



TECHNICAL PROPOSAL REPORT

Agreement: E00371	Project Specific	Active
Name: Three (3) Bridge Replacements in Bucks County		Selection Process: Normal Initiating Org: Engineering District 6-0
Supplement: 3	Normal	Executed
Description: add additional design services for Delaware Ave over Delaware Canal Bridge. This includes additional survey, environmental studies, and revisions to structure plans.		

Part 2 - Preliminary Engineering

Description

Preliminary Engineering for the replacement of one (1) structure on Delaware Road SR 1016 Section BBR BMS # 09101600100561 over the Delaware Canal in the Borough of Riegelsville.

Task 1 - Project Management/Administration

Objective:

2.1.1

This task consists of the administrative effort required by principals, project manager, and involving personnel to complete the project on time, within budget, and provide a quality product.

Scope:

2.1.1

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 but not limited to the tasks outlined in the Department Detail.

Detail Task 3 - Project Management/Administration

Department Details:

As per standard scope.

Approach:

PCS will comply with the objectives and scope of this task.

Task 2 - Surveys

Objective:

2.4.1

This task consists of providing the survey requirements associated with specific PennDOT projects designated for studies, reports, design and construction. Publication 122M applies to this task.

Scope:

2.4.1

Surveys may consist of either; Conventional or Three- Dimensional Data Collection, or a combination, as directed by the District.

Base mapping must be supplemented with conventional survey applications.

The following subtasks are considered survey requirements, relative to the existing topography within specific project boundaries.

1. County Tax Records investigation(s) to obtain names and addresses of involved property owners.
2. Issue a "Notice of Intent to Enter" letter (Form 983) to each property owner by certified mail.
3. Obtain published horizontal and vertical control data for specific project use.
4. Prior to initiating surveys, develop a Traffic Control Plan for implementation during surveys within existing highways and streets.
5. Establish horizontal and vertical control relative to referenced monumentation.
6. Establish the preliminary mainline horizontal alignment in the field.
7. Obtain profiles and cross sections along each of the project's established roadways, baselines, and centerlines.
8. Field edit mapping topography, including the type, size, location, and elevation of existing storm drain and utility facilities; and evident property corners.
9. Establish existing stream baseline and obtain stream profile and cross sections.
10. Establish existing railroad baseline, tied to the centerline, and obtain railroad profile and cross sections, subject to the railroad's inspector and protection requirements.
11. Perform existing bridge structure surveys including type, size, location and pertinent elevation data.
12. Perform Map Accuracy Tests to verify spatial accuracy.
13. Flag horizontal alignment prior to the Design Field View.
14. Stakeout the approved Baselines and Centerlines.
15. Stakeout the Core Boring Hole locations.
16. Establish and record final Benchmarks and References for construction stakeout.
17. Set monumentation points on the Legal Right-of-Way Lines.
18. Field Survey Notebook compilations, numbering and content indexing.

Detail Task 2 - Surveys

Department Details:

As per standard scope. As a minimum locate all exiting features within the limits of temporary bridge and roadway. Identify the underground existing septic tanks, pedestrian bridge, walkways and existing ADA ramps etc.

Approach:

PCS will comply with the objectives and scope of this task.

After completing the initial survey and base mapping of the project area, Riegelsville Borough constructed a new 70 foot long pedestrian bridge with 100 feet of concrete approach walkway on the south side of SR 1016. In addition, the Riegelsville Inn (Parcel 12) also installed new septic tanks between the pedestrian bridge and the Inn where the proposed temporary bridge will be located. The pedestrian bridge, its approaches,

superstructure, and substructure, and the septic tank locations will be surveyed. The previously completed base map, profiles and cross sections will also be amended to include these facilities.

Task 4 - Environmental Evaluation Report

Objective:

2.3.6

This task consists of the assembly and approval of the Environmental Evaluation Report.

Scope:

2.3.6

Reference the CEE Handbook, Publication 295 for detail requirements.

