be used to verify funding requirements and to determine acceptability of bids, and submit with the PS&E to Contract Management.

AECOM will complete the cost driver analysis form and will include the lump sum cost estimate backup with the pre-bid estimate.

AECOM will ensure that all issues related to the Construction Plan Review (Checklist items) have been resolved and that all back-checking of the plans and special provisions is complete.

Upon assembly of the bid proposal at the District, AECOM will enter into ECMS all pertinent project information (i.e., Project identification numbers, special provisions, pay items, funding codes, quantities, estimate, etc.)

AECOM will perform the following for this task:
- Provide ten (10) full size and ten (10) half-size copies of all final signed plans and cross sections after award for use by the Department's Construction Unit and contractors at the pre-construction conference.
- Attend the pre-bid meeting (if needed), and provide input regarding design details, answer contractor questions, and take minutes.
- Submit all documents, approvals, and permits for final scanning into ECMS by the District.
- Provide electronic copies of the final project deliverables.
- Assist the District Contract Management Unit with preparing addenda if needed.
- Assist with review and justification of bids.
- Review and approve alternative design drawings as needed per DM1A.
- Participate in the pre-construction conference as needed.

Task 25 - Environmental Activities

Objective:

2.10.1 - Environmental Activities
The tasks that fall under this category are environmental activities that occur during final design to satisfy Federal and State regulations.

2.10.1.1 - Mitigation Activities
This item includes any and all activities necessary to begin the preparation of mitigation plans and/or agreements.

2.10.1.2 - Other Documents/Approvals
This task includes any and all documents /approvals not previously covered in Preliminary Design.

2.10.1.3 - Environmental Re-Evaluation
This task covers all work necessary to complete a Re-Evaluation of the approved environmental document. Publication 294, CEE Handbook; Publication 278, EIS Handbook; and Publication 362, Environmental Assessment Handbook apply to this task.

Scope:

2.10.1 - Environmental Activities
This task includes any and all work necessary to incorporate commitments made during Preliminary Design, Mitigation Activities and Re-Evaluation but does not include actual plan preparation.

2.10.1.1 - Mitigation Activities
Perform the following tasks:

1. Mitigation measures identified during the environmental clearance process shall be tracked throughout final design and addressed in the construction bid package. In the case of an EA, a Mitigation Memorandum must be completed and distributed. In the case of an EIS, the Mitigation Report that was prepared at the time of receiving the ROD, will be used to monitor the mitigation measures throughout final design.

2. If changes to the original mitigation measures are necessary, written approval will be obtained from the Environmental Manager, FHWA and the

environmental agencies

2.10.1.2 - Other Documents/Approvals
Prepare all necessary documents and/or obtain approvals to commence the project bidding process.

2.10.1.3 - Environmental Re-Evaluation
Perform the following tasks:

1. Depending upon the time elapsed since issuance of a CE approval, FONSI, or ROD and, the magnitude of anticipated changes to the environmental impacts, an environmental re-evaluation may be required when requesting a major approval from FHWA. A meeting should be scheduled with FHWA and the Department to determine the appropriate documentation.

2. Prepare the appropriate document and submit to the BOD for review. Revise if necessary and send the standard Re-Evaluation Transmittal Form along with the NEPA document to BOD for forwarding to FHWA, if a re-evaluation is deemed appropriate, or prepare a SEIS (same process and format as an original EIS minus scoping).

Detail Task 1 - Environmental Activities

Department Details:

Refer to Stream Mitigation Plan, and all other mitigation plan tasks for the preparation of the individual plans.

Perform an Environmental Re-evaluation if required. Coordinate with the District to determine the appropriate documentation.

Provide the necessary Environmental Tracking Documentation for inclusion in the bid package.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

Due to potential refinements in the project’s preliminary design to be developed during final design, an environmental re-evaluation may be required when requesting a major approval from FHWA. If required, a meeting may be scheduled with FHWA and the Department to determine the need for a re-evaluation and the appropriate document. This task covers all work necessary to complete a re-evaluation of the approved (April 8, 2011) Categorical Exclusion Evaluation document. The CEE document is not anticipated to be up-scoped.

