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ROLAND L. RODE

TECHNICAL PROPOSAL REPORT

Agreement: E01217 **Project Specific** **Active**

Name: I-676 Superstructure Replacements

Selection Process: Normal

Initiating Org: Engineering District 6-0

Supplement: 3 **Normal** **Executed**

Description: add final design in Parts 4, 5, 6, 7 and 8 for I-676 Sections PAA, PAB and PAC. Also add Prelminary Engineering in Part 9 for the Spring Garden Street over the Schukill River

Part 4 - Final Design - 21st and 22nd Streets

Description

Final Design - 21st and 22nd Streets

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.

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.

Detail Task 1 - Project Management/Administration

Department Details:

2.1.1
The consultant shall provide construction cost updates as required by the Department.
The consultant will thoroughly check all design submissions before submitting them to the Department for review.
The Department reviews will be cursory in nature and the consultant will be responsible for design and plan accuracy.
The consultant will be liable for design and plan errors in accordance with 67 PA Code, Chapter 455, Consultant Highway Design Errors.
The consultant will be responsible for DBE progress, and all submissions prepared by the DBE will be submitted through the prime consultant's office. The prime consultant will be responsible for the accuracy and quality of the DBE work.

2.1.1.1
The consultant will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
Assume there will be one (1) design related meeting per month for the duration of the final design phase of the project.

2.1.1.3
The project QC/QA plan is to be provided to the District one (1) month after NTP. Include sub-consultant QC/QA plans as appropriate.

2.1.1.5
The initial project Welcom Plan is to be provided to the District one month after NTP.

Approach:

2.1.1
This task will be a continuation of the project management effort from Preliminary Engineering. Jim Pezzotti will continue to manage the Pennoni Team, including sub-consultants Amman & Whitney Pennsylvania, Inc. (A&W), ASC Group, Inc. (ASC), Chilton Engineering, Inc. (Chilton), Lager Raabe Skafte Landscape Architects, Inc. (LRSLA) and Vector Corrosion Technologies, Inc. (Vector) as well as individual Pennoni discipline leaders. Mr. Pezzotti will continue as the main point of contact with the District and is responsible for the overall coordination of the project team as necessary to deliver a quality project PS&E package to the District by the specified time and within the designated budget.

Mr. Pezzotti will continue to serve as the primary contact with governmental agencies and other project stakeholders. For this project, these stakeholders include various City of Philadelphia agencies (Streets Department, Water Department, Philadelphia Gas Works, Fairmount Park Commission, School District, etc.), various private utility companies (PECO, Verizon, etc.) city emergency service providers, local government (City Council, etc.) and involved community groups.

Mr. Pezzotti will be responsible for ensuring that the Department's standards for invoicing are followed and that invoices are submitted correctly.

Pennoni will prepare a construction cost estimate at the Value Engineering Review, Constructability Review, and PS&E Submission stages of the project, and as required by the Department. Each cost estimate will use the latest standard item bid prices from ECMS, supplemented by additional data and engineering experience as required.

2.1.1.1
As directed by the Department, the Pennoni Team will attend all required project meetings, including public meetings, agency coordination meetings, design review meetings with District personnel, and meetings with City of Philadelphia agencies and project stakeholder groups. Pennoni will prepare agendas and minutes for every meeting, and will prepare handout and/or display materials as appropriate. For purposes of this proposal, a total of twenty-four (24) meetings are anticipated in Final Design (one design-related meeting per month for the duration of the phase).

The Pennoni Team will also attend any task-specific meeting as required, examples of which include meetings with the District Traffic Unit and the Streets Department.

2.1.1.3
Pennoni's commitment to quality includes our Project Specific Quality Assurance Plan. Mr. Pezzotti will develop a Quality Assurance Plan for this project, and will be responsible for overall project quality. Our Quality Assurance Plan will be available for District review and approval within one

month from issuance of Notice-to-Proceed for Final Design, and contains a detailed approach to monitor the progress of each project task, including maintenance of project budgets and schedules, project staffing, communications with the District, sub-consultant supervision, plan reviews, quality assurance, and document control. Sub-consultants will submit their own QA/QC plan, which will be checked to ensure a uniform quality control approach for the entire project team.

2.1.1.5
Pennoni will provide an updated project design schedule using Welcom Open Plan and will submit it to the District along with our QA/QC plan within a month of issuance of Notice-to-Proceed for Final Design. The project schedule will be updated with each project status meeting and will be available for review by the Department's Project Manager.

Task 2 - 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 - Coordinate Constructability Review

Department Details:

2.1.2
It is anticipated that a Constructability Review will be required for this project. Provide all materials and services to assure this review is completed appropriately.

Approach:

2.1.2
The Pennoni Team will work with the District in developing and coordinating a constructability review team throughout the project. The Pennoni Team will submit appropriate materials for review by District personnel at various stages of project design in order to avoid costly re-engineering efforts later in the design phase. The constructability review submission will include, at a minimum:

--A full plan set (roadway, structural, traffic control, traffic signal, etc.);
--Estimated items and quantities;
--Construction cost estimate;
--Construction schedule;
--Draft Project Special Provisions
Our proposed design will be reviewed by our in-house constructability review personnel prior to submission to the District as part of our QA/QC procedures.

Pennoni will be available to meet with the District's constructability review team in order to discuss project details and concerns of the review team. One (1) District constructability meeting is assumed for this Final Design Part. Meeting minutes will be prepared to document the review discussion and required changes to the plans.

Task 3 - 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:

2.1.3
The consultant will prepare and distribute to appropriate parties the minutes of all meetings.
Assume there will be one (1) general public meeting/ public officials meeting, four (4) municipal meetings and four (6) project stakeholder meetings.

Approach:

2.1.3
The Pennoni Team will continue Public Involvement efforts from Preliminary Engineering through Final Design. Pennoni will attend all project public

involvement activities during the project. Pennoni with assistance from A&W, ASC and LRSLA will prepare for the meetings specified in the Department Details. Three (3) meetings per Part are anticipated to cover the eleven (11) total meetings described in the original Part 2 Department Details. Pennoni will review the requirements for each meeting with the Department prior to the meeting, and will develop agendas, appropriate display materials/handouts, and other materials required for the meeting. Pennoni will also assist the Department in coordinating with meeting attendees as required.

All public meetings will be attended by Pennoni Professional Engineers and qualified professionals with the requisite project knowledge for the meeting agenda. Members of our sub-consultant team will attend meetings as required by the meeting agenda. If required, a "dry run" will be scheduled prior to the public meeting, allowing sufficient time to incorporate any revisions requested by Department staff.

Pennoni will publish meeting minutes from the public meeting(s) and will submit them to the Department within ten (10) working days of the meeting for the Project Manager to review. We will revise the minutes if necessary. Changes to the plans which result from these meetings will be fully documented and incorporated into the plans where applicable.

Task 4 - Value Engineering

Objective:

2.1.4 - Value Engineering
This task involves performing a value engineering review.

Scope:

2.1.4 - Value Engineering
Provide work as detailed by the Department. See Department Detail.

Detail Task 1 - Value Engineering

Department Details:

2.1.4
Prepare necessary documentation, attend and present proposed project for a Department Value Engineering review.
Provide assistance to the District Value Engineering Coordinator in documenting the process and necessary follow-up tasks.

Approach:

2.1.4
Pennoni with assistance from A&W and LRSLA will prepare the Value Engineering submission for the project, composed of appropriate plans, specifications, and associated documents for review by the District Value Engineering Review Committee. The submission will be in compliance with the procedures and criteria outlined in Design Manual 1A, Appendix H, and will be coordinated with the District Value Engineering Coordinator. Since the total project is a Federal-Aid project with a construction value greater than $20 million, a full Value Engineering review is anticipated.

Pennoni, A&W and LRSLA will attend the Value Engineering review meeting and will present the project to the team and review project details. One (1) Value Engineering review meeting is assumed for this Final Design Part. Team members with detailed knowledge of specific project details (structural, traffic control, etc.) will attend in order to answer specific technical questions. All proceedings will be documented by Pennoni in order to be included in the final Value Engineering Report. Pennoni will document any changes to the design (and their associated cost savings) that result

from the Value Engineering Review.

Task 5 - 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.

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.

Detail Task 1 - Environmental Activities

Department Details:

2.10.1
Identify and incorporate any commitments made during Preliminary Engineering.

2.10.1.3
A re-evaluation of the environmental document will be required prior to the P.S.&E. submission.
Follow Department Policies and Strike-off Letters regarding Due Dilligence and Asbestos documentation.

Approach:

2.10.1 & 2.10.1.3
Depending on the time elapsed, and if any changes to the project occur, ASC will re-evaluate the environmental documentation in Final Design, prior to the PS&E Submission. If necessary, ASC will complete an Environmental Due Diligence (EDD) Phase I Visual Inspection form and appropriate Asbestos Documentation, in accordance with the PennDOT Policies and Strike-Off Letters. ASC will update the Pennsylvania Natural Diversity Inventory (PNDI) and coordinate with the appropriate agencies, as required. ASC will coordinate with Pennoni and the District, as requested, to complete any coordination required for Section 6(f) clearance. ASC assumes attendance at two (2) status/design project meetings associated with this task.

If the project Scope of Work is changed to include improvements in the area of Callowhill Street (17th Street to Broad Street), ASC will incorporate this information into the environmental document or the re-evaluation of the environmental document. At least three (3) National Register Listed buildings are located adjacent to the project area. ASC will coordinate with the District 6-0 Qualified Professional to determine if any cultural resources coordination is required and with the District 6-0 Environmental Unit to determine if additional Section 4(f) coordination is required.

Task 6 - 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:

2.10.12
Investigate condition of existing local street, pedestrian and highway lighting and design lighting elements as required.

Approach:

2.10.12
Highway lighting plans will be developed by Ammann & Whitney with assistance from Pennoni as part of the project's PS&E submission. The Highway Lighting Plans will be developed in accordance with all applicable Department Standards, including Design Manual Parts 2 and 3, and AASHTO's "Roadway Lighting Design Guide".

Ammann & Whitney will coordinate development with this plan with the Central Office Highway Lighting Section. Input on required street lighting will be obtained from the Streets Department and from stakeholder coordination completed in Preliminary Engineering. Decorative or specific lighting hardware will be considered and included into the plans upon direction from the Department or if the lighting is a condition of the approved project environmental document and/or landscaping plan.

Ammann & Whitney will investigate the adequacy of the existing lighting hardware and lighting pattern for adjacent local streets and under-bridge lighting on the Vine Street Expressway, and will design upgrades as required. Special attention will be given to replacing existing mercury vapor lighting with high pressure sodium lighting systems. Under-bridge lighting details will be included on the Final Structure Plans, as discussed in Task 7.0, Final Structure Plans. Design of final Sign Lighting Plans will be included in the efforts for Task 19.0, Signing and Sign Lighting Plans.

Ammann & Whitney will coordinate and attend a pre-design meeting with the Central Office Highway Lighting Section and the Streets Department to review and establish specific design criteria prior to beginning detailed plan development.

Final plans will be submitted to the Highway Lighting Division and Streets Department for approval prior to inclusion of the plans in the PS&E package.

Task 7 - 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:

2.10.13
Incorporate additional information (as applicable) such as existing and proposed ground lines in the vicinity of the structure, approach guide rail data, existing structure layout, point of minimum vertical clearance, horizontal clearances, and utilities.

Prepare plans for the superstructure replacements (2).
There are two structures involved with this project:
1. 21st Street over I-676
2. 22nd Street over I-676

Approach:

2.10.13
Ammann & Whitney will prepare the final structure plans for 22nd Street. The plans will include the necessary rehabilitation required to strengthen the pump house roof of the north abutment so it can carry the increased dead load that will be placed on the roof to raise the profile to achieve the 14'-6" vertical clearance over I-676.

Final structure design will follow the guidelines in Design Manual Part 4. The design constraints and criteria contained within the approved TS&L plans and recommendations will be incorporated into the final bridge design. In addition, the following design criteria / methodologies will be used:

a) AASHTO LRFD Bridge Design Specifications, 3rd Edition 2004, U.S. units, as supplemented by the Department's Design Manual Part 4, September 2007 Edition.

b) AASHTO Standard Specifications for Highway Bridges, 15th Edition, 1992, and Interim Specifications 1993 and 1994 (existing abutment analysis).

c) The structure will be designed for the PHL-93 loading or for P-82 permit load, whichever governs.

d) We will comply with seismic analysis requirements for Design Manual Part 4 and AASHTO LRFD Bridge Design Specifications. The project structures will be designed in accordance with Seismic Zone 2 as specified by Design Manual Part 4, D-3.10.2.

e) We will use the LRFD Design Method to determine the projected inventory and operating ratings for the structures as indicated in Design Manual, Part 4 (Table 1.8.3 (A)).

We will determine the type of aesthetic treatments required, based on discussions with the Department and the project stakeholders, and incorporate these details into the Final Structure Plan Submission.

The Final Structure Plan Submission will include the following items:

a) Complete final engineering design, including seismic criteria for the replacement structure based upon the TS&L plans and recommendations approved by the Department and the Streets Department.

b) Quantity and cost estimates for each structure, with consideration given to project-specific constraints, including construction phasing requirements, access to the project site, and constructability.

c) Standard special provisions and project specific special provisions for excavation, construction phasing, and items not covered by Department specifications. Special provisions and pay items will also be included for design alternate bidding.

d) A final submission in compliance with the guidelines outlined in Design Manual Part 4, including final structure plans, construction documents,

special provisions, pay items, quantity estimates, cost estimates, design calculations and QA/QC forms will be made to the Department and, the Streets Department. We will attend any bridge design review meetings requested by the Department and/or the Streets Department. Meeting minutes will be generated which document the discussion items and required plan changes (if any).

Pennoni will prepare the final structure plans for the 21st Street Bridge. Final structure design will follow the guidelines in Design Manual Part 4. The design constraints and criteria contained within the approved TS&L plans and recommendations will be incorporated into the final bridge design. In addition, the following design criteria / methodologies will be used:

a) AASHTO LRFD Bridge Design Specifications, 3rd Edition 2004, U.S. units, as supplemented by the Department's Design Manual Part 4, 2000 including latest revisions (August 2005).

b) AASHTO Standard Specifications for Highway Bridges, 15th Edition, 1992, and Interim Specifications 1993 and 1994 (existing abutment analysis).

c) The structure will be designed for the PHL-93 loading or for P-82 permit load, whichever governs
We will comply with seismic analysis requirements for Design Manual Part 4 and AASHTO LRFD Bridge Design Specifications. The project structures will be designed in accordance with Seismic Zone 2 as specified by Design Manual Part 4, D-3.10.2.

d) We will use the LRFD Design Method to determine the projected inventory and operating ratings for the structures as indicated in Design Manual, Part 4 (Table 1.8.3 (A)).

We will determine the type of aesthetic treatments required, based on discussions with the Department and the project stakeholders, and incorporate these details into the Final Structure Plan Submission.

The Final Structure Plan Submission will include the following items:

a) Complete final engineering design, including seismic criteria for the replacement structure based upon the TS&L plans and recommendations approved by the Department and the Streets Department.

b) Quantity and cost estimates for each structure, with consideration given to project-specific constraints, including construction phasing requirements, access to the project site, and constructability.

c) Standard special provisions and project specific special provisions for excavation, construction phasing, and items not covered by Department specifications. Special provisions and pay items will also be included for design alternate bidding.

d) A final submission in compliance with the guidelines outlined in Design Manual Part 4, including final structure plans, construction documents, special provisions, pay items, quantity estimates, cost estimates, design calculations and QA/QC forms will be made to the Department and, the Streets Department. We will attend any bridge design review meetings requested by the Department and/or the Streets Department. Meeting minutes will be generated which document the discussion items and required plan changes (if any).

Vector with assistance from Pennoni and A&W will provide the final corrosion mitigation / protection design services for the existing 22nd Street and 21st Street Bridge abutments. The design of the corrosion mitigation / protection system will be based on the results of the Preliminary

Engineering Corrosion Evaluation prepared by Vector in February, 2011. The final corrosion mitigation / protection system(s) will be selected based on input from the District and designed with the goal of extending the service life of these abutments through effective corrosion mitigation. The following work will be completed by Vector.

• Select applicable corrosion mitigation/protection system for each abutment.

• Obtain pre-approval for recommended system prior to working on the design.

• Prepare written specifications to cover any of the following sections where applicable:
o Description of System
o Installer Qualifications
o Materials and Equipment Requirements
o Installation Procedures
o Pre- and Post-Installation Testing
o System Operation and Maintenance
o Criteria for Termination of the ECE Treatment
o Dismantlement and Disposal of the System
o Post Treatment Cleaning and Patching of Concrete
o Surface Treatment of Concrete
o Documentation, QA/QC

• Prepare working drawings specific for each abutment.

• Develop Bill of Quantities for Bid Items.

• Provide cost estimates for each abutment based on estimated time, direct and other costs.

• Assist with answers on questions regarding incidental work.

Task 8 - 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:

2.10.14
This will be a continuation of work performed during the Preliminary Design Phase. A Detour Plan where applicable will be prepared during the

Final Design Phase. This activity will include a separate plan and written narrative. All signs will be represented with symbols. The plan will be completed in compliance with Publication 213.
Coordinate/design placement of temporary traffic signals to facilitate traffic during construction activities.