Perform the following tasks:

1. Conduct detailed field work to identify and define environmental resources. Both quantitative and qualitative data will be collected. At this time, any pertinent reports will need to be prepared. Coordination with person(s), organizations, or agencies may be required to complete this task.
2. All reports should be submitted to PennDOT for review and revised as necessary. The Cultural Resource reports should be submitted to the PHMC to obtain the SHPO's concurrence with the report.
3. Develop a features map showing the various resources in the study area.
4. As appropriate, coordination with the resource agencies, municipal officials and others should be conducted.
5. Establish the engineering criteria in accordance with Publication 13M, Design Manual Part 2 and AASHTO's "A Policy on Geometric Design of Highways and Streets".
6. Develop study alternatives, in coordination with the Project Team. All reasonable alternatives that would meet the project purpose and need should be developed and analyzed. Attempts should be made to avoid and minimize impacts to natural, cultural and socioeconomic resources and take into consideration local land use planning and community goals as alternatives are developed.
7. Assess the impacts of each alternative on natural, cultural and socioeconomic resources. A reexamination of the design of alternatives to seek out alignment shifts or measures to reduce or eliminate impacts will be conducted. Both quantitative and qualitative assessments should be included in the impacts analysis.
8. Hold public meetings at various stages of development of the environmental document. In preparation of these meetings, the consultant may be required to identify appropriate locations and schedule the meetings. All public and agency comments presented at these meetings shall be included in the Technical Support Data files. Refinements to the alternatives should be made, as appropriate. Prepare presentation materials for the meetings as well as newsletters, brochures, fliers, posters, internet sites, etc.
9. Maintain coordination with the resource agencies throughout the project development process.

10. Complete Parts of EER form as the development of the project progresses.
11. Develop mitigation measures to minimize impacts of the alternatives on the resources. Coordination with the resource agencies, the public and others should be undertaken.
12. Identify the Preferred Alternative in consultation with the Project Team. The Preferred Alternative should be the most reasonable, least costly that fulfills the project needs and meets appropriate engineering design criteria while resulting in the fewest impacts to the natural, cultural and socioeconomic environment.
13. Develop presentation materials and attend public meeting. Present resolution of comments received at first public meeting. Document all comments gathered not only at this public meeting but through all public involvement activities.
14. Complete EER Form in its entirety and submit to Project Manager for review/comments. Revise as necessary and submit ten copies of the EER w/attachments to BOD.
15. Revise EER Form as necessary and only schedule a meeting if there are substantial or numerous comments. Address review comments and submit five copies to BOD for backcheck.
16. After BOD approves of document for circulation and if a public hearing is required, transmit the EER to the list of Act 120 agencies. Attend public hearing.
17. Prepare responses to the comments presented at the hearing as well as any submitted to PennDOT. Revise EER as necessary.
18. Submit copies of the EER to the BOD for concurrence/approval.

Detail Task 3 - Environmental Evaluation Report

Department Details:

Coordinate with individual review agencies and address comments on the Individual Section 4(f) report and submit revised Final Section 4(f) Report for approval. Also, continue to coordinate with stakeholders and address concerns.

Approach:

PCS will comply with the objectives and scope of this task.

The existing bridge is located within and is a contributing element to the Riegelsville Historic District. Replacement of the bridge will also impact the Pennsylvania Canal National Historic Landmark and the Benjamin Riegel House, which is listed on the National Register of Historic Places. Many of the existing structures within the project area are also eligible for the National Register and three Archaeological Sites were identified during the Phase I Survey. Due to the extent of Cultural Resource involvement discovered during the Phase I survey, additional design and coordination efforts will be provided to document resource impacts and to address comments and concerns of the various project stakeholders and governmental agencies. The section 4(f) report will be revised and resubmitted in response to the comments from various project stakeholders and governmental agencies.

Task 10 - Safety Review/Audit

Objective:

2.8.7

This task consists of the time required for the Safety Review Committee to review the preliminary plans and the Project Design Criteria Report.

Scope:

2.8.7

1. Conduct the safety review/audit as early in the design process as possible.
2. Identify all applicable items on the Safety Review Checklist (see Publication 10A, Design Manual Part 1A). Add any additional items based on engineering judgement and experience.
3. Detect safety deficiencies in the design.
4. Recommend safety enhancements.
5. Prepare the Safety Review Submission (two copies) at least two weeks before the design field view (if applicable). Include the following:
 - * Color coded plans
 - * Profiles
 - * Typical sections
 - * Project Design Criteria Report (see Design Manual 1A for details)

Detail Task 2 - Safety Review/Audit

Department Details:

Revise and resubmit previously approved Safety Review for recertification. Use most recent crash data available in analysis.