The commitments identified during final design and recorded from preliminary engineering will be tracked throughout final design and addressed in the construction bid package (PennDOT’s Publication 10X (DM-1X)). If changes to the original mitigation measures are necessary, written approval will be obtained from the Environmental Manager, FHWA and the environmental agencies. Development and use of the projects ECMTS will be used to monitor and document the implementation of environmental commitments from and mitigation measures agreed to during a project's environmental compliance, preliminary engineering, final design and permit approval processes.

Task 26 - Railroad Activities

Objective:

2.10.9 - Railroad Activities
This task includes RR coordination and PUC involvement.

2.10.9.1 - RR Coordination
This task consists of coordination with the RR companies.

2.10.9.2 - PUC Hearing
This task includes preparation for and attendance at the PUC hearing.

2.10.9.3 - PUC Secretarial Letter/Order
This task consists of the time required to receive the PUC secretarial letter/order.

2.10.9.4 - PUC Approval of Construction Plan
This task consists of the time required to receive PUC approval of the construction plans.

Scope:

2.10.9 - Railroad Activities
When improvement or creation of a railroad crossing is included within the limits of a highway construction project, it is the responsibility of the project designer to coordinate all required railroad/highway interaction activities, in accordance with applicable policies and procedures outlined in Publication 10/10A, Design Manual Part 1/1A and Publication 16M, Design Manual Part 5.

In connection with a highway construction project on which a railroad crossing is involved, the Department will file an application with the Public Utility Commission for the improvement or creation of the railroad crossing. All parties involved, including affected utility companies, shall be furnished with copies of the application.

Relative to the Departments application, the Public Utility Commission will schedule a field investigation and conference meeting to which all parties of interest are invited to attend and discuss the project.

At the field conference, the Commission will establish the area over which it will assume jurisdiction. The Commission may assume jurisdiction over any portion, or over the entire highway improvement project.

2.10.9.1 - RR Coordination
The railroad shall be contacted as early as possible in the design process and advised of the potential impact of the project on its facilities with a formal notification letter. A project location map should be enclosed with the letter.

Submit Forms D-4279 and D-4279A to the railroad and request their return of the completed forms.

Request, from the railroad, railroad track and valuation maps for the highway project area, if needed.

Request, from the railroad, their requirements and restrictions for entrance onto railroad property by Department, their agents, and personnel to make surveys and investigations for project design. The railroad's requirements concerning insurance, permits, etc. must be met prior to entering onto railroad property.

Submit copies of each design phase highway and structure plans to the railroad for their review, approval and comment. The plan submissions must clearly show the location and type of the proposed highway/railroad involvements and horizontal and vertical clearances in the case of a structure.

When the railroad work is incorporated into the highway construction contract, obtain copies of the railroad's construction details and construction specifications for the related work items, if available.

Schedule meetings, and invite railroad representatives to discuss and resolve railroad/highway design issues.

Record all railroad related meeting minutes, telephone conversations, etc. and distribute copies, including correspondence, to all affected companies and agencies.

2.10.9.2 - PUC Hearing
When one or more of the affected parties raises objections to the proposed improvements for the hearing.

Plans and documents must be prepared and submitted in accordance with applicable requirements of Publication 10A, Design Manual Part 1A.

The purpose of the formal hearing is to hear testimony from parties, both for and against the proposed improvements. The hearing must also be held for the allocation of costs and assignment of maintenance responsibilities.

The result of the formal hearing will be the rendering of decisions, by a PUC judge, and the preparation of the order spelling out the actions to be taken and the responsibilities for all involved parties.

2.10.9.3 - PUC Secretarial Letter/Order
If no objections are raised to the project at the field conference, a secretarial letter may be issued by the PUC approving the project. If objections are raised, the case is set for a hearing before a PUC judge with the judge deciding the issues. If any railroad property needs to be appropriated for the project, it must be done so by a PUC order rather than a secretarial letter. Final signed right-of-way plans are needed by the PUC prior to appropriation of property.

2.10.9.4 - PUC Approval of Construction Plan
Final construction for the project plans must be submitted to the commission for approval and to the parties involved for review prior to the start of construction. Ideally, the project should not be let prior to the issuance of a secretarial letter or order by the PUC . In no case, the contract should be awarded without a secretarial letter/order.