Approach:

2.10.14
This task is a continuation of the efforts, plan preparation, and coordination performed in the Preliminary Engineering part of this Agreement. Pennoni will continue to develop the final Traffic Control Plan in coordination with the District Traffic Unit, the Streets Department, and project stakeholders, along with input gained through various project reviews such as the Design Field View Meeting, the project Value Engineering Review, the project Constructability Review, and the Final Design Office Meeting.

It is anticipated that 21st and 22nd Street will be constructed with staged construction. For operations requiring closure of SR 676, traffic will be detoured on the local road network as developed during preliminary engineering. In addition, short term lane closure plans will be developed for SR 676.

Pennoni will prepare Traffic Control Plans showing required signs, signals, temporary pavement markings, and other details for review and approval by the Department. These plans will include detour plans and other construction staging details as required. In preparing the Traffic Control Plans, Pennoni will adhere to all applicable provisions of Publication 213 - Work Zone Traffic Control and the Manual on Uniform Traffic Control Devices (MUTCD). The Traffic Control Plan will show required stages for review and approval by the Department. Draft Contract Special Provisions for Maintenance and Protection of Traffic, as well as Traffic Control Plan items, will be included in each submission for review and comment.

Pennoni will attend one review meeting with the Traffic Unit and the Streets Department during Final Design. Comments from these reviews will be documented via meeting minutes prepared by Pennoni.

The Final Traffic Control Plans will include index/notes sheets, tabulation of quantities sheet(s), advance signing sheets, traffic control details sheet, detour plan sheets/details, and detail sheets for each bridge requiring staged construction. A written narrative, which encapsulates the Traffic Control Plan details and Special Provisions, will be included with each Traffic Control Plan submission. The narrative will be modified as required during the development and refinement of the Traffic Control Plan. Detailed staged construction plans are anticipated for the following bridges:
--21st Street (3 stages)
--22nd Street (4 stages)

Pennoni anticipates that 4 sheets will be required to show the staging plans for 21st and 22nd street. Pennoni anticipates that up to 18 sheets will be required to show I-676 advanced warning signage, I-676 detour plans, I-676 short term lane closure plans and traffic control details and quantities for this part.

Pennoni will update the Traffic Management Plan developed during preliminary engineering. The Traffic Management Plan will identify the bridges to be designed and constructed under Final Design Parts 4-8 and will be updated based on the District's bid schedule for these projects.

It is likely that changes in traffic patterns as a result of the phased construction and the night time detours will affect the operation of the existing signals along the detour route. As part of our Traffic Control Plan development, we will investigate the operations of the existing signals and recommend possible modifications to signal timings to maximize the efficiency of the existing signals. For the purpose of this proposal we

anticipate up to 10 retiming's will be required and that signal plans will not be required for the 10 intersections where retiming is proposed.

Pennoni will prepare a Temporary Traffic Signal Plan in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

Pennoni will develop Temporary Signal Plans for intersections identified in Preliminary Engineering. The following Temporary Signal Plans are anticipated:

--22nd Street and Winter Street
--21st Street and Winter Street

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

The following task will be completed by the Pennoni Team for temporary traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Task 9 - 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:

2.10.15
Provide required plans and information for all signals impacted by the project. This includes signals adjacent to the project and any intersections designated along detour routes or Traffic Management Plan initiatives.

Approach:

2.10.15
The Pennoni Team will prepare final signal construction plans for two (2) signalized intersections within the project limits, in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

For the purpose of this proposal, the Pennoni Team assumes that the signals at 22nd Street and Winter Street, and 21st and Winter will require upgrades to existing signal hardware.

Special Provisions will 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 will be submitted with the Traffic Signal Plan as a separate entity.

Full-size drawings of the traffic signal construction plans will be submitted to the District Traffic Engineer and the Streets Department at the completion of the 60% and 90% project completion levels for review and comment. The Pennoni Team will schedule and attend one meeting with the District Traffic Engineer and/or Streets Department to discuss the review comments before advancing the design. Copies of the Special Provisions will be submitted at the 90% project completion level.

The Pennoni Team will prepare Traffic Signal Permit plans for the two (2) signalized intersections by modifying the Traffic Signal Construction Plans to reflect the final permitted operation of the traffic signal. Notes specific to the signal construction will be removed and notes identifying the Permittee's responsibilities will be added along with a permit issue block to the upper right hand corner of the plan sheet. As directed, the Traffic Signal Permit Plans will be submitted to the Streets Department following construction.

The following task will be completed by the Pennoni Team for final traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Signal design for temporary traffic signals associated with detour routes will be completed as part of Task 8.0, Traffic Control Plan

Task 10 - 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

Department Details:

2.10.16
All traffic related signs will be incorporated into the Pavement Marking Plan.

Approach:

2.10.16
The Pennoni Team will continue on the work completed in preliminary engineering in preparing the final pavement marking and signing plan for this project. The plans will follow the preliminary design that was completed as part of the Design Field View Submission. The plans will be developed in accordance with Design Manual Part 3, the Manual on Uniform Traffic Control Devices, Traffic Standards (TC-7600 Series), and Publication 68 with guidance from the Pavement Marking Handbook.

The plans will consists of a title sheet with general notes, tabulation sheets, and plan sheets. The plan sheets will show proposed pavement markings, sign locations, sign types and messages. The final submission will include:
• General Plans
• Special Details
• Quantities
• Specifications

Pennoni will review the final plans with the Streets Department prior to submission to the Department. Pennoni will coordinate with the Philadelphia Parking Authority regarding parking regulations and associated signage. Pennoni anticipates that the Parking Authority will provide the details to any non-standard parking signs. Efforts will be made to retain existing signage where possible. Special sign details will be incorporated into the plans as required.

Task 11 - 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.

Scope:

2.10.2 - Roadway
Needs completed.

Detail Task 1 - Roadway

Department Details:

2.10.2.3
Remove item 1. Item 2 is only necessary where approach work involves the reconstruction of an adjacent intersection.
Plans will be at a scale of 1"=25'.

Approach:

2.10.2 & 2.10.2.3
The Pennoni Team will complete the final design for 21st Street, 22nd St., the I-76 ramps at 22nd Street and the 2100 block of Winter Street. We will complete the design and prepare deliverables for the project's PS&E package, including final roadway plans, specifications, engineer's estimate, and pre-bid schedule. Plans and documents will be prepared in accordance with Design Manual Parts 1A, 2, 3, 4, and 5, and applicable Department standard drawings. The construction plans will follow the formats and procedures outlined in Design Manual Part 3.

Details for each component in the PS&E package are described in our following approach for each subtask.

Ammann & Whitney will finalize the drainage design developed in Preliminary Engineering. Since the drainage is expected to be limited to the replacement of existing facilities and/or minor improvements, the final roadway plan will provide the appropriate information for the replacement of the inlets, including excavation, invert depth elevations, etc.

Hydraulic design computations will be prepared using appropriate methodologies for all roadway drainage structures. The replacement inlets will be checked to confirm that their capacity is adequate for the 10-year storm flow, and that downstream drainage capacity is sufficient for the proposed design. The proposed drainage design will be closely coordinated with our Erosion and Sedimentation Control design.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review. This submission will include design plans as well as Checklist B as described in PWD's Stormwater Management Manual. Due to the nature of project, zoning and building permits are not anticipated. In accordance with PWD policies and procedures for roadway maintenance and rehabilitation projects, therefore we will apply for a waiver from meeting the PWD Stormwater Management Regulations. A Post-Construction Stormwater Management Plan is not anticipated.

Due to the limited amount of full depth roadway construction, a simplified method of pavement design may be appropriate for this project. Pennoni will verify limits of work, existing pavement types and anticipated pavement section with the District and Streets Department prior to submission of the final pavement design documents. Pennoni anticipates that the standard Philadelphia pavement section will be utilized for the limited full depth roadway reconstruction. Pennoni will submit a pavement design letter and form D-4332A to the Pavement Design Unit for approval. Pavement items will be clearly indicated on the typical sections included with the final roadway plans.

Pennoni will prepare those sheets needed for the overall construction package and the drawings for 21st Street. Ammann & Whitney will prepare the sheets needed to represent the areas of 22nd St and the I-76 ramps.

The final PS&E package will include the preparation of the following roadway construction documents:

Typical Section Sheet - includes the typical sections developed in Preliminary Engineering. The typical sections will be updated with proposed pavement types and depths. The typical section sheets will be prepared as outlined in Design Manual Part 3.

Tabulation of Quantities Sheets - will be prepared in accordance with the guidelines specified in Design Manual Part 3. The sheets will be formatted in accordance with the sample included in Chapter 15 of Design Manual Part 3.

Plan and Profile Sheets - include roadway construction plans and profiles. The detail sheets will be prepared at a horizontal scale of 1"=25' and a vertical scale of 1"=5'. These drawings will show existing and proposed features including topography, horizontal geometry, bench marks, references, legal right-of-way, construction easements, utilities, existing and proposed structural data, and other required design information.

ADA ramp design sheets – includes an intersection plan, spot elevation plan and slope and dimension plan for each impacted ramp. Plans will be prepared on 11x17 sheets and organized in a three ring binder with a cover letter. Additionally a CS-4401 form will be filled out for each ramp and if required, a TIF form will be submitted for ramps not meeting the current criteria. Pennoni will submit the ADA design package to the PennDOT and the Philadelphia Streets Department ADA reviewers. The approved ADA designs will be incorporated into the detail sheets of the construction set.

The submitted set of final roadway plans will include the "also" plans, including Structure Plans, Cross Sections, Erosion and Sedimentation Control Plans, Traffic Control Plans, and Pavement Marking and Signing Plans. The final plan set submission will also include any incorporated and approved utility relocation plans.

Since the existing horizontal alignments are expected to be retained, the intersection design for this project is expected to generally replicate existing conditions. The minor adjustments to the vertical profiles developed during preliminary engineering will be incorporated in the final design detail sheets.

Before final plans are completed, an in-house plan review will be performed. This review will check the plans for presentation details, plan clarity, item number and special provision references, and overall quality of the plan from a contractor's viewpoint. Any major changes to the plans that result from the plan review will be reviewed with the District prior to final submission.

The Pennoni Team will prepare all submissions for, and attend, the Final Design Office Meeting. The submission will include all plans, special provisions, preliminary special provisions, and construction cost estimate. Pennoni will prepare minutes of the meeting, documenting discussion points and required revisions to the design package.

All special provisions will be reviewed as part of the constructability and Final Design Office Meeting reviews. Every effort will be made to use pre-approved provision language to simplify this effort. Special provisions unique to utilities and the City of Philadelphia will be reviewed with the affected agency to ensure conformance with agency criteria.

Proprietary items, if any, will be identified as soon as possible in Final Design. Appropriate documentation and justification for the use of proprietary items in the bid package will submitted to the Department for review and approval.

The Pennoni Team will prepare plans, profiles, typical sections, and cost estimate for the Final Design Field View. Pennoni will prepare for the meeting at the approximate 35% completion stage of Final Design. Pennoni will attend the meeting with appropriate personnel versed in specific

project details. Meeting minutes will be generated which document discussion points and required revisions to the design package.

Task 12 - Section 4(f) Mitigation Plan

Objective:

2.10.23 - Section 4(f) Mitigation Plan
This task is the development of the Section 4(f) mitigation plan.

Scope:

2.10.23 - Section 4(f) Mitigation Plan
1. Develop a mitigation plan that identifies any mitigation measures committed to in the Final Section 4(f) Evaluation and NEPA document for Section 4(f) resources.

2. Submit plan to PennDOT, PHMC and possibly FHWA for review. Revise plan if necessary.

3. Include this plan in the final design plans, specifications and estimates package to ensure that the measures are carried out during construction.

Detail Task 1 - Section 4(f) Mitigation Plan

Department Details:

2.10.23
Provide all services to complete 4(f) Mitigation as required through the environmental documentation phase.

Approach:

2.10.23
ASC will assist Pennoni in the development of a Section 4(f) mitigation plan by identifying any mitigation measures committed to in the Section 4(f) documentation. ASC will assist Pennoni in any coordination efforts required for Section 4(f). These mitigation measures will be identified on the Final Design plans and carried out during construction, as required.

Task 13 - 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:

2.10.25
Provide all required permits and approvals to advance to PS&E.

Approach:

2.10.25
Ammann & Whitney with assistance from Pennoni will prepare an Erosion and Sedimentation Control Plan and narrative for this project in accordance with Design Manual, Part 2, Chapter 13, and the guidelines set forth in the Pennsylvania Department of Environmental Protection's publication Erosion and Sedimentation (E&S) Control Program Manual, dated March 2000, as well as any revisions thereto. We will develop, establish, and maintain stringent temporary and permanent controls to restrict sediment within the project's excavated areas. The plans and narrative will be prepared with specific and positive safeguards, to protect adjacent properties from pollution by transported sediment. Both temporary as well as permanent erosion and sedimentation controls will be developed. Due to the type of construction, it is anticipated that the E&S measures will be limited to inlet protection, silt fence, seeding & mulching, or similar facilities. E&S controls that require additional right-of-way, such as sediment traps or sediment basins, are not anticipated.

Ammann & Whitney will draw upon previous experience with Erosion and Sedimentation Control design for City of Philadelphia projects in developing the final plans. We will coordinate with the Philadelphia Water Department (PWD) during final plan development, since PWD approves Erosion Control plans for projects with less than one acre of disturbance within the City. It is anticipated that the project will disturb less than 1 acre and will be exempt from the NPDES requirements. Therefore, a post-construction stormwater management plan is not anticipated.

We will submit the final erosion and sedimentation control plan to the District for their review and approval. Upon approval by the District, the plans and narrative will be forwarded to the Philadelphia Water Department review and approval.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review as described in 2.10.2.

Approved erosion control items will be incorporated into the final construction plans and special provisions, as required.

Task 14 - 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.

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."

Detail Task 1 - Assemble Final Project Documents for Contract Management

Department Details:

2.10.29
Use PENNDOT ECMS system for bid package preparation. Assist District personnel in the preparation of any addendum required for the project. Prepare bid justification documents as required.

Approach:

2.10.29
The Pennoni Team will assemble the project's bid package using the Department's ECMS system. Pennoni will thoroughly check the plans, specifications, construction cost estimates, and the project schedule for accuracy and completeness prior to submission. Pennoni will ensure that all required approvals, permits, clearances, etc. have been secured/approved by the appropriate authorities. Prior to submission, Pennoni will complete the Project Development Checklist and will produce copies of the required documents to the District for linking into ECMS.

Once the bid package is advertised, Pennoni will provide answers to bidder's questions via the ECMS system.

Pennoni will attend the pre-bid meeting at the direction of the District. Pennoni Team members with the requisite project experience will attend the meeting in order to appropriately answer questions about the bid package. Meeting minutes will be generated which document discussion points and required revisions to the design package.

If required by the District, Pennoni will create and submit addendums to the project's Bid Package. As required, changes to plans, quantities, or special provisions will be made and the project documents updated accordingly. Pennoni will coordinate this effort with the District's Project Manager and the District Contract Management Unit.

Pennoni's PS&E package will include a critical-path project construction schedule in Welcom Open Plan format. The schedule will be included in the project's constructability review for review and comment by the District Construction Unit prior to inclusion in the bid package. Both the full-logic schedule and abbreviated critical path version will be included in the submission.

Draft special provisions will be submitted to the District for review prior to the PS&E submission. The special provisions will be written in standard PennDOT format, and will be cross-checked against existing Department and District Standard Special Provisions for consistency. Items specific to City of Philadelphia construction will be reviewed with the appropriate City agency prior to inclusion in the PS&E package.

A detailed construction cost estimate will be provided with both the constructability review and the PS&E package. The estimate will provide an estimated unit cost for each item in the proposal based on historical bid data from ECMS. Items not available in ECMS will be estimated by Pennoni using past experience in other projects and by obtaining price information from reliable contractor and supplier sources. Pennoni will provide backup data for the estimated unit costs as requested.

Pennoni will utilize the Department's ECMS system for preparation and submission of the bid package and related documents. Pennoni will provide copies and/or electronic scans of project documents for attachment to the Project Development Checklist, and will assist the District Contract Management Unit with preparation of the final bid package for advertisement.

Task 15 - 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:

2.10.3
Provide field survey to update information which may have changed since the preliminary survey as required in Publication 122M at the required intervals.

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

Scope Deliverables:
1. Recover horizontal control and vertical datum.
2. Stake final alignment.
3. Provide line book in Form D-428.
4.Establish vertical control network by setting benchmarks within project area by differential leveling.
5. Record level loops in Form D-428 field book.
6. Benchmarks set will be no greater than one half mile apart and will be set on permanent objects not subject to movement.
7. Benchmarks will be set on both sides of proposed structures and/or structures to be replaced.
8. Stake required right-of-way lines, legal right-of-way lines, temporary construction easements, slope easements, etc.

Approach:

2.10.3
Chilton Engineering, Inc. (Chilton) will perform the incidental surveys as deemed necessary to supplement the original survey performed for this project during Preliminary Design.

Chilton will perform an updated property owner search, and perform supplemental roadway and structural surveys as necessary. Survey work will be performed in accordance with the latest edition of the Surveying and Mapping Manual and any relevant Strike-Off Letters. All field surveys will be performed with modern total station instruments equipped with electronic data collectors or High Definition Survey (HDS) Scanning equipment.. As part of the survey process, standard field books will be maintained according to District requirements, including indexing.