Approach:

PCS will comply with the objectives and scope of this task.

The previously submitted Design Criteria and Design Exception Reports will be updated and resubmitted with the revised Safety Review Submission using the most recent crash data and smart transportation guidelines.

Consultant Hierarchy

Business Partner

DBE Type

Supervising BP

Pickering, Corts & Summerson, Inc.

No

Attachments

No records found.

Part 4 - Final Design Delaware Rd Bridge

Description

Final Design Sevices pertaining to the birdge repalcement project as stated on part 2 of the agreement.

Task 3 - Roadway

Objective:

2.10.2

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

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

2.10.2.2

This task is the preparation of the final pavement design.

2.10.2.3

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

Scope:

2.10.2

Needs completed.

2.10.2.1

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

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

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

Detail Task 2 - Roadway

Department Details:

Prepare and submit ADA curb cut ramps and design build specifications to ADA coordinator for their review and concurrence. Assume one meeting as a minimum. Also, prepare a special provision for the contractor to maintain and clean out the Riegelsville Inn Septic tanks while Temporary Bridge is in use.

Approach:

PCS will comply with the objectives and scope of this task.

Curb ramp locations will be conceptually shown by PCS on the plan sheets only of the contract documents. Establishing controlling dimensions and elevations in accordance with current standards and obtaining approval of the curb ramp design from the Department will be the responsibility of the contractor. PCS will prepare a special provision to reflect the design and submission requirements for the curb ramps.

Task 4 - Final Right-of-Way Plan

Objective:

2.10.5

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

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 2 - Final Right-of-Way Plan

Department Details:

Provide two additional construction plan sheets to include Temporary Bridge alignment plan and profile. Also, show details of existing pedestrian bridge and walkways.

Approach:

PCS will comply with the objectives and scope of this task.

Task 7 - Final Type, Size & Location (TS&L) Report

Objective:

2.7.3

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

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

Department Details:

Update TS&L plan and the TS&L letter to reflect the revised span length and location of wing walls.

Approach:

PCS will comply with the objectives and scope of this task.

The location of the west abutment and northwest wing wall will be revised to minimize impacts to a historic property and stone retaining wall. The face of the abutment wall will be placed in-line with the existing retaining wall and the wing wall will be oriented in a parallel (u-wing) configuration.

Task 9 - Final Structure Plans

Objective:

2.10.13

This task is the development of the final structure plans.

Scope:

2.10.13

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 2 - Final Structure Plans

Department Details:

Prepare and submit additional sheets to depict the canal liner repair detail and ornamental bridge trusses. Also, included in this task are construction quantities and contract special provisions associated with canal liner repair and ornamental trusses.

Approach:

PCS will comply with the objectives and scope of this task.

Task 13 - 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 - Highway Lighting Plan

Department Details:

Review and incorporate walkway lighting plans and details and special.

Approach:

This work is the completion of a walkway lighting system along the approaches of an existing pedestrian bridge that is owned and maintained by Rieglesville Borough. The Borough has designed a lighting system and obtained the lighting fixtures for the walkway that will be located within their existing easement on private property.

The Department will be acquiring a temporary construction easement for the installation of a temporary bridge located near the existing pedestrian bridge. The temporary bridge will be used by vehicular traffic during reconstruction of the SR 1016 bridge. The Borough has withheld installation of their walkway lighting fixtures that are in conflict with the installation of the temporary bridge and approaches.

To complete the Borough's walkway lighting system, PCS will locate the remaining light fixtures on the construction plans in accordance with the lighting plans provided by the Borough. PCS will also provide a special provision for the contractor to install the lighting fixtures after the temporary

bridge has been removed. The materials for the lighting fixtures will be supplied by the Borough and installed by the Contractor.

For this task, PCS assumes that only installation of the lighting fixtures by the contractor will be required using the lighting design and materials supplied by the Borough. We further assume that PCS will not be required to prepare or submit a highway lighting plan or calculations to the Department since the light fixtures are located outside of the Department's right of way and the fixtures will be owned and maintained by the Borough upon completion of bridge reconstruction and expiration of the temporary construction easement.

Consultant Hierarchy

Business Partner

DBE Type

Supervising BP

Pickering, Corts & Summerson, Inc.	No	
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Attachments

No records found.

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