Detail Task 1 - Railroad Activities

Department Details:

As indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:
AECOM will perform final design coordination with Norfolk Southern in accordance with applicable policies and procedures outlined in Publication 10/10A, Design Manual Part 1/1A and Publication 16M, Design Manual Part 5, and as described herein.

AECOM will contact the railroad as early as possible in the design process and advise them of the potential impact of the project on its facilities with a formal notification letter. A project location map will be enclosed with the letter. AECOM will submit Forms D4279 and D4279A to the railroad and request their return of the completed forms. AECOM will request from the railroad, railroad track and valuation maps for the highway project area, if needed. AECOM will request from the railroad, their requirements and restrictions for entrance onto railroad property by Department, their agents, and personnel to make surveys and investigations for project design.

AECOM will submit copies of each design phase highway and structure plans to the railroad for their review, approval and comment. The plan submissions will clearly show the location and type of the proposed highway/railroad involvements and horizontal and vertical clearances in the case of a structure.

Meetings with railroad representatives will be conducted to discuss and resolve railroad/highway design issues. It is assumed that two representative from AECOM will attend coordination meetings. Meeting minutes will be prepared distributed to all affected companies and agencies.

Task 27 - Hydrologic and Hydraulic Report

Objective:

2.7.1 - Hydrologic and Hydraulic Report
This task consists of the preparation of Hydrologic and Hydraulic reports for all bridges, culverts and longitudinal encroachments to size waterway openings properly and to satisfy permitting requirements. Publication 13M, Design Manual Part 2, Publication 15M, Design Manual Part 4; and PADEP Chapter 105 apply to this task.

Scope:

2.7.1 - Hydrologic and Hydraulic Report
A separate Hydrologic and Hydraulic Report is required for each hydraulic structure. However, dual structures or structures located within the same hydraulic system should be combined into one report.

The following work elements are required for the successful completion of this task:

1. Gather existing information to be used in the development of the hydrologic and hydraulic analyses and in the preparation of the H&H Report.

2. Perform a hydrologic analysis of the watershed at each proposed crossing using one or more of the Department approved methodologies. The

use of a particular model shall be justified as valid for the situation in which it is being used. All assumptions and/or limitations of each model shall be clearly identified and referenced. Multiple hydrologic models are recommended to assist in validating the selected approach. An analysis of the flood history according to the guidelines contained in Design Manual Part 2 should also be considered.

3. Perform a hydraulic analysis for each proposed crossing including alternatives, if necessary, using one or more of the Department approved hydraulic models. The use of a particular model shall be justified as valid for the situation in which it is being used. All assumptions and/or limitations of each model shall be clearly identified and referenced. Where a Flood Insurance Study has been established by FEMA, the hydraulic data included in the study should be utilized to the maximum extent deemed appropriate. Each proposed alternative shall be modeled to assist in the justification for the selected alternative. The hydraulic model shall extend a sufficient distance upstream and downstream to adequately evaluate the potential impacts due to the proposed construction. The hydraulic model should be used to compare existing and proposed conditions with respect to water surface elevations and channel velocities for the design discharge rate(s), including the 500-year event for the scour evaluation and the "overtopping event" for the risk assessment.

4. Evaluate the scour potential at bridge abutments and piers in accordance with Design Manual Part 4. Evaluate the erosion potential at culvert outlets in accordance with HEC-14.

5. Evaluate the channel stability and design countermeasures, if needed.

6. Perform a risk assessment or analysis for each applicable waterway structure or encroachment alternative.

7. Evaluate the hydraulic impacts as a result of temporary encroachments and/or permanent bank protection, if applicable.

8. Prepare the Hydrologic and Hydraulic Report following the general outline described in Design Manual Part 2.

9. If applicable, prepare a Conditional Letter of Map Revision (CLOMR) in accordance with FEMA regulations. The scope of work for the preparation of the CLOMR is not included herein and should be developed prior to initiating the work.

Detail Task 1 - Hydrologic and Hydraulic Report

Department Details:

As indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

Martins Creek is a FEMA studied stream. AECOM will use the Hydrology and Hydraulics Report and Joint Permit Application developed under the previous contract as basis for the joint permit submission using the JPA/Expert system.