Survey Control: Existing horizontal and vertical survey control established during Preliminary Design will be recovered. Additional survey control will be established as necessary. All survey data that is obtained during our field activities will be referenced to this control network. A final survey report will be prepared.

Traffic Control Plan for Field Activities: Any traffic control and protection of the traveling public measures necessary for the required field survey tasks will be in conformance with PennDOT Publication 213, Work Zone Traffic Control. The plan will be submitted to the District Traffic Unit for approval prior to implementation. All major traffic control devices required for major work zone traffic control measures will be furnished, erected and maintained by a firm specializing in these measures. Lane shifts on ramps and/or partial closures on side roads will be limited to off peak hours. We will advise the District's Press Office prior to any lane closures and/or encroachments.

Field Edit of Existing Base Plan Mapping: Chilton will field review the existing base plan mapping surveyed during Preliminary Design to identify any changes to the topographic features within the project limits.

Topographic Survey: Chilton will perform required topographic surveys to provide more detail or extend plan coverage as directed by Pennoni. Information gathered will be plotted on the existing base plan mapping and all additional features identified and clearly labeled.

The digital terrain model of the project will be updated to incorporate the field review. This model will be updated, with contours calculated and shown on the plan at one (1) foot intervals.

Roadway Cross Sections: We will update cross section data as deemed necessary. Measurements will be exacted to the nearest one-hundredth (0.01) of a foot on hard surfaces and pavements and to the nearest one-tenth (0.1) of a foot on ground shots.

Structural Survey: Field survey edits will be performed at the existing bridge and overhead structure sites as directed by Pennoni. Clearances measurements will be updated at the fascia beam on both sides of each bridge if required.

Stakeout Roadway and Structure Core Boring Hole Locations. If necessary, we will stakeout any additional proposed roadway core boring hole locations. The boring locations will be staked and existing ground elevations will be obtained.

Stakeout Proposed Right-of-Way Easement or Acquisition Parcels. If necessary, we will stakeout the proposed corners/lines of any right-of-way takes or easements for property owner review. Each stake will be identified by ribbon color and labeling of Sta./Offset and point description.

Using the approved final roadway geometry layout as provided by Pennoni, Chilton's surveyors will perform the field stakeout of the proposed construction baselines when directed by Pennoni. Because of the volume of traffic in this area the use of offset base lines may be used. The offset base lines will be set in the shoulder. The staking of the actual baseline or use of offset lines will be determined after review with the Department and Pennoni. Actual control points such as PC's, PT's and PI's will be either drill hole (in concrete), PK nail (in asphalt) or iron pin (in soil).

The construction baseline or offset baseline points will be referenced after they have been set. The references will be located outside the area of proposed construction. References will be set meeting applicable Department standards, where possible. At a minimum, Chilton will reference all horizontal control points to three fixed objects located outside the limits of proposed construction with both angular and distance ties provided, showing orientation to the baseline. Reference sketches will be prepared for these points, to prepare detailed control reference circles on plans.

Task 16 - 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:

2.10.4
Develop Cross Sections as required for the project.

Approach:

2.10.4
The Pennoni Team will prepare the final cross sections following the procedures outlined in Design Manual Part 3. The sections will be prepared at a horizontal and vertical scale of 1"=5'. Proposed template areas and the limits of earthwork will also be shown on the cross sections. The earthwork quantities for these template areas will be computed and tabulated as part of the final PS&E package.

Cross sections are anticipated for 22nd Street, 22nd Street ramps A and B, 21st Street and the 2100 block of Winter Street.

Roadway cross sections will be prepared at 25 foot intervals and at locations of all major terrain features. Since the roadway reconstruction is expected to be limited, the roadway sections will extend the area necessary to facilitate the reconstruction of the bridge approaches and any intersection/street reconstruction as appropriate. The existing information outlined in Preliminary Engineering will be included on the final cross sections as will the following proposed information:

• Proposed roadway template, including pavement depth
• Construction and survey baselines
• Limits of earthwork & curbing with computations
• Proposed utilities (if applicable)
• Existing and proposed drainage facilities

The cross sections will also be prepared to assist in determining limits of involvement at driveways and adjacent street intersections. The final roadway cross sections will be used to assist in the refinement of the roadway line and grade, in addition to the evaluation of the proposed improvements.

Existing and proposed ground lines will be generated utilizing the proposed alignment information and three-dimensional electronic imaging files. Existing ground lines at pavement tie-in points and along those roadways requiring surveyed cross sections will be generated using field survey data. The proposed roadway template will be added to the final roadway cross sections.

Drainage features, including pipes, inlets, and manholes, will be superimposed on the existing cross section. Existing and relocated utilities will also be included on the cross sections.

Task 17 - 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:

2.10.5
The consultant will prepare a separate right of way plan as described in Paragraph A and in accordance with all applicable Design Manuals and PA D.O.T. Strike-off Letter 430-98-26. Present no more than two plats per sheet. Verification of ownership will be rechecked just prior to the final submission.

Approach:

2.10.5
Chilton Engineering, Inc. with assistance from Pennoni will prepare the project's Final Right-of-Way Plans.

The Final Right-of-Way Plans will be prepared in accordance with Design Manual Part 3, Chapter 3, and appropriate Strike-Off Letters. As the project is located within the City of Philadelphia, the Right-of-Way Plans will also meet the requirements of the City's Board of View.

Chilton will research public records to update ownership and location of properties adjacent to the project. Chilton will conduct research of the public records at the City, as necessary, and will utilize electronic search measures where feasible.

Chilton will obtain copies of deeds, adverses, descriptions of easements, any available development plans, tax maps, etc. that have been revised to confirm the Department's existing right-of-way. The Department's record retention unit will be contacted and relevant plans requested. Private and public right-of-way and easements will be indicated and cross referenced to the appropriate legal document.

Chilton will utilize the information described above to update the mosaic of all properties.

Final Right-of-Way Plans will be developed by Chilton to show the relationship of the proposed construction to the existing and required Right-of-Way and property details. The plans will show legal and required Right-of-Way and easements including existing and relocated utilities. The final plans will show all data necessary to prepare appraisals and to acquire the properties. Topographic features that will affect the value of the takes will be shown including trees, shrubbery, drainage features, buildings, signs, drainage, fences, and other structures.

The need for Temporary Construction Easements and/or Drainage Easements will be determined. Pennoni will coordinate the need for and the location of easement areas with Chilton during Final Right-of-Way Plan development.

Final Right-of-Way Plans will be submitted to the Streets Department and the District for review. Chilton and Pennoni will attend a plan review meeting with the Department's Field Liaison Engineer as required. Revisions to the plan will be made prior to final submission for acquisition.

Copies of record plans, tax maps, deeds, lease agreements, private/public right documents, and transcribing sheets will be submitted to the District as requested.

Chilton will prepare the Right-of-Way property plats by using the Right-of-Way plans prepared under Task 17.0 as the basis. The plans will show all utilities, trees, shrubbery, buildings and other structures and other features that may impact property values. The metes and bounds of properties, easements, and Right-of-Way lines will be shown. The location of private water supplies and sanitary sewer facilities that may be affected by the proposed construction will be identified.

Task 18 - Utility Engineering

Objective:

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

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.

Detail Task 1 - Utility Engineering

Department Details:

2.9.1
Build upon coordination effort that has taken place during the Preliminary Engineering Phase of this project.

Approach:

2.10.8 & 2.9.1
Chilton with assistance from Pennoni and A&W will coordinate the utility relocations required for the project.

The PA ONE-CALL will be made and existing utility information requested. This information will be verified and checked against information received and plotted during the preliminary design phase.

Each affected utility will be contacted to determine their requirements and methods of relocation. Determinations will be made whether utilities will be relocated by the utility, by the contractor as incorporated work, or by a combination of both.

Chilton will verify whether all formal requests for agreement permits and occupancy applications are in accordance with the policies and procedures of Design Manual Part 5.

Chilton will coordinate with the Department and Pennoni to schedule an Initial Utility Design Stage Meeting to introduce the project goals, schedules, and targeted utility clearance dates. Chilton will keep each utility informed of all design changes that could impact existing or planned utilities.

As the final design plans, profiles and cross sections for the project are generated, copies will be forwarded to each utility company affected within the project limits. The utility will be asked to verify their facilities, identify any need for additional Right-of-Way or easements, and identify any potential conflicts. Each utility will receive the appropriate form for submission of bridge attachment requests. As meetings are scheduled to resolve utility conflicts, we will provide personnel familiar with project to attend and coordinate.

Chilton will maintain continuous contact with each utility company representative throughout the life of the project. We will schedule the Final Utility Design Stage Meeting with the Pennoni Team, the Department, the Streets Department, and each utility representative. The purpose of the meeting will be to resolve all outstanding issues, reinforce the utility clearance target dates, and introduce the construction schedule. Chilton will send periodic project status reports to each utility to keep all involved with the progress of utility conflict resolutions.

Upon approaching the scheduled PS&E submission, Chilton will schedule a utility meeting to review all utility issues and resolutions. At this meeting a task schedule will be developed for utility work to be completed prior to construction. This meeting will also be used to identify any outstanding design issues.

Chilton will work with the utility providers to complete and file all required forms and permits including Form D-419, Utility Clearance and Form D4181X for bridge occupancy where applicable. This work will be coordinated with the District Utility Unit.

Chilton will invite all utility representatives to attend all pre-bid, pre-construction and construction status meetings.

Task 19 - Signing and Sign Lighting Plan

Objective:

2.10.17 - Signing and Sign Lighting Plan
This task is the development of the signing & sign lighting plan.

Scope:

2.10.17 - Signing and Sign Lighting 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.

The final submission will include:
- A Title Sheet
- Index Sheet
- An Index-Location Map
- Tabulation of Quantities Sheet(s)
- Summary of Quantities (used only if signing plan is a stand alone plan)
- Detail Sheets
- Specifications

Type I Detail Sheets (general plans) 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.

Type II Detail Sheet includes sign structure details. These plans include:
- A location plan
- Plan, elevation and end view of the sign structure
- Details
- Sign schematic
- Sections and steel sizes for Type A signs
- Estimated quantities
- Design criteria
- General notes.

Type III Detail Sheet consists of sign fabrication information and includes:
- Length of sign
- Height of sign
- Sign legend details including letter spacing, letter size and series, and sign color)
- Size of border and radii of corners
- Sign lighting design
- Quantities

Refer to TC-8701A for sign lighting requirements. In general, all overhead signs that do not have a 800' tangent sight distance require sign lighting. Verify the requirements with the District. Prepare the sign lighting plans in accordance with Standard Drawing TC-8715 and Publication 408, Section 920 requirements. Submit sign lighting plans to Central Office, Highway Lighting Unit for approval prior to the release of the final sign lighting plans to the District for PS&E Development.

Detail Task 1 - Signing and Sign Lighting Plan

Department Details:

2.10.17
Provide all required plans and specifications as identified above.

Approach:

2.10.17
Ammann & Whitney with assistance from Pennoni will prepare the plans for the sign structures at the following locations:

Sign Structure #1 - STA 41+00.72
Sign Structure #2 - STA 42+28.81
Sign Structure #3 - STA 45+64.30
Sign Structure #4 - STA 46+51.71

All work will be performed in accordance with the Department's Scope of Work.

Ammann & Whitney will complete the Final Signing and Sign Lighting Plans for the project, in accordance with applicable TC-8700 standards. This work will be a continuation of the work completed in Preliminary Engineering.

Type I, Type II, and Type III Sheets will be prepared as required in the Scope of Work for each sign. Details on sign sizes, lettering, material, and spacing will be replicated from the original plans, if available, with modifications as required. Sign Lighting Plans will be submitted to Central Office, Highway Lighting Unit for approval prior to submission to the District Traffic Unit for final approval.

As part of this task, Ammann & Whitney will complete plans for the relocation of the signs that are currently mounted to the superstructure- of the bridges. Duplication of sign movements will be eliminated to the best extent possible; with a focus on relocating signs to their permanent position in the first stage of each bridge's reconstruction.

Task 20 - Roadside Development Plan

Objective:

2.10.27 - Roadside Development Plan
This task is the development of the roadside development plan.

Scope:

2.10.27 - Roadside Development Plan
These include Wetland Mitigation Planting Plans, Wildlife Habitat Mitigation Planting Plans, Maintenance Yard or Stockpile Area Screening Plans or any other plans requiring landscape design and plans preparation.

Where no roadway construction is involved, the plans are an entity in themselves. Where roadside development is a part of highway construction, the quantities and plans are numbered in the Construction Plans and placed immediately after the Contour Grading and Drainage Plans.

Where separate plans are required, the Roadside Development Plan includes:
1. Title Sheet
2. Index Sheet
3. Typical Section Sheet

4. Summary and Tabulation of Quantities Sheet
5. Detail Sheets (required for all tree, shrub and vine plantings)

Where plans are a part of the highway construction, it is not necessary to prepare a separate Title Sheet, Index Sheet, Typical Section Sheet or Summary and Tabulation of Quantities Sheet.

Prepare plans in accordance with Publication 14M, Design Manual Part 3.

Detail Task 1 - Roadside Development Plan

Department Details:

2.10.27
Provide all plans and specifications as detailed above.

Approach:

2.10.27
LRSLA with assistance from Pennoni will develop the landscape design approved in Preliminary Engineering. The area will include areas adjacent to the roadway improvements, including planting adjacent to the 21st and 22nd Street bridges. The plans will include Landscape Demolition Plans (including existing tree and soil protection zones), Landscape Planting Plans, and Landscape Details for soil profiles and planting. Materials and details will follow the Fairmount Park Commission Benjamin Franklin Parkway Design Guidelines Manual, approved and adopted by FPC, and in accordance with Publication 14M, Design Manual Part 3.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
Pennoni Associates Incorporated	No	
Ammann & Whitney Pennsylvania, Inc.	No	Pennoni Associates Incorporated
ASC Group, Inc.	Yes	Pennoni Associates Incorporated
Chilton Engineering, Inc.	Yes	Pennoni Associates Incorporated
Lager Raabe Skafte Landscape Architects,Inc.	Yes	Pennoni Associates Incorporated
Vector Corrosion Technologies, Inc.	No	Pennoni Associates Incorporated

Attachments

No records found.

Part 5 - Final Design - 20th Street and Ben Franklin Pkwy

Description

Final Design - 20th Street and Ben Franklin Pkwy

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.

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.

Detail Task 1 - Project Management/Administration

Department Details:

2.1.1
The consultant shall provide construction cost updates as required by the Department.
The consultant will thoroughly check all design submissions before submitting them to the Department for review.
The Department reviews will be cursory in nature and the consultant will be responsible for design and plan accuracy.
The consultant will be liable for design and plan errors in accordance with 67 PA Code, Chapter 455, Consultant Highway Design Errors.
The consultant will be responsible for DBE progress, and all submissions prepared by the DBE will be submitted through the prime consultant's office. The prime consultant will be responsible for the accuracy and quality of the DBE work.

2.1.1.1
The consultant will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
Assume there will be one (1) design related meeting per month for the duration of the final design phase of the project.

2.1.1.3
The project QC/QA plan is to be provided to the District one (1) month after NTP. Include sub-consultant QC/QA plans as appropriate.

2.1.1.5
The initial project Welcom Plan is to be provided to the District one month after NTP.

Approach:

2.1.1
This task will be a continuation of the project management effort from Preliminary Engineering. Jim Pezzotti will continue to manage the Pennoni Team, including sub-consultants Amman & Whitney Pennsylvania, Inc. (A&W), ASC Group, Inc. (ASC), Chilton Engineering, Inc. (Chilton), Lager Raabe Skafte Landscape Architects, Inc. (LRSLA) and Vector Corrosion Technologies, Inc. (Vector) as well as individual Pennoni discipline leaders. Mr. Pezzotti will continue as the main point of contact with the District and is responsible for the overall coordination of the project team as necessary to deliver a quality project PS&E package to the District by the specified time and within the designated budget.

Mr. Pezzotti will continue to serve as the primary contact with governmental agencies and other project stakeholders. For this project, these stakeholders include various City of Philadelphia agencies (Streets Department, Water Department, Philadelphia Gas Works, Fairmount Park

Commission, School District, etc.), various private utility companies (PECO, Verizon, etc.) city emergency service providers, local government (City Council, etc.) and involved community groups.

Mr. Pezzotti will be responsible for ensuring that the Department's standards for invoicing are followed and that invoices are submitted correctly.

Pennoni will prepare a construction cost estimate at the Value Engineering Review, Constructability Review, and PS&E Submission stages of the project, and as required by the Department. Each cost estimate will use the latest standard item bid prices from ECMS, supplemented by additional data and engineering experience as required.

2.1.1.1
As directed by the Department, the Pennoni Team will attend all required project meetings, including public meetings, agency coordination meetings, design review meetings with District personnel, and meetings with City of Philadelphia agencies and project stakeholder groups. Pennoni will prepare agendas and minutes for every meeting, and will prepare handout and/or display materials as appropriate. For purposes of this proposal, a total of twenty-four (24) meetings are anticipated in Final Design (one design-related meeting per month for the duration of the phase).

The Pennoni Team will also attend any task-specific meeting as required, examples of which include meetings with the District Traffic Unit and the Streets Department.