A CLOMR will not be submitted.

Task 28 - Hazardous and Residual Wastes

Objective:

2.2.12 - Hazardous and Residual Wastes
This task consists of applying the waste site evaluation procedures to a transportation improvement project. Reference Publication 281.

2.2.12.2 - Phase II Environmental Site Assessment (ESA)
This task includes performing an Phase II ESA. This work includes the necessary field/office studies and coordination and laboratory testing of materials, if necessary. Reference Publication 281.

Scope:

2.2.12 - Hazardous and Residual Wastes
Needs completed.

2.2.12.2 - Phase II Environmental Site Assessment (ESA)
Perform the following tasks leading up to the determination of whether or not a Phase III Environmental Site Assessment is warranted:

1. Collect soil and sediment samples by hand or with non-motorized hand tools. Water samples can only be obtained from surface water bodies or existing groundwater wells.

2. Conduct an analysis on the samples collected. This analysis is limited to broad screening analytical methods and/or contaminants known to be on-site.

3. Depending on the site conditions and the goal of the geophysical investigation, the use of non-intrusive geophysical investigative methods may be required.

4. Gather and organize all existing information obtained during the Phase II investigation.

5. Study the compiled data and evaluate the impact of the known environmental conditions on the project.

6. Develop recommendations for further action at sites where environmental conditions of concern were noted.

7. Prepare a draft Phase II report but also may be requested to make a presentation to the District. Submit report to the District for review/comment. Revise draft report as necessary.

8. Present Final report to the District.

Detail Task 1 - Hazardous and Residual Wastes

Department Details:

Phase II Investigations are recommended for six sites as follows:
1) Merry Maid Special Events - Ground Penetrating Radar (GPR) Survey, and soil and groundwater (GW) sampling;
2) Special Events Tent and Party Rental - soil and GW sampling;
3) Kline's Auto Repair - soil and GW sampling in areas of acquisition;
4) Taylor Building - soil and GW sampling in areas of acquisition;
5) Bangor Car Wash - soil and GW sampling in areas of acquisition; and
6) Norfolk Southern Railroad ROW - soil and GW sampling.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

The Plan is based on the information and recommendations provided in the August 2008 Phase I ESA prepared by A.D. Marble & Company. The Waste Site Evaluation procedures presented in the Transportation Project Development Process handbook (Reference Publication 281) were referenced during the development of the Plan.

Understanding and Objectives
This Plan was prepared in accordance with the two (2) objectives presented in Task 28 of the Department's Scope of Work Report. The first objective consists of applying the waste site evaluation procedures to a transportation improvement project by referencing Reference Publication 281. The second objective identified completing a Phase II ESA by collecting soil and groundwater samples and conducting a geophysical investigation for the following six (6) sites:
- Merry Maid Special Events Warehouse
- Special Events Tent and Party Rental by Merry Maid
- Kline's Auto Repair
- Taylor Building
- Bangor Car Wash
- Norfolk Southern Railroad ROW

All of the sites are located in the Borough of Bangor. The Merry Maid Special Events Warehouse site and the Special Events Tent and Party Rental by Merry Maid site are located at the northwest and southwest corner of the Murray Street and Messinger Street intersection, respectively. The Kline's Auto Repair site and the Bangor Car Wash site are located near the intersection of Messinger Street and South First Street. The Taylor Building site is located south east of the Messinger Street and Murray Street intersection. The Norfolk Southern Railroad ROW is located beneath the Messinger Street Bridge.

This Plan provides information regarding the implementation of tasks performed as part of a Phase II ESA on the above-mentioned Sites. The data gathered during the Phase II ESA will be assessed and presented in a Phase II ESA Report.

After completing a review of the Site conditions presented in the Phase I ESA Report, soil and groundwater samples cannot be collected from several sites without the use of non-motorized equipment. No groundwater wells exist at the either of the six (6) sites and significant portions of the

sites are paved with asphalt. AECOM understands that motorized sampling techniques would be implemented under a Phase III ESA process per the Reference Publication 281 guidance document. This Plan does not include activities to perform a Phase III ESA. AECOM's preliminary recommendations to complete a Phase III ESA are included in this Plan. The final Phase III ESA will be based on the results of the Phase II ESA activities and data presented in the Phase II ESA Report.

Background/Site Conditions
The Phase I ESA Report identified areas of concern due to the possible presence of environmentally sensitive materials at the Merry Maid Special Events Warehouse property and the Special Events Tent and Party Rental by Merry Maid property. The areas of concerns were supported by evidence of impacted soil and groundwater from former underground storage tank (UST) systems and reports from personnel with knowledge of previous land-use history. No monitoring wells related to the release from the former USTs are known to exist in the Site area.

Site Reconnaissance
Prior to completing the Phase II ESA, AECOM proposes to conduct a Site field-visit with the Site Project Manager and the field technician to review the areas of concern and sample locations, review available Site maps and utility lines, review access to each site, and to place mark-outs for the utility clearance by PA One-Call if necessary. Field notes will be documented in a field log book
Phase II ESA Investigation
AECOM proposes to complete a Phase II ESA by using manual (non-motorized) sampling methods to collect soil samples and submit the samples to a laboratory that possess Pennsylvanian Department of Environmental Protection (PADEP) accreditation. In addition, geophysical investigative methods are proposed to be completed at identified areas of concerns to confirm that the presence (or absence) of the USTs. Site conditions at the Merry Maid Special Events Warehouse property and the Special Events Tent and Party Rental by Merry Maid property will prevent the manual collection of samples from each property. Since it is unlikely that subsurface soil samples cannot be obtained without motorized equipment, AECOM recommends that sample collection will be completed under the Phase III ESA process.

Special Events Tent and Party Rental by Merry Maid
The Phase I ESA Report indicated that a 10,000 gallon UST was located near the northern wall of the existing three-story building. A 1,000 gallon above ground storage tank (AST) was also reported between Murray Street and eastern wall of the building. The AST did not contain secondary containment and was removed sometime between 2001 and 2008. The proximity of the former tank locations are not within the Required ROW.

A Phase II ESA geophysical investigation is proposed to be completed on the site within the Required ROW beneath the Messinger Street Bridget and between the Special Events Tent and Party Rental building and the Merry Maids Special Events Warehouse building. AECOM will procure a subcontractor to conduct a geophysical survey using ground penetrating radar (GPR), electromagnetic equipment (EM) and global positioning system (GPS) survey equipment. These methods should be useful in determining the UST orientation (if present) and any buried utilities and ancillary piping near the USTs and the former dispensing island. A to-scale AutoCAD drawing of the Site will be prepared by AECOM and provided to the subcontractor. This drawing will serve as base map for the subcontractor to overlay the geophysical results.

The southern and eastern portion of the site is located near the Required ROW. The collection of soil and groundwater samples from the site is recommended based on historical site conditions. The site is paved with asphalt and the collection of soil samples cannot be completed without motorized techniques. Therefore, upon completing the Phase II ESA, AECOM recommends completing a Scope of Work to perform a Phase III ESA and submit to the Department for review and approval.

Merry Maids Special Events Warehouse
The Phase I ESA Report indicated that a former auto dealership existed on the site until the late 1980's and that gasoline dispensers and USTs

were located east of the building. An unknown number of USTs were reportedly removed from the site. A sketch map in the Phase I ESA indicated that the approximate locations of the former USTs are within the Required ROW.

A Phase II ESA geophysical investigation is proposed to be completed on the entire site focusing on the eastern area of the site and the Required ROW. AECOM will procure a subcontractor to conduct a geophysical survey using GPR, EM and GPS survey equipment. These methods should be useful in determining the UST orientation (if present) and any buried utilities and ancillary piping near the USTs and the former dispensing island. A to-scale AutoCAD drawing of the Site will be prepared by AECOM and provided to the subcontractor. This drawing will serve as base map for the subcontractor to overlay the geophysical results.

The northern and eastern portion of the site is located in the Required ROW. The collection of soil and groundwater samples from the site is recommended based on historical site conditions. The site is paved with asphalt and the collection of soil samples cannot be completed without intrusive techniques. Therefore, upon completing the Phase II ESA, AECOM recommends completing a Scope of Work to perform a Phase III ESA and submit to the Department for review and approval.