2.1.1.3
Pennoni's commitment to quality includes our Project Specific Quality Assurance Plan. Mr. Pezzotti will develop a Quality Assurance Plan for this project, and will be responsible for overall project quality. Our Quality Assurance Plan will be available for District review and approval within one month from issuance of Notice-to-Proceed for Final Design, and contains a detailed approach to monitor the progress of each project task, including maintenance of project budgets and schedules, project staffing, communications with the District, sub-consultant supervision, plan reviews, quality assurance, and document control. Sub-consultants will submit their own QA/QC plan, which will be checked to ensure a uniform quality control approach for the entire project team.

2.1.1.5
Pennoni will provide an updated project design schedule using Welcom Open Plan and will submit it to the District along with our QA/QC plan within a month of issuance of Notice-to-Proceed for Final Design. The project schedule will be updated with each project status meeting and will be available for review by the Department's Project Manager.

Task 2 - 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 - Coordinate Constructability Review

Department Details:

2.1.2
It is anticipated that a Constructability Review will be required for this project. Provide all materials and services to assure this review is completed appropriately.

Approach:

2.1.2
The Pennoni Team will work with the District in developing and coordinating a constructability review team throughout the project. The Pennoni Team will submit appropriate materials for review by District personnel at various stages of project design in order to avoid costly re-engineering efforts later in the design phase. The constructability review submission will include, at a minimum:
--A full plan set (roadway, structural, traffic control, traffic signal, etc.);
--Estimated items and quantities;
--Construction cost estimate;
--Construction schedule;
--Draft Project Special Provisions
Our proposed design will be reviewed by our in-house constructability review personnel prior to submission to the District as part of our QA/QC procedures.

Pennoni will be available to meet with the District's constructability review team in order to discuss project details and concerns of the review team. One (1) District constructability meeting is assumed for this Final Design Part. Meeting minutes will be prepared to document the review discussion and required changes to the plans.

Task 3 - 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:

2.1.3
The consultant will prepare and distribute to appropriate parties the minutes of all meetings.
Assume there will be one (1) general public meeting/ public officials meeting, four (4) municipal meetings and four (6) project stakeholder meetings.

Approach:

2.1.3
The Pennoni Team will continue Public Involvement efforts from Preliminary Engineering through Final Design. Pennoni will attend all project public involvement activities during the project. Pennoni with assistance from A&W, ASC and LRSLA will prepare for the meetings specified in the Department Details. Three (3) meetings per Part are anticipated to cover the eleven (11) total meetings described in the original Part 2 Department Details. Pennoni will review the requirements for each meeting with the Department prior to the meeting, and will develop agendas, appropriate display materials/handouts, and other materials required for the meeting. Pennoni will also assist the Department in coordinating with meeting attendees as required.

All public meetings will be attended by Pennoni Professional Engineers and qualified professionals with the requisite project knowledge for the meeting agenda. Members of our sub-consultant team will attend meetings as required by the meeting agenda. If required, a "dry run" will be scheduled prior to the public meeting, allowing sufficient time to incorporate any revisions requested by Department staff.

Pennoni will publish meeting minutes from the public meeting(s) and will submit them to the Department within ten (10) working days of the meeting for the Project Manager to review. We will revise the minutes if necessary. Changes to the plans which result from these meetings will be fully documented and incorporated into the plans where applicable.

Task 4 - Value Engineering

Objective:

2.1.4 - Value Engineering
This task involves performing a value engineering review.

Scope:

2.1.4 - Value Engineering

Provide work as detailed by the Department. See Department Detail.

Detail Task 1 - Value Engineering

Department Details:

2.1.4
Prepare necessary documentation, attend and present proposed project for a Department Value Engineering review.
Provide assistance to the District Value Engineering Coordinator in documenting the process and necessary follow-up tasks.

Approach:

2.1.4
Pennoni, A&W and LRSLA will prepare the Value Engineering submission for the project, composed of appropriate plans, specifications, and associated documents for review by the District Value Engineering Review Committee. The submission will be in compliance with the procedures and criteria outlined in Design Manual 1A, Appendix H, and will be coordinated with the District Value Engineering Coordinator. Since the total project is a Federal-Aid project with a construction value greater than $20 million, a full Value Engineering review is anticipated.

Pennoni, A&W and LRSLA will attend the Value Engineering review meeting and will present the project to the team and review project details. One (1) Value Engineering review meeting is assumed for this Final Design Part. Team members with detailed knowledge of specific project details (structural, traffic control, etc.) will attend in order to answer specific technical questions. All proceedings will be documented by Pennoni in order to be included in the final Value Engineering Report. Pennoni will document any changes to the design (and their associated cost savings) that result from the Value Engineering Review.

Task 5 - 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.

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.

Detail Task 1 - Environmental Activities

Department Details:

2.10.1
Identify and incorporate any commitments made during Preliminary Engineering.

2.10.1.3
A re-evaluation of the environmental document will be required prior to the P.S.&E. submission.
Follow Department Policies and Strike-off Letters regarding Due Dilligence and Asbestos documentation.

Approach:

2.10.1 & 2.10.1.3
Depending on the time elapsed, and if any changes to the project occur, ASC will re-evaluate the environmental documentation in Final Design, prior to the PS&E Submission. If necessary, ASC will complete an Environmental Due Diligence (EDD) Phase I Visual Inspection form and appropriate Asbestos Documentation, in accordance with the PennDOT Policies and Strike-Off Letters. ASC will update the Pennsylvania Natural Diversity Inventory (PNDI) and coordinate with the appropriate agencies, as required. ASC will coordinate with Pennoni and the District, as requested, to complete any coordination required for Section 6(f) clearance. ASC assumes attendance at two (2) status/design project meetings associated with this task.

If the project Scope of Work is changed to include improvements in the area of Callowhill Street (17th Street to Broad Street), ASC will incorporate this information into the environmental document or the re-evaluation of the environmental document. At least three (3) National Register Listed buildings are located adjacent to the project area. ASC will coordinate with the District 6-0 Qualified Professional to determine if any cultural resources coordination is required and with the District 6-0 Environmental Unit to determine if additional Section 4(f) coordination is required.

Task 6 - 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:

2.10.12

Investigate condition of existing local street, pedestrian and highway lighting and design lighting elements as required.

Approach:

2.10.12
Highway lighting plans will be developed by Ammann & Whitney with assistance from Pennoni as part of the project's PS&E submission. The Highway Lighting Plans will be developed in accordance with all applicable Department Standards, including Design Manual Parts 2 and 3, and AASHTO's "Roadway Lighting Design Guide".

Ammann & Whitney will coordinate development with this plan with the Central Office Highway Lighting Section. Input on required street lighting will be obtained from the Streets Department and from stakeholder coordination completed in Preliminary Engineering. Decorative or specific lighting hardware will be considered and included into the plans upon direction from the Department or if the lighting is a condition of the approved project environmental document and/or landscaping plan.

Ammann & Whitney will investigate the adequacy of the existing lighting hardware and lighting pattern for adjacent local streets and under-bridge lighting on the Vine Street Expressway, and will design upgrades as required. Special attention will be given to replacing existing mercury vapor lighting with high pressure sodium lighting systems. Under-bridge lighting details will be included on the Final Structure Plans, as discussed in Task 7.0, Final Structure Plans. Design of final Sign Lighting Plans will be included in the efforts for Task 19.0, Signing and Sign Lighting Plans.

Ammann & Whitney will coordinate and attend a pre-design meeting with the Central Office Highway Lighting Section and the Streets Department to review and establish specific design criteria prior to beginning detailed plan development.

Final plans will be submitted to the Highway Lighting Division and Streets Department for approval prior to inclusion of the plans in the PS&E package.

Task 7 - 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:

2.10.13
Incorporate additional information (as applicable) such as existing and proposed ground lines in the vicinity of the structure, approach guide rail data, existing structure layout, point of minimum vertical clearance, horizontal clearances, and utilities.

Prepare plans for the superstructure replacement of 20th Street and Ben Franklin Parkway over I-676.

This task also includes the closure of the gap between the Ben Franklin Parkway spans and the Free Library spans.

Approach:

2.10.13
Pennoni will prepare the final structure plans for the Ben Franklin Parkway (BFP) / 20th Street Bridge. Final structure design will follow the guidelines in Design Manual Part 4. The design constraints and criteria contained within the approved TS&L plans and recommendations will be incorporated into the final bridge design. In addition, the following design criteria / methodologies will be used:

a) AASHTO LRFD Bridge Design Specifications, 3rd Edition 2004, U.S. units, as supplemented by the Department's Design Manual Part 4, September 2007 Edition.

b) AASHTO Standard Specifications for Highway Bridges, 15th Edition, 1992, and Interim Specifications 1993 and 1994 (existing abutment analysis).

c) A refined analysis utilizing the computer program STAAD and long hand calculations will be completed to finalize the superstructure design carrying the BFP travel lanes over the superstructure at a 35 degree skew.

d) The structure will be designed for PHL-93 loading, P-82 permit load, H15-44 Special Live Load, Pedestrian and/or Landscape loads, whichever governs.

e) We will comply with seismic analysis requirements for Design Manual Part 4 and AASHTO LRFD Bridge Design Specifications. The project

structures will be designed in accordance with Seismic Zone 2 as specified by Design Manual Part 4, D-3.10.2.

f) We will use the LRFD Design Method to determine the projected inventory and operating ratings for the structures as indicated in Design Manual, Part 4 (Table 1.8.3 (A)).

We will determine the type of aesthetic treatments required, based on discussions with the Department and the project stakeholders, and incorporate these details into the Final Structure Plan Submission.

The Final Structure Plan Submission will include the following items:

a) Complete final engineering design, including seismic criteria for the replacement structure based upon the TS&L plans and recommendations approved by the Department and the Streets Department.

b) Quantity and cost estimates for each structure, with consideration given to project-specific constraints, including construction phasing requirements, access to the project site, and constructability.

c) Standard special provisions and project specific special provisions for excavation, construction phasing, and items not covered by Department specifications. Special provisions and pay items will also be included for design alternate bidding.

d) A final submission in compliance with the guidelines outlined in Design Manual Part 4, including final structure plans, construction documents, special provisions, pay items, quantity estimates, cost estimates, design calculations and QA/QC forms will be made to the Department and, the Streets Department. We will attend any bridge design review meetings requested by the Department and/or the Streets Department. Meeting minutes will be generated which document the discussion items and required plan changes (if any).

The superstructure design and substructure retrofitting for the enclosure of Shakespeare Park (currently open between the BFP / 20th Street Bridge and the Free Library Bridge) is included in the Part 6 Scope of Work.

Vector with assistance from Pennoni will provide the final corrosion mitigation / protection design services for the existing BFP / 20th Street Bridge abutments. The design of the corrosion mitigation / protection system will be based on the results of the Preliminary Engineering Corrosion Evaluation prepared by Vector in February, 2011. The final corrosion mitigation / protection system(s) will be selected based on input from the District and designed with the goal of extending the service life of these abutments through effective corrosion mitigation. The following work will be completed by Vector.

• Select applicable corrosion mitigation/protection system for each abutment.

• Obtain pre-approval for recommended system prior to working on the design.

• Prepare written specifications to cover any of the following sections where applicable:
o Description of System
o Installer Qualifications
o Materials and Equipment Requirements
o Installation Procedures

o Pre- and Post-Installation Testing
o System Operation and Maintenance
o Criteria for Termination of the ECE Treatment
o Dismantlement and Disposal of the System
o Post Treatment Cleaning and Patching of Concrete
o Surface Treatment of Concrete
o Documentation, QA/QC

• Prepare working drawings specific for each abutment.

• Develop Bill of Quantities for Bid Items.

• Provide cost estimates for each abutment based on estimated time, direct and other costs.

• Assist with answers on questions regarding incidental work.

Task 8 - 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:

2.10.14
This will be a continuation of work performed during the Preliminary Design Phase. A Detour Plan where applicable will be prepared during the Final Design Phase. This activity will include a separate plan and written narrative. All signs will be represented with symbols. The plan will be completed in compliance with Publication 213.
Coordinate/design placement of temporary traffic signals to facilitate traffic during construction activities.

Approach:

2.10.14
This task is a continuation of the efforts, plan preparation, and coordination performed in the Preliminary Engineering part of this Agreement. Pennoni will continue to develop the final Traffic Control Plan in coordination with the District Traffic Unit, the Streets Department, and project stakeholders, along with input gained through various project reviews such as the Design Field View Meeting, the project Value Engineering Review, the project Constructability Review, and the Final Design Office Meeting.

It is anticipated that Winter Street, Ben Franklin Parkway and 20th Street will be constructed with staged construction. We currently anticipate that up to 5 stages will be used. For operations requiring closure of SR 676, traffic will be detoured on the local road network as developed during

preliminary engineering. In addition, short term lane closure plans will be developed for SR 676.

Pennoni will prepare Traffic Control Plans showing required signs, signals, temporary pavement markings, and other details for review and approval by the Department. These plans will include detour plans and other construction staging details as required. In preparing the Traffic Control Plans, Pennoni will adhere to all applicable provisions of Publication 213 - Work Zone Traffic Control and the Manual on Uniform Traffic Control Devices (MUTCD). The Traffic Control Plan will show required stages for review and approval by the Department. Draft Contract Special Provisions for Maintenance and Protection of Traffic, as well as Traffic Control Plan items, will be included in each submission for review and comment.

Pennoni will attend one review meeting with the Traffic Unit and the Streets Department during Final Design. Comments from these reviews will be documented via meeting minutes prepared by Pennoni.

The Final Traffic Control Plans will include index/notes sheets, tabulation of quantities sheet(s), advance signing sheets, traffic control details sheet, detour plan sheets/details, and detail sheets for each bridge requiring staged construction. A written narrative, which encapsulates the Traffic Control Plan details and Special Provisions, will be included with each Traffic Control Plan submission. The narrative will be modified as required during the development and refinement of the Traffic Control Plan. Detailed staged construction plans are anticipated for the following bridges:

Pennoni anticipates that 13 sheets will be required to show the staging plans for the 20th Street Bridge, Winter Street and the Ben Franklin Parkway. Pennoni anticipates that up to 18 sheets will be required to show I-676 advanced warning signage, I-676 detour plans, I-676 short term lane closure plans and traffic control details and quantities for this part.

Pennoni will update the Traffic Management Plan developed during preliminary engineering. The Traffic Management Plan will identify the bridges to be designed and constructed under Final Design Parts 4-8 and will be updated based on the District's bid schedule for these projects.

It is likely that changes in traffic patterns as a result of the phased construction and the night time detours will affect the operation of the existing signals along the detour route. As part of our Traffic Control Plan development, we will investigate the operations of the existing signals and recommend possible modifications to signal timings to maximize the efficiency of the existing signals. For the purpose of this proposal we anticipate up to 10 retiming's will be required and that signal plans will not be required for the 10 intersections where retiming is proposed.

Pennoni will prepare a Temporary Traffic Signal Plan in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

Pennoni will develop Temporary Signal Plans for intersections identified in Preliminary Engineering. Temporary Signal Plans are anticipated for the 3 stages of construction impacting the signals at the 20th and Ben Franklin Parkway intersection.

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).

- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

The following task will be completed by the Pennoni Team for temporary traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Task 9 - 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:

2.10.15

Provide required plans and information for all signals impacted by the project. This includes signals adjacent to the project and any intersections designated along detour routes or Traffic Management Plan initiatives.

Approach:

2.10.15
The Pennoni Team will prepare final signal construction plans for two (2) signalized intersections within the project limits, in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

A communications plan will be prepared for the interconnection of the following traffic signals: Twenty-first (21th) Street/Ben Franklin Parkway, Twentieth (20th) Street/ Ben Franklin Parkway, Nineteenth (19th) Street/Vine Street and Eighteenth Street/Vine Street. The plan will show the connection details for interconnection equipment to the traffic signal controllers and/or traffic control center. If fiber optic cable is used to interconnect the signals, the communications plan will detail the color coded fiber strands to be connected to the modems and identify the spare strands in accordance with District and City standards.

A systems plan will be prepared for the traffic signal system on the Ben Franklin Parkway from Eakins Oval to 20th Street extending on Vine Street westbound to 16th Street and Vine Street eastbound to 16th Street. The systems plan will include a network coordination chart identifying the coordination scenarios and the signal offsets for each of the individual traffic signals and referenced on the traffic signal plan sheets.

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

For the purpose of this proposal, the Pennoni Team assumes that the signals at 21st and Ben Franklin Parkway will require upgrades to existing signal hardware, while the signals at 20th Street and the Benjamin Franklin Parkway will require complete replacement of the signal hardware.

Special Provisions will 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 will be submitted with the Traffic Signal Plan as a separate entity.

Full-size drawings of the traffic signal construction plans will be submitted to the District Traffic Engineer and the Streets Department at the completion of the 60% and 90% project completion levels for review and comment. The Pennoni Team will schedule and attend one meeting with the District Traffic Engineer and/or Streets Department to discuss the review comments before advancing the design. Copies of the Special Provisions will be submitted at the 90% project completion level.

The Pennoni Team will prepare Traffic Signal Permit plans for the two (2) signalized intersections by modifying the Traffic Signal Construction

Plans to reflect the final permitted operation of the traffic signal. Notes specific to the signal construction will be removed and notes identifying the Permittee's responsibilities will be added along with a permit issue block to the upper right hand corner of the plan sheet. As directed, the Traffic Signal Permit Plans will be submitted to the Streets Department following construction.

The following task will be completed by the Pennoni Team for final traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Signal design for temporary traffic signals associated with detour routes will be completed as part of Task 8.0, Traffic Control Plan

Task 10 - 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

Department Details:

2.10.16
All traffic related signs will be incorporated into the Pavement Marking Plan.

Approach:

2.10.16
The Pennoni Team will continue on the work completed in preliminary engineering in preparing the final pavement marking and signing plan for this project. The plans will follow the preliminary design that was completed as part of the Design Field View Submission. The plans will be developed in accordance with Design Manual Part 3, the Manual on Uniform Traffic Control Devices, Traffic Standards (TC-7600 Series), and Publication 68 with guidance from the Pavement Marking Handbook.

The plans will consists of a title sheet with general notes, tabulation sheets, and plan sheets. The plan sheets will show proposed pavement markings, sign locations, sign types and messages. The final submission will include:
• General Plans
• Special Details
• Quantities
• Specifications

Pennoni will review the final plans with the Streets Department prior to submission to the Department. Pennoni will coordinate with the Philadelphia Parking Authority regarding parking regulations and associated signage. Pennoni anticipates that the Parking Authority will provide the details to any non-standard parking signs. Efforts will be made to retain existing signage where possible. Special sign details will be incorporated into the plans as required.

Task 11 - 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.

Scope:

2.10.2 - Roadway
Needs completed.

Detail Task 1 - Roadway

Department Details:

2.10.2.3
Remove item 1. Item 2 is only necessary where approach work involves the reconstruction of an adjacent intersection.

Plans will be at a scale of 1"=25'.

Approach:

2.10.2 & 2.10.2.3
Pennoni Team will complete the final design for 20th Street, Ben Franklin Parkway (from 21st Street to Logan Circle), and the 2000 block of Winter Street. We will complete the design and prepare deliverables for the project's PS&E package, including final roadway plans, specifications, engineer's estimate, and pre-bid schedule. Plans and documents will be prepared in accordance with Design Manual Parts 1A, 2, 3, 4, and 5, and applicable Department standard drawings. The construction plans will follow the formats and procedures outlined in Design Manual Part 3.

Details for each component in the PS&E package are described in our following approach for each subtask.

Ammann & Whitney will finalize the drainage design developed in Preliminary Engineering. Since the drainage is on Ben Franklin Parkway is expected to be limited to the replacement of existing facilities and/or minor improvements, the final roadway plan will provide the appropriate information for the replacement of the inlets, including excavation, invert depth elevations, etc. Ammann & Whitney will provide the drainage design for the relocated Winter Street.

Hydraulic design computations will be prepared using appropriate methodologies for all roadway drainage structures. The replacement inlets will be checked to confirm that their capacity is adequate for the 10-year storm flow, and that downstream drainage capacity is sufficient for the proposed design. The proposed drainage design will be closely coordinated with our Erosion and Sedimentation Control design.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review. This submission will include design plans as well as Checklist B as described in PWD's Stormwater Management Manual. Due to the nature of project, zoning and building permits are not anticipated. In accordance with PWD policies and procedures for roadway maintenance and rehabilitation projects, therefore we will apply for a waiver from meeting the PWD Stormwater Management Regulations. A Post-Construction Stormwater Management Plan is not anticipated.

Due to the limited amount of full depth roadway construction, a simplified method of pavement design may be appropriate for this project. Pennoni will verify limits of work, existing pavement types and anticipated pavement section with the District and Streets Department prior to submission of the final pavement design documents. Pennoni anticipates that the standard Philadelphia pavement section will be utilized for the limited full depth roadway reconstruction. Pennoni will submit a pavement design letter and form D-4332A to the Pavement Design Unit for approval. Pavement items will be clearly indicated on the typical sections included with the final roadway plans.

Pennoni will be responsible for the construction plan set for part 5.

The final PS&E package will include the preparation of the following roadway construction documents:
Typical Section Sheet - includes the typical sections developed in Preliminary Engineering. The typical sections will be updated with proposed pavement types and depths. The typical section sheets will be prepared as outlined in Design Manual Part 3.

Tabulation of Quantities Sheets - will be prepared in accordance with the guidelines specified in Design Manual Part 3. The sheets will be formatted in accordance with the sample included in Chapter 15 of Design Manual Part 3.

Plan and Profile Sheets - include roadway construction plans and profiles. The detail sheets will be prepared at a horizontal scale of 1"=25' and a vertical scale of 1"=5'. These drawings will show existing and proposed features including topography, horizontal geometry, bench marks,

references, legal right-of-way, construction easements, utilities, existing and proposed structural data, and other required design information.

ADA ramp design sheets – includes an intersection plan, spot elevation plan and slope and dimension plan for each impacted ramp. Plans will be prepared on 11x17 sheets and organized in a three ring binder with a cover letter. Additionally a CS-4401 form will be filled out for each ramp and if required, a TIF form will be submitted for ramps not meeting the current criteria. Pennoni will submit the ADA design package to the PennDOT and the Philadelphia Streets Department ADA reviewers. The approved ADA designs will be incorporated into the detail sheets of the construction set.

The submitted set of final roadway plans will include the "also" plans, including Structure Plans, Cross Sections, Erosion and Sedimentation Control Plans, Traffic Control Plans, and Pavement Marking and Signing Plans. The final plan set submission will also include any incorporated and approved utility relocation plans.

The horizontal geometry for the relocated Winter Street and the geometric changes to the Ben Franklin Parkway and 20th Street intersection will be further refined during final design. The minor adjustments to the vertical profiles developed during preliminary engineering will be incorporated in the final design detail sheets. Due to the relative flatness and size of the Ben Franklin Parkway and 20th Street, a detailed spot grading plan of the intersection will be developed.

Before final plans are completed, an in-house plan review will be performed. This review will check the plans for presentation details, plan clarity, item number and special provision references, and overall quality of the plan from a contractor's viewpoint. Any major changes to the plans that result from the plan review will be reviewed with the District prior to final submission.

The Pennoni Team will prepare all submissions for, and attend, the Final Design Office Meeting. The submission will include all plans, special provisions, preliminary special provisions, and construction cost estimate. Pennoni will prepare minutes of the meeting, documenting discussion points and required revisions to the design package.

All special provisions will be reviewed as part of the constructability and Final Design Office Meeting reviews. Every effort will be made to use pre-approved provision language to simplify this effort. Special provisions unique to utilities and the City of Philadelphia will be reviewed with the affected agency to ensure conformance with agency criteria.

Proprietary items, if any, will be identified as soon as possible in Final Design. Appropriate documentation and justification for the use of proprietary items in the bid package will submitted to the Department for review and approval.

Pennoni will prepare plans, profiles, typical sections, and cost estimate for the Final Design Field View. Pennoni will prepare for the meeting at the approximate 35% completion stage of Final Design. Pennoni will attend the meeting with appropriate personnel versed in specific project details. Meeting minutes will be generated which document discussion points and required revisions to the design package.

Task 12 - Section 4(f) Mitigation Plan

Objective:

2.10.23 - Section 4(f) Mitigation Plan
This task is the development of the Section 4(f) mitigation plan.

Scope:

2.10.23 - Section 4(f) Mitigation Plan

1. Develop a mitigation plan that identifies any mitigation measures committed to in the Final Section 4(f) Evaluation and NEPA document for Section 4(f) resources.

2. Submit plan to PennDOT, PHMC and possibly FHWA for review. Revise plan if necessary.

3. Include this plan in the final design plans, specifications and estimates package to ensure that the measures are carried out during construction.

Detail Task 1 - Section 4(f) Mitigation Plan

Department Details:

2.10.23
Provide all services to complete 4(f) Mitigation as required through the environmental documentation phase.

Approach:

2.10.23
ASC will assist Pennoni in the development of a Section 4(f) mitigation plan by identifying any mitigation measures committed to in the Section 4(f) documentation. ASC will assist Pennoni in any coordination efforts required for Section 4(f). These mitigation measures will be identified on the Final Design plans and carried out during construction, as required.

Task 13 - 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:

2.10.25

Provide all required permits and approvals to advance to PS&E.

Approach:

2.10.25
Ammann & Whitney will prepare an Erosion and Sedimentation Control Plan and narrative for this project in accordance with Design Manual, Part 2, Chapter 13, and the guidelines set forth in the Pennsylvania Department of Environmental Protection's publication Erosion and Sedimentation (E&S) Control Program Manual, dated March 2000, as well as any revisions thereto. We will develop, establish, and maintain stringent temporary and permanent controls to restrict sediment within the project's excavated areas. The plans and narrative will be prepared with specific and positive safeguards, to protect adjacent properties from pollution by transported sediment. Both temporary as well as permanent erosion and sedimentation controls will be developed. Due to the type of construction, it is anticipated that the E&S measures will be limited to inlet protection, silt fence, seeding & mulching, or similar facilities. E&S controls that require additional right-of-way, such as sediment traps or sediment basins, are not anticipated.

Ammann & Whitney will draw upon previous experience with Erosion and Sedimentation Control design for City of Philadelphia projects in developing the final plans. We will coordinate with the Philadelphia Water Department (PWD) during final plan development. It is anticipated that the project will disturb more than one acre and an individual NPDES Permit will be required. However, a post-construction stormwater management plan is not anticipated.

We will submit the final erosion and sedimentation control plan to the District for their review and approval. Upon approval by the District, the plans and narrative will be forwarded to the Philadelphia Water Department review and approval.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review as described in 2.10.2.

Approved erosion control items will be incorporated into the final construction plans and special provisions, as required.

Task 14 - 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.

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."

Detail Task 1 - Assemble Final Project Documents for Contract Management

Department Details:

2.10.29
Use PENNDOT ECMS system for bid package preparation. Assist District personnel in the preparation of any addendum required for the project. Prepare bid justification documents as required.

Approach:

2.10.29
The Pennoni Team will assemble the project's bid package using the Department's ECMS system. Pennoni will thoroughly check the plans, specifications, construction cost estimates, and the project schedule for accuracy and completeness prior to submission. Pennoni will ensure that all required approvals, permits, clearances, etc. have been secured/approved by the appropriate authorities. Prior to submission, Pennoni will complete the Project Development Checklist and will produce copies of the required documents to the District for linking into ECMS.

Once the bid package is advertised, Pennoni will provide answers to bidder's questions via the ECMS system.

Pennoni will attend the pre-bid meeting at the direction of the District. Pennoni Team members with the requisite project experience will attend the meeting in order to appropriately answer questions about the bid package. Meeting minutes will be generated which document discussion points and required revisions to the design package.

If required by the District, Pennoni will create and submit addendums to the project's Bid Package. As required, changes to plans, quantities, or special provisions will be made and the project documents updated accordingly. Pennoni will coordinate this effort with the District's Project Manager and the District Contract Management Unit.

Pennoni's PS&E package will include a critical-path project construction schedule in Welcom Open Plan format. The schedule will be included in the project's constructability review for review and comment by the District Construction Unit prior to inclusion in the bid package. Both the full-logic schedule and abbreviated critical path version will be included in the submission.

Draft special provisions will be submitted to the District for review prior to the PS&E submission. The special provisions will be written in standard PennDOT format, and will be cross-checked against existing Department and District Standard Special Provisions for consistency. Items specific to City of Philadelphia construction will be reviewed with the appropriate City agency prior to inclusion in the PS&E package.

A detailed construction cost estimate will be provided with both the constructability review and the PS&E package. The estimate will provide an

estimated unit cost for each item in the proposal based on historical bid data from ECMS. Items not available in ECMS will be estimated by Pennoni using past experience in other projects and by obtaining price information from reliable contractor and supplier sources. Pennoni will provide backup data for the estimated unit costs as requested.

Pennoni will utilize the Department's ECMS system for preparation and submission of the bid package and related documents. Pennoni will provide copies and/or electronic scans of project documents for attachment to the Project Development Checklist, and will assist the District Contract Management Unit with preparation of the final bid package for advertisement.

Task 15 - 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:

2.10.3
Provide field survey to update information which may have changed since the preliminary survey as required in Publication 122M at the required intervals.

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

Scope Deliverables:
1. Recover horizontal control and vertical datum.
2. Stake final alignment.
3. Provide line book in Form D-428.
4.Establish vertical control network by setting benchmarks within project area by differential leveling.
5. Record level loops in Form D-428 field book.
6. Benchmarks set will be no greater than one half mile apart and will be set on permanent objects not subject to movement.
7. Benchmarks will be set on both sides of proposed structures and/or structures to be replaced.
8. Stake required right-of-way lines, legal right-of-way lines, temporary construction easements, slope easements, etc.

Approach:

2.10.3
Chilton Engineering, Inc. (Chilton) will perform the incidental surveys as deemed necessary to supplement the original survey performed for this project during Preliminary Design.

Chilton will perform an updated property owner search, and perform supplemental roadway and structural surveys as necessary. Survey work will be performed in accordance with the latest edition of the Surveying and Mapping Manual and any relevant Strike-Off Letters. All field surveys will be performed with modern total station instruments equipped with electronic data collectors or High Definition Survey (HDS) Scanning equipment.. As part of the survey process, standard field books will be maintained according to District requirements, including indexing.

Survey Control: Existing horizontal and vertical survey control established during Preliminary Design will be recovered. Additional survey control will be established as necessary. All survey data that is obtained during our field activities will be referenced to this control network. A final survey report will be prepared.

Traffic Control Plan for Field Activities: Any traffic control and protection of the traveling public measures necessary for the required field survey tasks will be in conformance with PennDOT Publication 213, Work Zone Traffic Control. The plan will be submitted to the District Traffic Unit for approval prior to implementation. All major traffic control devices required for major work zone traffic control measures will be furnished, erected and maintained by a firm specializing in these measures. Lane shifts on ramps and/or partial closures on side roads will be limited to off peak hours. We will advise the District's Press Office prior to any lane closures and/or encroachments.

Field Edit of Existing Base Plan Mapping: Chilton will field review the existing base plan mapping surveyed during Preliminary Design to identify any changes to the topographic features within the project limits.

Topographic Survey: Chilton will perform required topographic surveys to provide more detail or extend plan coverage as directed by Pennoni. Information gathered will be plotted on the existing base plan mapping and all additional features identified and clearly labeled.

The digital terrain model of the project will be updated to incorporate the field review. This model will be updated, with contours calculated and shown on the plan at one (1) foot intervals.

Roadway Cross Sections: We will update cross section data as deemed necessary. Measurements will be exacted to the nearest one-hundredth (0.01) of a foot on hard surfaces and pavements and to the nearest one-tenth (0.1) of a foot on ground shots.

Structural Survey: Field survey edits will be performed at the existing bridge and overhead structure sites as directed by Pennoni. Clearances

measurements will be updated at the fascia beam on both sides of each bridge if required.

Stakeout Roadway and Structure Core Boring Hole Locations. If necessary, we will stakeout any additional proposed roadway core boring hole locations. The boring locations will be staked and existing ground elevations will be obtained.

Stakeout Proposed Right-of-Way Easement or Acquisition Parcels. If necessary, we will stakeout the proposed corners/lines of any right-of-way takes or easements for property owner review. Each stake will be identified by ribbon color and labeling of Sta./Offset and point description.

Using the approved final roadway geometry layout as provided by Pennoni, Chilton's surveyors will perform the field stakeout of the proposed construction baselines when directed by Pennoni. Because of the volume of traffic in this area the use of offset base lines may be used. The offset base lines will be set in the shoulder. The staking of the actual baseline or use of offset lines will be determined after review with the Department and Pennoni. Actual control points such as PC's, PT's and PI's will be either drill hole (in concrete), PK nail (in asphalt) or iron pin (in soil).

The construction baseline or offset baseline points will be referenced after they have been set. The references will be located outside the area of proposed construction. References will be set meeting applicable Department standards, where possible. At a minimum, Chilton will reference all horizontal control points to three fixed objects located outside the limits of proposed construction with both angular and distance ties provided, showing orientation to the baseline. Reference sketches will be prepared for these points, to prepare detailed control reference circles on plans.

Task 16 - 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:

2.10.4
Develop Cross Sections as required for the project.

Approach:

2.10.4
Pennoni will prepare the final cross sections following the procedures outlined in Design Manual Part 3. The sections will be prepared at a horizontal and vertical scale of 1"=5'. Proposed template areas and the limits of earthwork will also be shown on the cross sections. The earthwork quantities for these template areas will be computed and tabulated as part of the final PS&E package.

Cross sections are anticipated for 20th Street, the Ben Franklin Parkway from 21st Street to Logan Circle and the 2000 block of Winter Street.

Roadway cross sections will be prepared at 25 foot intervals and at locations of all major terrain features. Since the roadway reconstruction is expected to be limited, the roadway sections will extend the area necessary to facilitate the reconstruction of the bridge approaches and any intersection/street reconstruction as appropriate. The existing information outlined in Preliminary Engineering will be included on the final cross sections as will the following proposed information:

• Proposed roadway template, including pavement depth
• Construction and survey baselines
• Limits of earthwork & curbing with computations
• Proposed utilities (if applicable)
• Existing and proposed drainage facilities

The cross sections will also be prepared to assist in determining limits of involvement at driveways and adjacent street intersections. The final roadway cross sections will be used to assist in the refinement of the roadway line and grade, in addition to the evaluation of the proposed improvements.

Existing and proposed ground lines will be generated utilizing the proposed alignment information and three-dimensional electronic imaging files. Existing ground lines at pavement tie-in points and along those roadways requiring surveyed cross sections will be generated using field survey data. The proposed roadway template will be added to the final roadway cross sections.