Kline's Auto Repair
This site is located west of the Site and in 2008 served as an automobile repair and inspection facility. This site is not located with the project Required Right of Way and partial or complete property acquisition is not anticipated. A Phase II ESA investigation is not recommended for this site since it is anticipated that intrusive construction activities are not necessary on this site.

Taylor Building
This site is located southeast of the Site and in 2008 served as a steel fabrication mill. This site is not located with the project Required Right of Way and partial or complete property acquisition is not anticipated. A Phase II ESA investigation is not recommended for this site since it is anticipated that intrusive construction activities are not necessary on this site.

Bangor Car Wash
This site is located southwest of the Site and in 2008 served as self-service car wash facility. This site is not located with the project Required Right of Way and partial or complete property acquisition is not anticipated. A Phase II ESA investigation is not recommended for this site since it is anticipated that intrusive construction activities are not necessary on this site.

Norfolk Southern Railroad ROW
An approximate 60 feet x 70 feet area exists within the Norfolk Southern rail line ROW and within the Required Right of Way. Sampling collection during the Phase II ESA will be limited to collection of no more than four (4) soil samples collected with a hand trowel or soil auger (i.e., non-motorized) equipment. Each soil sample will be collected between 1 to 2 feet below ground surface (bgs). The soil sample equipment will be decontaminated between each sampling location. The samples will be prepared for shipment to an accredited laboratory analysis. The proposed sampling depth may be modified based on observations made in the field. Since the sampling depths are relatively shallow, a request for a utility clearance by PA One Call is not anticipated.

AECOM will coordinate the sampling event with Norfolk Southern, as part of the railroad coordination activities, in order to obtain access to the site. There are no known specific contaminants identified within the Norfolk Southern rail line ROW. Based on the land use, AECOM recommends proceeding with the soil and sediment analytical list provided in Reference Publication 281. Each soil sample will submitted for the following analysis:
- TOX (Total Organic Halogens); and,

- Priority Pollutant Metals

Groundwater is not anticipated to be encountered during the collection of the Phase II samples. If groundwater or bedrock is encountered, the soil samples will be collected above the soil/groundwater or soil/bedrock interface. No groundwater samples are anticipated to be collected from the Norfolk Southern rail line ROW site.

Assessment
The data and findings obtained from the Phase II ESA will be evaluated in accordance with the assessment procedures as presented in the Reference Publication 281 guidance document. All the original data generated during the Phase II ESA will be provided to the Department. Copies of the data will be maintained at the AECOM office. Based on an evaluation of the compiled data, AECOM will develop one of the four recommendations for further action at sites where environmental conditions of concern were noted.

Reporting
The data and findings obtained from the Phase II ESA will be presented to Department in a written, draft report (one electronic submission and three hard copies). As discussed above, the report will include a sampling plan to complete Phase III ESA activities.

The Phase II ESA will be organized and completed in accordance with the Reference Publication 281 guidance document. The report will include AECOM's recommendations for further action relating to the recognized environmental conditions associated with the sites. AECOM will proceed with the preparation of the final Phase II ESA report (one electronic submission and three hard copies) upon receiving comments and approval from the Department.

Potential Phase III ESA Investigation
Mechanical sampling through the use of a Geoprobe® will be necessary in order to obtain soil samples from a target depth of 8-12' bgs on the Merry Maid Special Events Warehouse site and the Special Events Tent and Party Rental by Merry Maid site. The Phase I ESA Report did not provide any information about the size of the USTs or vertical distance below ground surface of a suspected release. Up to eight (8) soil borings and eight (8) samples are proposed to be installed and collected, respectively, at each site as part of a Phase III ESA investigation. The soil borings should be advanced to an approximate depth of 12 feet bgs or at the bedrock/soil interface or the groundwater/soil interface, whichever is encountered first. A photo ionization detector (PID) should be used by a field geologist to screen the soil boring for volatiles. The soil sample depths will be determined by noticeable visual contamination of PID readings. The lithology encountered during the installation of the soil boring log will be recorded in the field log book. A Geoprobe® unit may also be used for installing up to three (3) shallow groundwater monitoring wells. The depth of the well is contingent on the depth to bedrock or groundwater which is currently unknown. Shortly after completing the wells, each well will be developed and sampled in accordance with the Pennsylvania Department of Environmental Protection's (PADEP) Groundwater Monitoring Guidance document. The soil and groundwater samples will be submitted for analysis utilizing the PADEP's UST Short List of Petroleum Products presented in Appendix B of the UST Closure Guidance document.