Drainage features, including pipes, inlets, and manholes, will be superimposed on the existing cross section. Existing and relocated utilities will also be included on the cross sections.

Task 17 - 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:

2.10.5
The consultant will prepare a separate right of way plan as described in Paragraph A and in accordance with all applicable Design Manuals and PA D.O.T. Strike-off Letter 430-98-26. Present no more than two plats per sheet. Verification of ownership will be rechecked just prior to the final submission.

Approach:

2.10.5
Chilton Engineering, Inc. with assistance from Pennoni will prepare the project's Final Right-of-Way Plans.

The Final Right-of-Way Plans will be prepared in accordance with Design Manual Part 3, Chapter 3, and appropriate Strike-Off Letters. As the project is located within the City of Philadelphia, the Right-of-Way Plans will also meet the requirements of the City's Board of View.

Chilton will research public records to update ownership and location of properties adjacent to the project. Chilton will conduct research of the public records at the City, as necessary, and will utilize electronic search measures where feasible.

Chilton will obtain copies of deeds, adverses, descriptions of easements, any available development plans, tax maps, etc. that have been revised to confirm the Department's existing right-of-way. The Department's record retention unit will be contacted and relevant plans requested. Private and public right-of-way and easements will be indicated and cross referenced to the appropriate legal document.

Chilton will utilize the information described above to update the mosaic of all properties.

Final Right-of-Way Plans will be developed by Chilton to show the relationship of the proposed construction to the existing and required Right-of-Way and property details. The plans will show legal and required Right-of-Way and easements including existing and relocated utilities. The final plans will show all data necessary to prepare appraisals and to acquire the properties. Topographic features that will affect the value of the takes will be shown including trees, shrubbery, drainage features, buildings, signs, drainage, fences, and other structures.

The need for Temporary Construction Easements and/or Drainage Easements will be determined. Pennoni will coordinate the need for and the location of easement areas with Chilton during Final Right-of-Way Plan development.

Final Right-of-Way Plans will be submitted to the Streets Department and the District for review. Chilton and Pennoni will attend a plan review meeting with the Department's Field Liaison Engineer as required. Revisions to the plan will be made prior to final submission for acquisition.

Copies of record plans, tax maps, deeds, lease agreements, private/public right documents, and transcribing sheets will be submitted to the District as requested.

Chilton will prepare the Right-of-Way property plats by using the Right-of-Way plans prepared under Task 17.0 as the basis. The plans will show all

utilities, trees, shrubbery, buildings and other structures and other features that may impact property values. The metes and bounds of properties, easements, and Right-of-Way lines will be shown. The location of private water supplies and sanitary sewer facilities that may be affected by the proposed construction will be identified.

Task 18 - Utility Engineering

Objective:

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

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.

Detail Task 1 - Utility Engineering

Department Details:

2.9.1
Build upon coordination effort that has taken place during the Preliminary Engineering Phase of this project.

Approach:

2.10.8 & 2.9.1
Chilton with assistance from Pennoni will coordinate the utility relocations required for the project.

The PA ONE-CALL will be made and existing utility information requested. This information will be verified and checked against information received and plotted during the preliminary design phase.

Each affected utility will be contacted to determine their requirements and methods of relocation. Determinations will be made whether utilities will be relocated by the utility, by the contractor as incorporated work, or by a combination of both.

Chilton will verify whether all formal requests for agreement permits and occupancy applications are in accordance with the policies and procedures of Design Manual Part 5.

Chilton will coordinate with the Department and Pennoni to schedule an Initial Utility Design Stage Meeting to introduce the project goals, schedules, and targeted utility clearance dates. Chilton will keep each utility informed of all design changes that could impact existing or planned utilities.

As the final design plans, profiles and cross sections for the project are generated, copies will be forwarded to each utility company affected within the project limits. The utility will be asked to verify their facilities, identify any need for additional Right-of-Way or easements, and identify any potential conflicts. Each utility will receive the appropriate form for submission of bridge attachment requests. As meetings are scheduled to resolve utility conflicts, we will provide personnel familiar with project to attend and coordinate.

Chilton will maintain continuous contact with each utility company representative throughout the life of the project. We will schedule the Final Utility Design Stage Meeting with the Pennoni Team, the Department, the Streets Department, and each utility representative. The purpose of the meeting will be to resolve all outstanding issues, reinforce the utility clearance target dates, and introduce the construction schedule. Chilton will send periodic project status reports to each utility to keep all involved with the progress of utility conflict resolutions.

Upon approaching the scheduled PS&E submission, Chilton will schedule a utility meeting to review all utility issues and resolutions. At this meeting a task schedule will be developed for utility work to be completed prior to construction. This meeting will also be used to identify any outstanding design issues.

Chilton will work with the utility providers to complete and file all required forms and permits including Form D-419, Utility Clearance and Form D4181X for bridge occupancy where applicable. This work will be coordinated with the District Utility Unit.

Chilton will invite all utility representatives to attend all pre-bid, pre-construction and construction status meetings.

Task 19 - Signing and Sign Lighting Plan

Objective:

2.10.17 - Signing and Sign Lighting Plan
This task is the development of the signing & sign lighting plan.

Scope:

2.10.17 - Signing and Sign Lighting 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.

The final submission will include:
- A Title Sheet
- Index Sheet
- An Index-Location Map
- Tabulation of Quantities Sheet(s)
- Summary of Quantities (used only if signing plan is a stand alone plan)

- Detail Sheets
- Specifications

Type I Detail Sheets (general plans) 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.

Type II Detail Sheet includes sign structure details. These plans include:
- A location plan
- Plan, elevation and end view of the sign structure
- Details
- Sign schematic
- Sections and steel sizes for Type A signs
- Estimated quantities
- Design criteria
- General notes.

Type III Detail Sheet consists of sign fabrication information and includes:
- Length of sign
- Height of sign
- Sign legend details including letter spacing, letter size and series, and sign color)
- Size of border and radii of corners
- Sign lighting design
- Quantities

Refer to TC-8701A for sign lighting requirements. In general, all overhead signs that do not have a 800' tangent sight distance require sign lighting. Verify the requirements with the District. Prepare the sign lighting plans in accordance with Standard Drawing TC-8715 and Publication 408, Section 920 requirements. Submit sign lighting plans to Central Office, Highway Lighting Unit for approval prior to the release of the final sign lighting plans to the District for PS&E Development.

Detail Task 1 - Signing and Sign Lighting Plan

Department Details:

2.10.17
Provide all required plans and specifications as identified above.

Approach:

2.10.17
Ammann & Whitney with assistance from Pennoni will prepare the plans for the sign structures at the following locations:

Sign Structure #5 - STA 47+87.57

All work will be performed in accordance with the Department's Scope of Work.

Ammann & Whitney will complete the Final Signing and Sign Lighting Plans for the project, in accordance with applicable TC-8700 standards. This work will be a continuation of the work completed in Preliminary Engineering.

Type I, Type II, and Type III Sheets will be prepared as required in the Scope of Work for each sign. Details on sign sizes, lettering, material, and spacing will be replicated from the original plans, if available, with modifications as required. Sign Lighting Plans will be submitted to Central Office, Highway Lighting Unit for approval prior to submission to the District Traffic Unit for final approval.

As part of this task, Ammann & Whitney will complete plans for the relocation of the signs that are currently mounted to the superstructure- of the bridges. Duplication of sign movements will be eliminated to the best extent possible; with a focus on relocating signs to their permanent position in the first stage of each bridge's reconstruction.

Task 20 - Roadside Development Plan

Objective:

2.10.27 - Roadside Development Plan
This task is the development of the roadside development plan.

Scope:

2.10.27 - Roadside Development Plan
These include Wetland Mitigation Planting Plans, Wildlife Habitat Mitigation Planting Plans, Maintenance Yard or Stockpile Area Screening Plans or any other plans requiring landscape design and plans preparation.

Where no roadway construction is involved, the plans are an entity in themselves. Where roadside development is a part of highway construction, the quantities and plans are numbered in the Construction Plans and placed immediately after the Contour Grading and Drainage Plans.

Where separate plans are required, the Roadside Development Plan includes:
1. Title Sheet
2. Index Sheet
3. Typical Section Sheet
4. Summary and Tabulation of Quantities Sheet
5. Detail Sheets (required for all tree, shrub and vine plantings)

Where plans are a part of the highway construction, it is not necessary to prepare a separate Title Sheet, Index Sheet, Typical Section Sheet or Summary and Tabulation of Quantities Sheet.

Prepare plans in accordance with Publication 14M, Design Manual Part 3.

Detail Task 1 - Roadside Development Plan

Department Details:

2.10.27

Provide all plans and specifications as detailed above.

Approach:

2.10.27
LRSLA with assistance from Pennoni will develop the landscape design approved in Preliminary Engineering. The area will include paved pedestrian zones and planted zones adjacent to the roadway improvements. These areas will include Winter Street, the plaza on Winter Street north of the Franklin Institute, and the south side and two (2) central medians of the 2000 block of the Benjamin Franklin Parkway. The plans will include Landscape Demolition Plans (including existing tree and soil protection zones), Landscape Materials Plans, Landscape Layout Plans, Landscape Grading Plans, Landscape Planting Plans and Irrigation plans. Landscape Details will include pedestrian paving sections and plan pattern details, site furnishings, and planting sections and detail plans. Materials and details will follow the Fairmount Park Commission Benjamin Franklin Parkway Design Guidelines Manual, approved and adopted by FPC, and in accordance with Publication 14M, Design Manual Part 3. Pennoni will develop the details necessary for the connection of the irrigation system to the existing water vault or existing irrigation system on the Ben Franklin Parkway.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
Pennoni Associates Incorporated	No	
Ammann & Whitney Pennsylvania, Inc.	No	Pennoni Associates Incorporated
ASC Group, Inc.	Yes	Pennoni Associates Incorporated
Chilton Engineering, Inc.	Yes	Pennoni Associates Incorporated
Lager Raabe Skafte Landscape Architects,Inc.	Yes	Pennoni Associates Incorporated
Vector Corrosion Technologies, Inc.	No	Pennoni Associates Incorporated

Attachments

No records found.

Part 6 - Final Design - Free Library Pedestrian Bridge

Description

Final Design - Free Library Pedestrian 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.

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.

Detail Task 1 - Project Management/Administration

Department Details:

2.1.1
The consultant shall provide construction cost updates as required by the Department.
The consultant will thoroughly check all design submissions before submitting them to the Department for review.
The Department reviews will be cursory in nature and the consultant will be responsible for design and plan accuracy.
The consultant will be liable for design and plan errors in accordance with 67 PA Code, Chapter 455, Consultant Highway Design Errors.
The consultant will be responsible for DBE progress, and all submissions prepared by the DBE will be submitted through the prime consultant's office. The prime consultant will be responsible for the accuracy and quality of the DBE work.

2.1.1.1
The consultant will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
Assume there will be one (1) design related meeting per month for the duration of the final design phase of the project.

2.1.1.3
The project QC/QA plan is to be provided to the District one (1) month after NTP. Include sub-consultant QC/QA plans as appropriate.

2.1.1.5
The initial project Welcom Plan is to be provided to the District one month after NTP.

Approach:

2.1.1
This task will be a continuation of the project management effort from Preliminary Engineering. Jim Pezzotti will continue to manage the Pennoni Team, including sub-consultants Amman & Whitney Pennsylvania, Inc. (A&W), ASC Group, Inc. (ASC), Chilton Engineering, Inc. (Chilton), Lager Raabe Skafte Landscape Architects, Inc. (LRSLA) and Vector Corrosion Technologies, Inc. (Vector) as well as individual Pennoni discipline leaders. Mr. Pezzotti will continue as the main point of contact with the District and is responsible for the overall coordination of the project team as necessary to deliver a quality project PS&E package to the District by the specified time and within the designated budget.

Mr. Pezzotti will continue to serve as the primary contact with governmental agencies and other project stakeholders. For this project, these stakeholders include various City of Philadelphia agencies (Streets Department, Water Department, Philadelphia Gas Works, Fairmount Park Commission, School District, etc.), various private utility companies (PECO, Verizon, etc.) city emergency service providers, local government (City Council, etc.) and involved community groups.

Mr. Pezzotti will be responsible for ensuring that the Department's standards for invoicing are followed and that invoices are submitted correctly.

Pennoni will prepare a construction cost estimate at the Value Engineering Review, Constructability Review, and PS&E Submission stages of the project, and as required by the Department. Each cost estimate will use the latest standard item bid prices from ECMS, supplemented by additional data and engineering experience as required.

2.1.1.1
As directed by the Department, the Pennoni Team will attend all required project meetings, including public meetings, agency coordination meetings, design review meetings with District personnel, and meetings with City of Philadelphia agencies and project stakeholder groups. Pennoni will prepare agendas and minutes for every meeting, and will prepare handout and/or display materials as appropriate. For purposes of this proposal, a total of twenty-four (24) meetings are anticipated in Final Design (one design-related meeting per month for the duration of the phase).

The Pennoni Team will also attend any task-specific meeting as required, examples of which include meetings with the District Traffic Unit and the Streets Department.

2.1.1.3
Pennoni's commitment to quality includes our Project Specific Quality Assurance Plan. Mr. Pezzotti will develop a Quality Assurance Plan for this project, and will be responsible for overall project quality. Our Quality Assurance Plan will be available for District review and approval within one month from issuance of Notice-to-Proceed for Final Design, and contains a detailed approach to monitor the progress of each project task, including maintenance of project budgets and schedules, project staffing, communications with the District, sub-consultant supervision, plan reviews, quality assurance, and document control. Sub-consultants will submit their own QA/QC plan, which will be checked to ensure a uniform quality control approach for the entire project team.

2.1.1.5
Pennoni will provide an updated project design schedule using Welcom Open Plan and will submit it to the District along with our QA/QC plan within a month of issuance of Notice-to-Proceed for Final Design. The project schedule will be updated with each project status meeting and will be available for review by the Department's Project Manager.

Task 2 - 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 - Coordinate Constructability Review

Department Details:

2.1.2
It is anticipated that a Constructability Review will be required for this project. Provide all materials and services to assure this review is completed appropriately.

Approach:

2.1.2
The Pennoni Team will work with the District in developing and coordinating a constructability review team throughout the project. The Pennoni Team will submit appropriate materials for review by District personnel at various stages of project design in order to avoid costly re-engineering efforts later in the design phase. The constructability review submission will include, at a minimum:
--A full plan set (roadway, structural, traffic control, traffic signal, etc.);
--Estimated items and quantities;
--Construction cost estimate;
--Construction schedule;
--Draft Project Special Provisions
Our proposed design will be reviewed by our in-house constructability review personnel prior to submission to the District as part of our QA/QC procedures.

Pennoni will be available to meet with the District's constructability review team in order to discuss project details and concerns of the review team. One (1) District constructability meeting is assumed for this Final Design Part. Meeting minutes will be prepared to document the review discussion and required changes to the plans.

Task 3 - 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:

2.1.3
The consultant will prepare and distribute to appropriate parties the minutes of all meetings.
Assume there will be one (1) general public meeting/ public officials meeting, four (4) municipal meetings and four (6) project stakeholder meetings.

Approach:

2.1.3
The Pennoni Team will continue Public Involvement efforts from Preliminary Engineering through Final Design. Pennoni will attend all project public involvement activities during the project. Pennoni with assistance from A&W, ASC and LRSLA will prepare for the meetings specified in the Department Details. Three (3) meetings per Part are anticipated to cover the eleven (11) total meetings described in the original Part 2 Department Details. Pennoni will review the requirements for each meeting with the Department prior to the meeting, and will develop agendas, appropriate display materials/handouts, and other materials required for the meeting. Pennoni will also assist the Department in coordinating with meeting attendees as required.

All public meetings will be attended by Pennoni Professional Engineers and qualified professionals with the requisite project knowledge for the meeting agenda. Members of our sub-consultant team will attend meetings as required by the meeting agenda. If required, a "dry run" will be scheduled prior to the public meeting, allowing sufficient time to incorporate any revisions requested by Department staff.

Pennoni will publish meeting minutes from the public meeting(s) and will submit them to the Department within ten (10) working days of the meeting for the Project Manager to review. We will revise the minutes if necessary. Changes to the plans which result from these meetings will be fully documented and incorporated into the plans where applicable.

Task 4 - Value Engineering

Objective:

2.1.4 - Value Engineering
This task involves performing a value engineering review.

Scope:

2.1.4 - Value Engineering
Provide work as detailed by the Department. See Department Detail.

Detail Task 1 - Value Engineering

Department Details:

2.1.4
Prepare necessary documentation, attend and present proposed project for a Department Value Engineering review.
Provide assistance to the District Value Engineering Coordinator in documenting the process and necessary follow-up tasks.

Approach:

2.1.4
Pennoni, A&W and LRSLA will prepare the Value Engineering submission for the project, composed of appropriate plans, specifications, and associated documents for review by the District Value Engineering Review Committee. The submission will be in compliance with the procedures and criteria outlined in Design Manual 1A, Appendix H, and will be coordinated with the District Value Engineering Coordinator. Since the total project is a Federal-Aid project with a construction value greater than $20 million, a full Value Engineering review is anticipated.