Task 29 - Highway Lighting Plan

Objective:

2.10.12 - Highway Lighting Plan
This task is the development of the highway lighting plan.

Scope:

2.10.12 - Highway Lighting Plan

Develop lighting plans according to the requirements of Publication 10A, Design Manual 1A; Publication 13M, Design Manual Part 2; Publication 14M, Design Manual Part 3; AASHTO's 'Roadway Lighting Design Guide' and 'Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals'; Publication 408; Publications 72, 111M and 219M; and pre-design meeting requirements.

Contact Central Office Highway Lighting Section for a pre-design meeting to establish specific project design criteria. This information will include the limits of work and target average, uniformity and glare values. (Coordination with sign lighting and temporary lighting may be required.)

Items in this task include the preparation of preliminary and final plans and design calculations, special provisions, warrants, and cost estimates. (Economic evaluations of the construction, energy, and maintenance costs for partial, complete conventional, and high mast lighting systems, in addition to decorative or period style lighting options, may be required.)

Submissions are required for preliminary approval and for final approval. Submit lighting plans to Central Office, Highway Lighting Unit for approval prior to the release of the final lighting plans to the District for PS&E Development.

The Deputy Secretary for Highway Administration must approve exceptions to the 'General Lighting Policies'.

Detail Task 1 - Lighting Plan

Department Details:

Assume decorative lighting between the limits of work will be replaced and included on the structure.

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

Preliminary Engineering: This task will include a pre-design meeting with the Central Office Highway Lighting Section to review the proposed improvements and impact to the existing lighting system in the corridor.

AECOM will develop a preliminary highway lighting report and a preliminary highway lighting plan set for placement of conventional ornamental lighting across the Messinger Street Bridge. The proposed lighting is assumed to extend along the length of roadway improvements (1st Street to Main Street) – no lighting will be located outside the legal right-of-way of SR 1018.

A preliminary lighting report will include lighting warrants and the photometric calculations required to support the lighting layout. AECOM will prepare the report in accordance with Design Manual 2, Chapter 5 and the AASHTO Roadway Lighting Design Guide. The preliminary lighting plans and report will be submitted to Central Office for review.

After review of the preliminary lighting plans and report, AECOM will provide a cost estimate for the equipment required in the preliminary lighting plans.

Final Design: This task will include a post-design meeting/conference call with the Central Office Highway Lighting Section to confirm the proposed improvements.

Based on the approved preliminary highway lighting report and plans, AECOM will develop a final highway lighting plan set.

The proposed lighting will be comprised of conventional ornamental lighting. It is assumed that no lighting will be located outside the legal right-of-way of SR 1018.

The Lighting Plan will be developed in accordance with the following:
- PennDOT Publication 13M, “Design Manual, Part 2”, Chapter 5
- PennDOT Publication 14M, “Design Manual, Part 3”
- PennDOT Publication 72M, “Roadway Construction Standards”
- PennDOT Publication 408, “Specifications”

The final plans will are anticipated to include the following:
- Detail Sheet
- Circuit Diagram Sheet
- Plan Sheets (2)

It is anticipated that the lighting circuit will tap into an existing highway lighting cabinet located within the limits of work and within the legal right-of-way of SR 1018.

Calculations will be developed to determine the wire sizes and conduit sizes.

After the design is approved by PennDOT, item quantities and a cost estimate will be calculated for the final plans.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
AECOM Technical Services, Inc.	No	
Geo - Explorers, Inc.	Yes	AECOM Technical Services, Inc.
L&V Engineering, LLC	Yes	AECOM Technical Services, Inc.
Susquehanna Civil, Inc.	Yes	AECOM Technical Services, Inc.

Attachments

No records found.

Part 2 - Services During Construction

Description

Services During Construction - SR 1018-02B Messinger Street Bridge

Task 1 - Shop Drawing Review

Objective:

2.11.2 - Shop Drawing Review
This task involves the coordination, review and approval of shop drawings submitted by the contractor in accordance with Publication 10/10A, Design Manual 1/1A.

Scope:

2.11.2 - Shop Drawing Review
Review and approve shop drawings following the procedures in Design Manual Part 1A.

Detail Task 1 - Shop Drawing Review

Department Details:

As indicated

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

SHOP DRAWINGS
The AECOM Team will review and distribute the project shop drawings in accordance with the latest requirements of Design Manual 4.

The AECOM Team will review and check shop drawings required for the fabrication of materials necessary for the construction this project. This work will include the checking of geometry, principal dimensions, and material conformance with the contract plus specifications and standards.

A shop plan status log will be maintained to ensure efficient checking procedures and incorporate changes as they occur.

Shop Drawings will be stamped, signed, and returned to the contractor within ten (10) calendar days of receipt. Shop drawings that are re-submitted for revision will be reviewed and returned to the contractor within seven (7) calendar days of receipt of the submission.

In the event of a contractor redesign, the consultant will review the proposed design in accordance with the latest requirements of the Design Manual, Part 4. The AECOM Team will review and approve alternative design drawings as needed per DM1A.

Task 2 - Construction Consultation

Objective:

2.11.3 - Construction Consultation
This task is coordination with the contractor prior to issuance of the notice to proceed.

Scope:

2.11.3 - Construction Consultation
Upon contract execution, issue a Notice-to-Proceed letter and coordinate the scheduling of a pre-construction meeting.

Detail Task 1 - Construction Consultation

Department Details:

In addition, attend Construction Status Meetings as directed

Approach:

We will comply with the Scope of Work.

The following discussion is provided to amend, amplify and/or quantify the Department's scope.

This task consists of:

Administration, design and plan review, Requests-for-Information (RFIs) and construction consultation.

PROJECT MANAGEMENT / ADMINISTRATION
The AECOM Team will provide project management and administration activities during the construction of the project. The AECOM Project Manager will coordinate with the Construction Unit and will be the single point of contact for AECOM construction phase activities.

a) Meetings
The AECOM Team will attend progress, review, construction and coordination meetings with the Department to progress the development of the construction of the project.
We will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
AECOM will attend the pre-bid meeting, provide input regarding the design details, provide minutes of the meeting and answer contractor questions.
We assume there will be monthly meetings for the duration of the construction phase of the project. AECOM will assume 1 attendee for 3 meetings over the 24 month schedule.
b) Project Schedule Development and Maintenance
Schedule will be prepared by the Contractor and all future schedule updating/progressing will be handled through Department personnel.
c) Project Reporting
The AECOM Team will provide project status report with each invoice.

CONSTRUCTION CONSULTATION
The AECOM Team will provide consultation services on an as needed basis as required during the assumed 24 month construction period. This service will include time as required at the beginning of the construction to review construction plans with the contractor and the Project Engineer.

The AECOM Team will provide their review comments to the Department's Assistant Construction Manager. The Department will issue the comments to the Contractor.

The AECOM Team will attend meetings and participate in conference calls as needed to resolve review comments.

This work will include attending pre-construction meetings, field views, and the review of all miscellaneous contractor submittals, if required by the Department.

AECOM will also answer contractor questions submitted via ECMS, prepare bid addenda as needed and assist with the review and justification of bids.

AECOM will support the Department and/or Contractor with obtaining railroad approvals with Norfolk Southern Railroad.

We will be supported by Susquehanna Civil, Geo-Explorers and L&V Engineering for their respective deliverables and discipline areas. They will include a nominal number of hours for this effort.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
AECOM Technical Services, Inc.	No	
Geo - Explorers, Inc.	Yes	AECOM Technical Services, Inc.
L&V Engineering, LLC	Yes	AECOM Technical Services, Inc.
Susquehanna Civil, Inc.	Yes	AECOM Technical Services, Inc.

Attachments

No records found.