Pennoni, A&W and LRSLA will attend the Value Engineering review meeting and will present the project to the team and review project details. One (1) Value Engineering review meeting is assumed for this Final Design Part. Team members with detailed knowledge of specific project details (structural, traffic control, etc.) will attend in order to answer specific technical questions. All proceedings will be documented by Pennoni in order to be included in the final Value Engineering Report. Pennoni will document any changes to the design (and their associated cost savings) that result from the Value Engineering Review.

Task 5 - 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.

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.

Detail Task 1 - Environmental Activities

Department Details:

2.10.1
Identify and incorporate any commitments made during Preliminary Engineering.

2.10.1.3
A re-evaluation of the environmental document will be required prior to the P.S.&E. submission.
Follow Department Policies and Strike-off Letters regarding Due Dilligence and Asbestos documentation.

Approach:

2.10.1 & 2.10.1.3
Depending on the time elapsed, and if any changes to the project occur, ASC will re-evaluate the environmental documentation in Final Design, prior to the PS&E Submission. If necessary, ASC will complete an Environmental Due Diligence (EDD) Phase I Visual Inspection form and appropriate Asbestos Documentation, in accordance with the PennDOT Policies and Strike-Off Letters. ASC will update the Pennsylvania Natural Diversity Inventory (PNDI) and coordinate with the appropriate agencies, as required. ASC will coordinate with Pennoni and the District, as requested, to complete any coordination required for Section 6(f) clearance. ASC assumes attendance at two (2) status/design project meetings associated with this task.

If the project Scope of Work is changed to include improvements in the area of Callowhill Street (17th Street to Broad Street), ASC will incorporate this information into the environmental document or the re-evaluation of the environmental document. At least three (3) National Register Listed buildings are located adjacent to the project area. ASC will coordinate with the District 6-0 Qualified Professional to determine if any cultural resources coordination is required and with the District 6-0 Environmental Unit to determine if additional Section 4(f) coordination is required.

Task 6 - 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:

2.10.12
Investigate condition of existing local street, pedestrian and highway lighting and design lighting elements as required.

Approach:

2.10.12
Highway lighting plans will be developed by Ammann & Whitney with assistance from Pennoni as part of the project's PS&E submission. The Highway Lighting Plans will be developed in accordance with all applicable Department Standards, including Design Manual Parts 2 and 3, and AASHTO's "Roadway Lighting Design Guide".

Ammann & Whitney will coordinate development with this plan with the Central Office Highway Lighting Section. Input on required street lighting

will be obtained from the Streets Department and from stakeholder coordination completed in Preliminary Engineering. Decorative or specific lighting hardware will be considered and included into the plans upon direction from the Department or if the lighting is a condition of the approved project environmental document and/or landscaping plan.

Ammann & Whitney will investigate the adequacy of the existing lighting hardware and lighting pattern for adjacent local streets and under-bridge lighting on the Vine Street Expressway, and will design upgrades as required. Special attention will be given to replacing existing mercury vapor lighting with high pressure sodium lighting systems. Under-bridge lighting details will be included on the Final Structure Plans, as discussed in Task 7.0, Final Structure Plans. Design of final Sign Lighting Plans will be included in the efforts for Task 19.0, Signing and Sign Lighting Plans.

Ammann & Whitney will coordinate and attend a pre-design meeting with the Central Office Highway Lighting Section and the Streets Department to review and establish specific design criteria prior to beginning detailed plan development.

Final plans will be submitted to the Highway Lighting Division and Streets Department for approval prior to inclusion of the plans in the PS&E package.

Task 7 - 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:

2.10.13
Incorporate additional information (as applicable) such as existing and proposed ground lines in the vicinity of the structure, approach guide rail data, existing structure layout, point of minimum vertical clearance, horizontal clearances, and utilities.

Prepare plans for the superstructure replacement of the Free Library Pedestrian Bridge over I-676.

Approach:

2.10.13
Pennoni will prepare the Final Foundation Report and the final structure plans for the expanded Free Library Pedestrian Bridge which includes the enclosure of Shakespeare Park (currently the open area between the BFP / 20th Street Bridge and the Free Library Bridge). The Final Structure Foundation Report and design will follow the guidelines in Design Manual Part 4. The design constraints and criteria contained within the approved TS&L plans and recommendations will be incorporated into the final bridge design. In addition, the following design criteria / methodologies will be used:

a) AASHTO LRFD Bridge Design Specifications, 3rd Edition 2004, U.S. units, as supplemented by the Department's Design Manual Part 4, September 2007 Edition.

b) AASHTO Standard Specifications for Highway Bridges, 15th Edition, 1992, and Interim Specifications 1993 and 1994 (existing abutment analysis).

c) The structure will be designed for PHL-93 loading, P-82 permit load, H15-44 Special Live Load, Pedestrian and/or Landscape loads, whichever governs.

d) We will comply with seismic analysis requirements for Design Manual Part 4 and AASHTO LRFD Bridge Design Specifications. The project structures will be designed in accordance with Seismic Zone 2 as specified by Design Manual Part 4, D-3.10.2.

e) We will use the LRFD Design Method to determine the projected inventory and operating ratings for the structures as indicated in Design Manual, Part 4 (Table 1.8.3 (A)).

f) A Final Standard Foundation Submission will be prepared and submitted to the District in accordance with DM4, Section 1.9.4.3. As presented in the Type, Size and Location Study three (3) core borings are proposed along the expanded Shakespeare Park abutments; two (2) adjacent to the north wall and one (1) adjacent to the south wall. The new core borings will be the basis of the Final Foundation Report and allowable bearing capacities for the expanded Shakespeare Park abutments.

We will determine the type of aesthetic treatments required, based on discussions with the Department and the project stakeholders, and incorporate these details into the Final Structure Plan Submission.

The Final Structure Plan Submission will include the following items:

a) Complete final engineering design, including seismic criteria for the replacement structure based upon the TS&L plans and recommendations as well as the Final Foundation Report approved by the Department and the Streets Department.

b) Quantity and cost estimates for each structure, with consideration given to project-specific constraints, including construction phasing requirements, access to the project site, and constructability.

c) Standard special provisions and project specific special provisions for excavation, construction phasing, and items not covered by Department specifications. Special provisions and pay items will also be included for design alternate bidding.

d) A final submission in compliance with the guidelines outlined in Design Manual Part 4, including final structure plans, construction documents, special provisions, pay items, quantity estimates, cost estimates, design calculations and QA/QC forms will be made to the Department and, the Streets Department. We will attend any bridge design review meetings requested by the Department and/or the Streets Department. Meeting minutes will be generated which document the discussion items and required plan changes (if any).

Vector with assistance from Pennoni will provide the final corrosion mitigation / protection design services for the existing Free Library and the expanded Shakespeare Park Bridge abutments. The design of the corrosion mitigation / protection system will be based on the results of the Preliminary Engineering Corrosion Evaluation prepared by Vector in February, 2011. The final corrosion mitigation / protection system(s) will be selected based on input from the District and designed with the goal of extending the service life of these abutments through effective corrosion mitigation. The following work will be completed by Vector.

• Select applicable corrosion mitigation/protection system for each abutment.

• Obtain pre-approval for recommended system prior to working on the design.

• Prepare written specifications to cover any of the following sections where applicable:
o Description of System
o Installer Qualifications
o Materials and Equipment Requirements
o Installation Procedures
o Pre- and Post-Installation Testing
o System Operation and Maintenance
o Criteria for Termination of the ECE Treatment
o Dismantlement and Disposal of the System
o Post Treatment Cleaning and Patching of Concrete
o Surface Treatment of Concrete
o Documentation, QA/QC

• Prepare working drawings specific for each abutment.

• Develop Bill of Quantities for Bid Items.

• Provide cost estimates for each abutment based on estimated time, direct and other costs.

• Assist with answers on questions regarding incidental work.

Task 8 - 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:

2.10.14
This will be a continuation of work performed during the Preliminary Design Phase. A Detour Plan where applicable will be prepared during the Final Design Phase. This activity will include a separate plan and written narrative. All signs will be represented with symbols. The plan will be completed in compliance with Publication 213.
Coordinate/design placement of temporary traffic signals to facilitate traffic during construction activities.

Approach:

2.10.14
This task is a continuation of the efforts, plan preparation, and coordination performed in the Preliminary Engineering part of this Agreement. Pennoni will continue to develop the final Traffic Control Plan in coordination with the District Traffic Unit, the Streets Department, and project stakeholders, along with input gained through various project reviews such as the Design Field View Meeting, the project Value Engineering Review, the project Constructability Review, and the Final Design Office Meeting.

It is anticipated that the Free Library structure will be constructed with a pedestrian detour. Pennoni will develop a traffic control plan for Vine Street and on Logan Circle. We currently anticipate that up to 5 stages will be used. For operations requiring closure of SR 676, traffic will be detoured on the local road network as developed during preliminary engineering. In addition, short term lane closure plans will be developed for SR 676.

Pennoni will prepare Traffic Control Plans showing required signs, signals, temporary pavement markings, and other details for review and approval by the Department. These plans will include detour plans and other construction staging details as required. In preparing the Traffic Control Plans, Pennoni will adhere to all applicable provisions of Publication 213 - Work Zone Traffic Control and the Manual on Uniform Traffic Control Devices (MUTCD). The Traffic Control Plan will show required stages for review and approval by the Department. Draft Contract Special Provisions for Maintenance and Protection of Traffic, as well as Traffic Control Plan items, will be included in each submission for review and comment.

Pennoni will attend one review meeting with the Traffic Unit and the Streets Department during Final Design. Comments from these reviews will be

documented via meeting minutes prepared by Pennoni.

The Final Traffic Control Plans will include index/notes sheets, tabulation of quantities sheet(s), advance signing sheets, traffic control details sheet, detour plan sheets/details, and detail sheets for each bridge requiring staged construction. A written narrative, which encapsulates the Traffic Control Plan details and Special Provisions, will be included with each Traffic Control Plan submission. The narrative will be modified as required during the development and refinement of the Traffic Control Plan. Detailed staged construction plans are anticipated for the following bridges:

Pennoni anticipates that 3 sheets will be required to show the staging plans for Vine Street, Logan Circle and the Free Library structure. Pennoni anticipates that up to 18 sheets will be required to show I-676 advanced warning signage, I-676 detour plans, I-676 short term lane closure plans and traffic control details and quantities for this part.

Pennoni will update the Traffic Management Plan developed during preliminary engineering. The Traffic Management Plan will identify the bridges to be designed and constructed under Final Design Parts 4-8 and will be updated based on the District's bid schedule for these projects.

It is likely that changes in traffic patterns as a result of the construction and the night time detours will affect the operation of the existing signals along the detour route. As part of our Traffic Control Plan development, we will investigate the operations of the existing signals and recommend possible modifications to signal timings to maximize the efficiency of the existing signals. For the purpose of this proposal we anticipate up to 10 retiming's will be required and that signal plans will not be required for the 10 intersections where retiming is proposed.

The following task will be completed by the Pennoni Team for temporary traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Task 9 - 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:

2.10.15
Provide required plans and information for all signals impacted by the project. This includes signals adjacent to the project and any intersections designated along detour routes or Traffic Management Plan initiatives.

Approach:

2.10.15
The Pennoni Team will prepare a study of a mid-block pedestrian crossing on Vine Street westbound in the vicinity of the Free Library, in accordance with Pub 46 Chapter 11.9. A pedestrian flasher will be evaluated for installation at this location. Pennoni will conduct 1 weekday and 1 weekend pedestrian count in the vicinity of the crossing.

The results of the study will be coordinated with the adjacent Final Design Parts.

Signal design for temporary traffic signals associated with detour routes will be completed as part of Task 8.0, Traffic Control Plan

Task 10 - 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

Department Details:

2.10.16
All traffic related signs will be incorporated into the Pavement Marking Plan.

Approach:

2.10.16
The Pennoni Team will continue on the work completed in preliminary engineering in preparing the final pavement marking and signing plan for this project. The plans will follow the preliminary design that was completed as part of the Design Field View Submission. The plans will be developed in accordance with Design Manual Part 3, the Manual on Uniform Traffic Control Devices, Traffic Standards (TC-7600 Series), and Publication 68 with guidance from the Pavement Marking Handbook.

The plans will consists of a title sheet with general notes, tabulation sheets, and plan sheets. The plan sheets will show proposed pavement markings, sign locations, sign types and messages. The final submission will include:
• General Plans
• Special Details
• Quantities
• Specifications

Pennoni will review the final plans with the Streets Department prior to submission to the Department. Pennoni will coordinate with the Philadelphia Parking Authority regarding parking regulations and associated signage. Pennoni anticipates that the Parking Authority will provide the details to any non-standard parking signs. Efforts will be made to retain existing signage where possible. Special sign details will be incorporated into the plans as required.

Task 11 - 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.

Scope:

2.10.2 - Roadway
Needs completed.

Detail Task 1 - Roadway

Department Details:

2.10.2.3
Remove item 1. Item 2 is only necessary where approach work involves the reconstruction of an adjacent intersection.
Plans will be at a scale of 1"=25'.

Approach:

2.10.2 & 2.10.2.3
Pennoni Team will complete the final design for Vine Street between 19th Street and 20th Street and the area between the Ben Franklin Parkway/Logan Circle and 19th Street. We will complete the design and prepare deliverables for the project's PS&E package, including final roadway plans, specifications, engineer's estimate, and pre-bid schedule. Plans and documents will be prepared in accordance with Design Manual Parts 1A, 2, 3, 4, and 5, and applicable Department standard drawings. The construction plans will follow the formats and procedures outlined in Design Manual Part 3.

Details for each component in the PS&E package are described in our following approach for each subtask.

Ammann & Whitney will finalize the drainage design developed in Preliminary Engineering. Since the drainage is expected to be limited to the replacement of existing facilities and/or minor improvements, the final roadway plan will provide the appropriate information for the replacement of the inlets, including excavation, invert depth elevations, etc.

Hydraulic design computations will be prepared using appropriate methodologies for all roadway drainage structures. The replacement inlets will be checked to confirm that their capacity is adequate for the 10-year storm flow, and that downstream drainage capacity is sufficient for the proposed design. The proposed drainage design will be closely coordinated with our Erosion and Sedimentation Control design.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review. This submission will include design plans as well as Checklist B as described in PWD's Stormwater Management Manual. Due to the nature of project, zoning and building permits are not anticipated. In accordance with PWD policies and procedures for roadway maintenance and rehabilitation projects, therefore we will apply for a waiver from meeting the PWD Stormwater Management Regulations. A Post-Construction Stormwater Management Plan is not anticipated.

Due to the limited amount of full depth roadway construction, a simplified method of pavement design may be appropriate for this project. Pennoni will verify limits of work, existing pavement types and anticipated pavement section with the District and Streets Department prior to submission of the final pavement design documents. Pennoni anticipates that the standard Philadelphia pavement section will be utilized for the limited full depth roadway reconstruction. Pennoni will submit a pavement design letter and form D-4332A to the Pavement Design Unit for approval. Pavement items will be clearly indicated on the typical sections included with the final roadway plans.

Pennoni will be responsible for the construction plan set for part 6.

The final PS&E package will include the preparation of the following roadway construction documents:

Typical Section Sheet - includes the typical sections developed in Preliminary Engineering. The typical sections will be updated with proposed pavement types and depths. The typical section sheets will be prepared as outlined in Design Manual Part 3.

Tabulation of Quantities Sheets - will be prepared in accordance with the guidelines specified in Design Manual Part 3. The sheets will be formatted in accordance with the sample included in Chapter 15 of Design Manual Part 3.

Plan and Profile Sheets - include roadway construction plans and profiles. The detail sheets will be prepared at a horizontal scale of 1"=25' and a vertical scale of 1"=5'. These drawings will show existing and proposed features including topography, horizontal geometry, bench marks, references, legal right-of-way, construction easements, utilities, existing and proposed structural data, and other required design information.

ADA ramp design sheets – includes an intersection plan, spot elevation plan and slope and dimension plan for each impacted ramp. Plans will be prepared on 11x17 sheets and organized in a three ring binder with a cover letter. Additionally a CS-4401 form will be filled out for each ramp and if required, a TIF form will be submitted for ramps not meeting the current criteria. Pennoni will submit the ADA design package to the PennDOT and the Philadelphia Streets Department ADA reviewers. The approved ADA designs will be incorporated into the detail sheets of the construction set.

The submitted set of final roadway plans will include the "also" plans, including Structure Plans, Cross Sections, Erosion and Sedimentation Control Plans, Traffic Control Plans, and Pavement Marking and Signing Plans. The final plan set submission will also include any incorporated and approved utility relocation plans.

Since the existing horizontal and vertical alignments are expected to be retained, the intersection design for this project is expected to generally replicate existing conditions.

Before final plans are completed, an in-house plan review will be performed. This review will check the plans for presentation details, plan clarity, item number and special provision references, and overall quality of the plan from a contractor's viewpoint. Any major changes to the plans that result from the plan review will be reviewed with the District prior to final submission.

The Pennoni Team will prepare all submissions for, and attend, the Final Design Office Meeting. The submission will include all plans, special provisions, preliminary special provisions, and construction cost estimate. Pennoni will prepare minutes of the meeting, documenting discussion points and required revisions to the design package.

All special provisions will be reviewed as part of the constructability and Final Design Office Meeting reviews. Every effort will be made to use pre-approved provision language to simplify this effort. Special provisions unique to utilities and the City of Philadelphia will be reviewed with the affected agency to ensure conformance with agency criteria.

Proprietary items, if any, will be identified as soon as possible in Final Design. Appropriate documentation and justification for the use of proprietary items in the bid package will submitted to the Department for review and approval.

Pennoni will prepare plans, profiles, typical sections, and cost estimate for the Final Design Field View. Pennoni will prepare for the meeting at the approximate 35% completion stage of Final Design. Pennoni will attend the meeting with appropriate personnel versed in specific project details. Meeting minutes will be generated which document discussion points and required revisions to the design package.

Task 12 - Section 4(f) Mitigation Plan

Objective:

2.10.23 - Section 4(f) Mitigation Plan
This task is the development of the Section 4(f) mitigation plan.

Scope:

2.10.23 - Section 4(f) Mitigation Plan
1. Develop a mitigation plan that identifies any mitigation measures committed to in the Final Section 4(f) Evaluation and NEPA document for Section 4(f) resources.

2. Submit plan to PennDOT, PHMC and possibly FHWA for review. Revise plan if necessary.

3. Include this plan in the final design plans, specifications and estimates package to ensure that the measures are carried out during construction.

Detail Task 1 - Section 4(f) Mitigation Plan

Department Details:

2.10.23
Provide all services to complete 4(f) Mitigation as required through the environmental documentation phase.

Approach:

2.10.23
ASC will assist Pennoni in the development of a Section 4(f) mitigation plan by identifying any mitigation measures committed to in the Section 4(f) documentation. ASC will assist Pennoni in any coordination efforts required for Section 4(f). These mitigation measures will be identified on the Final Design plans and carried out during construction, as required.

Task 13 - 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:

2.10.25
Provide all required permits and approvals to advance to PS&E.

Approach:

2.10.25
Ammann & Whitney with assistance from Pennoni will prepare an Erosion and Sedimentation Control Plan and narrative for this project in accordance with Design Manual, Part 2, Chapter 13, and the guidelines set forth in the Pennsylvania Department of Environmental Protection's publication Erosion and Sedimentation (E&S) Control Program Manual, dated March 2000, as well as any revisions thereto. We will develop, establish, and maintain stringent temporary and permanent controls to restrict sediment within the project's excavated areas. The plans and narrative will be prepared with specific and positive safeguards, to protect adjacent properties from pollution by transported sediment. Both temporary as well as permanent erosion and sedimentation controls will be developed. Due to the type of construction, it is anticipated that the E&S measures will be limited to inlet protection, silt fence, seeding & mulching, or similar facilities. E&S controls that require additional right-of-way, such as sediment traps or sediment basins, are not anticipated.

Ammann & Whitney will draw upon previous experience with Erosion and Sedimentation Control design for City of Philadelphia projects in developing the final plans. We will coordinate with the Philadelphia Water Department (PWD) during final plan development, since PWD approves Erosion Control plans for projects with less than one acre of disturbance within the City. It is anticipated that the project will disturb less than 1 acre and will be exempt from the NPDES requirements. Therefore, a post-construction stormwater management plan is not anticipated.

We will submit the final erosion and sedimentation control plan to the District for their review and approval. Upon approval by the District, the plans and narrative will be forwarded to the Philadelphia Water Department review and approval.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review as described in 2.10.2.

Approved erosion control items will be incorporated into the final construction plans and special provisions, as required.

Task 14 - 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.

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."

Detail Task 1 - Assemble Final Project Documents for Contract Management

Department Details:

2.10.29
Use PENNDOT ECMS system for bid package preparation. Assist District personnel in the preparation of any addendum required for the project. Prepare bid justification documents as required.

Approach:

2.10.29
The Pennoni Team will assemble the project's bid package using the Department's ECMS system. Pennoni will thoroughly check the plans, specifications, construction cost estimates, and the project schedule for accuracy and completeness prior to submission. Pennoni will ensure that all required approvals, permits, clearances, etc. have been secured/approved by the appropriate authorities. Prior to submission, Pennoni will complete the Project Development Checklist and will produce copies of the required documents to the District for linking into ECMS.

Once the bid package is advertised, Pennoni will provide answers to bidder's questions via the ECMS system.

Pennoni will attend the pre-bid meeting at the direction of the District. Pennoni Team members with the requisite project experience will attend the meeting in order to appropriately answer questions about the bid package. Meeting minutes will be generated which document discussion points and required revisions to the design package.

If required by the District, Pennoni will create and submit addendums to the project's Bid Package. As required, changes to plans, quantities, or special provisions will be made and the project documents updated accordingly. Pennoni will coordinate this effort with the District's Project Manager and the District Contract Management Unit.

Pennoni's PS&E package will include a critical-path project construction schedule in Welcom Open Plan format. The schedule will be included in

the project's constructability review for review and comment by the District Construction Unit prior to inclusion in the bid package. Both the full-logic schedule and abbreviated critical path version will be included in the submission.

Draft special provisions will be submitted to the District for review prior to the PS&E submission. The special provisions will be written in standard PennDOT format, and will be cross-checked against existing Department and District Standard Special Provisions for consistency. Items specific to City of Philadelphia construction will be reviewed with the appropriate City agency prior to inclusion in the PS&E package.

A detailed construction cost estimate will be provided with both the constructability review and the PS&E package. The estimate will provide an estimated unit cost for each item in the proposal based on historical bid data from ECMS. Items not available in ECMS will be estimated by Pennoni using past experience in other projects and by obtaining price information from reliable contractor and supplier sources. Pennoni will provide backup data for the estimated unit costs as requested.

Pennoni will utilize the Department's ECMS system for preparation and submission of the bid package and related documents. Pennoni will provide copies and/or electronic scans of project documents for attachment to the Project Development Checklist, and will assist the District Contract Management Unit with preparation of the final bid package for advertisement.

Task 15 - 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:

2.10.3

Provide field survey to update information which may have changed since the preliminary survey as required in Publication 122M at the required intervals.
Guidance:
- Publication 122M, Surveying and Mapping Manual
- Strike Off Letter 430-99-20, QA/QC Control Checklist for Right-of-Way and Construction Plans
- Form D-428, Field Book
Scope Deliverables:
1. Recover horizontal control and vertical datum.
2. Stake final alignment.
3. Provide line book in Form D-428.
4.Establish vertical control network by setting benchmarks within project area by differential leveling.
5. Record level loops in Form D-428 field book.
6. Benchmarks set will be no greater than one half mile apart and will be set on permanent objects not subject to movement.
7. Benchmarks will be set on both sides of proposed structures and/or structures to be replaced.
8. Stake required right-of-way lines, legal right-of-way lines, temporary construction easements, slope easements, etc.

Approach:

2.10.3
Chilton Engineering, Inc. (Chilton) will perform the incidental surveys as deemed necessary to supplement the original survey performed for this project during Preliminary Design.

Chilton will perform an updated property owner search, and perform supplemental roadway and structural surveys as necessary. Survey work will be performed in accordance with the latest edition of the Surveying and Mapping Manual and any relevant Strike-Off Letters. All field surveys will be performed with modern total station instruments equipped with electronic data collectors or High Definition Survey (HDS) Scanning equipment.. As part of the survey process, standard field books will be maintained according to District requirements, including indexing.

Survey Control: Existing horizontal and vertical survey control established during Preliminary Design will be recovered. Additional survey control will be established as necessary. All survey data that is obtained during our field activities will be referenced to this control network. A final survey report will be prepared.

Traffic Control Plan for Field Activities: Any traffic control and protection of the traveling public measures necessary for the required field survey tasks will be in conformance with PennDOT Publication 213, Work Zone Traffic Control. The plan will be submitted to the District Traffic Unit for approval prior to implementation. All major traffic control devices required for major work zone traffic control measures will be furnished, erected and maintained by a firm specializing in these measures. Lane shifts on ramps and/or partial closures on side roads will be limited to off peak hours. We will advise the District's Press Office prior to any lane closures and/or encroachments.

Field Edit of Existing Base Plan Mapping: Chilton will field review the existing base plan mapping surveyed during Preliminary Design to identify any changes to the topographic features within the project limits.

Topographic Survey: Chilton will perform required topographic surveys to provide more detail or extend plan coverage as directed by Pennoni. Information gathered will be plotted on the existing base plan mapping and all additional features identified and clearly labeled.

The digital terrain model of the project will be updated to incorporate the field review. This model will be updated, with contours calculated and

shown on the plan at one (1) foot intervals.

Roadway Cross Sections: We will update cross section data as deemed necessary. Measurements will be exacted to the nearest one-hundredth (0.01) of a foot on hard surfaces and pavements and to the nearest one-tenth (0.1) of a foot on ground shots.

Structural Survey: Field survey edits will be performed at the existing bridge and overhead structure sites as directed by Pennoni. Clearances measurements will be updated at the fascia beam on both sides of each bridge if required.

Stakeout Roadway and Structure Core Boring Hole Locations. If necessary, we will stakeout any additional proposed roadway core boring hole locations. The boring locations will be staked and existing ground elevations will be obtained.

Stakeout Proposed Right-of-Way Easement or Acquisition Parcels. If necessary, we will stakeout the proposed corners/lines of any right-of-way takes or easements for property owner review. Each stake will be identified by ribbon color and labeling of Sta./Offset and point description.

Using the approved final roadway geometry layout as provided by Pennoni, Chilton's surveyors will perform the field stakeout of the proposed construction baselines when directed by Pennoni. Because of the volume of traffic in this area the use of offset base lines may be used. The offset base lines will be set in the shoulder. The staking of the actual baseline or use of offset lines will be determined after review with the Department and Pennoni. Actual control points such as PC's, PT's and PI's will be either drill hole (in concrete), PK nail (in asphalt) or iron pin (in soil).

The construction baseline or offset baseline points will be referenced after they have been set. The references will be located outside the area of proposed construction. References will be set meeting applicable Department standards, where possible. At a minimum, Chilton will reference all horizontal control points to three fixed objects located outside the limits of proposed construction with both angular and distance ties provided, showing orientation to the baseline. Reference sketches will be prepared for these points, to prepare detailed control reference circles on plans.

Task 16 - 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:

2.10.4
Develop Cross Sections as required for the project.

Approach:

2.10.4
Pennoni will prepare the final cross sections following the procedures outlined in Design Manual Part 3. The sections will be prepared at a horizontal and vertical scale of 1"=5'. Proposed template areas and the limits of earthwork will also be shown on the cross sections. The earthwork quantities for these template areas will be computed and tabulated as part of the final PS&E package.

Pennoni anticipates cross sections will be required for Vine Street from 19th Street to 20th Street.

Roadway cross sections will be prepared at 25 foot intervals and at locations of all major terrain features. Since the roadway reconstruction is expected to be limited, the roadway sections will extend the area necessary to facilitate the reconstruction of the bridge approaches and any intersection/street reconstruction as appropriate. The existing information outlined in Preliminary Engineering will be included on the final cross sections as will the following proposed information:

• Proposed roadway template, including pavement depth
• Construction and survey baselines
• Limits of earthwork & curbing with computations
• Proposed utilities (if applicable)
• Existing and proposed drainage facilities

The cross sections will also be prepared to assist in determining limits of involvement at driveways and adjacent street intersections. The final roadway cross sections will be used to assist in the refinement of the roadway line and grade, in addition to the evaluation of the proposed improvements.

Existing and proposed ground lines will be generated utilizing the proposed alignment information and three-dimensional electronic imaging files. Existing ground lines at pavement tie-in points and along those roadways requiring surveyed cross sections will be generated using field survey data. The proposed roadway template will be added to the final roadway cross sections.

Drainage features, including pipes, inlets, and manholes, will be superimposed on the existing cross section. Existing and relocated utilities will also be included on the cross sections.

Task 17 - 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:

2.10.5
The consultant will prepare a separate right of way plan as described in Paragraph A and in accordance with all applicable Design Manuals and PA D.O.T. Strike-off Letter 430-98-26. Present no more than two plats per sheet. Verification of ownership will be rechecked just prior to the final submission.

Approach:

2.10.5
Chilton Engineering, Inc. with assistance from Pennoni will prepare the project's Final Right-of-Way Plans.

The Final Right-of-Way Plans will be prepared in accordance with Design Manual Part 3, Chapter 3, and appropriate Strike-Off Letters. As the project is located within the City of Philadelphia, the Right-of-Way Plans will also meet the requirements of the City's Board of View.

Chilton will research public records to update ownership and location of properties adjacent to the project. Chilton will conduct research of the public records at the City, as necessary, and will utilize electronic search measures where feasible.

Chilton will obtain copies of deeds, adverses, descriptions of easements, any available development plans, tax maps, etc. that have been revised to confirm the Department's existing right-of-way. The Department's record retention unit will be contacted and relevant plans requested. Private and public right-of-way and easements will be indicated and cross referenced to the appropriate legal document.

Chilton will utilize the information described above to update the mosaic of all properties.

Final Right-of-Way Plans will be developed by Chilton to show the relationship of the proposed construction to the existing and required Right-of-Way and property details. The plans will show legal and required Right-of-Way and easements including existing and relocated utilities. The final plans will show all data necessary to prepare appraisals and to acquire the properties. Topographic features that will affect the value of the takes will be shown including trees, shrubbery, drainage features, buildings, signs, drainage, fences, and other structures.

The need for Temporary Construction Easements and/or Drainage Easements will be determined. Pennoni will coordinate the need for and the location of easement areas with Chilton during Final Right-of-Way Plan development.

Final Right-of-Way Plans will be submitted to the Streets Department and the District for review. Chilton and Pennoni will attend a plan review

meeting with the Department's Field Liaison Engineer as required. Revisions to the plan will be made prior to final submission for acquisition.

Copies of record plans, tax maps, deeds, lease agreements, private/public right documents, and transcribing sheets will be submitted to the District as requested.

Chilton will prepare the Right-of-Way property plats by using the Right-of-Way plans prepared under Task 17.0 as the basis. The plans will show all utilities, trees, shrubbery, buildings and other structures and other features that may impact property values. The metes and bounds of properties, easements, and Right-of-Way lines will be shown. The location of private water supplies and sanitary sewer facilities that may be affected by the proposed construction will be identified.

Task 18 - Utility Engineering

Objective:

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

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.

Detail Task 1 - Utility Engineering

Department Details:

2.9.1
Build upon coordination effort that has taken place during the Preliminary Engineering Phase of this project.

Approach:

2.10.8 & 2.9.1
Chilton with assistance from Pennoni will coordinate the utility relocations required for the project.

The PA ONE-CALL will be made and existing utility information requested. This information will be verified and checked against information received and plotted during the preliminary design phase.

Each affected utility will be contacted to determine their requirements and methods of relocation. Determinations will be made whether utilities will be relocated by the utility, by the contractor as incorporated work, or by a combination of both.

Chilton will verify whether all formal requests for agreement permits and occupancy applications are in accordance with the policies and procedures of Design Manual Part 5.

Chilton will coordinate with the Department and Pennoni to schedule an Initial Utility Design Stage Meeting to introduce the project goals, schedules, and targeted utility clearance dates. Chilton will keep each utility informed of all design changes that could impact existing or planned utilities.

As the final design plans, profiles and cross sections for the project are generated, copies will be forwarded to each utility company affected within the project limits. The utility will be asked to verify their facilities, identify any need for additional Right-of-Way or easements, and identify any potential conflicts. Each utility will receive the appropriate form for submission of bridge attachment requests. As meetings are scheduled to resolve utility conflicts, we will provide personnel familiar with project to attend and coordinate.

Chilton will maintain continuous contact with each utility company representative throughout the life of the project. We will schedule the Final Utility Design Stage Meeting with the Pennoni Team, the Department, the Streets Department, and each utility representative. The purpose of the meeting will be to resolve all outstanding issues, reinforce the utility clearance target dates, and introduce the construction schedule. Chilton will send periodic project status reports to each utility to keep all involved with the progress of utility conflict resolutions.

Upon approaching the scheduled PS&E submission, Chilton will schedule a utility meeting to review all utility issues and resolutions. At this meeting a task schedule will be developed for utility work to be completed prior to construction. This meeting will also be used to identify any outstanding design issues.

Chilton will work with the utility providers to complete and file all required forms and permits including Form D-419, Utility Clearance and Form D4181X for bridge occupancy where applicable. This work will be coordinated with the District Utility Unit.

Chilton will invite all utility representatives to attend all pre-bid, pre-construction and construction status meetings.

Task 19 - Signing and Sign Lighting Plan

Objective:

2.10.17 - Signing and Sign Lighting Plan
This task is the development of the signing & sign lighting plan.

Scope:

2.10.17 - Signing and Sign Lighting 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.

The final submission will include:
- A Title Sheet
- Index Sheet
- An Index-Location Map
- Tabulation of Quantities Sheet(s)
- Summary of Quantities (used only if signing plan is a stand alone plan)
- Detail Sheets
- Specifications

Type I Detail Sheets (general plans) 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.

Type II Detail Sheet includes sign structure details. These plans include:
- A location plan
- Plan, elevation and end view of the sign structure
- Details
- Sign schematic
- Sections and steel sizes for Type A signs
- Estimated quantities
- Design criteria
- General notes.

Type III Detail Sheet consists of sign fabrication information and includes:
- Length of sign
- Height of sign
- Sign legend details including letter spacing, letter size and series, and sign color)
- Size of border and radii of corners
- Sign lighting design
- Quantities

Refer to TC-8701A for sign lighting requirements. In general, all overhead signs that do not have a 800' tangent sight distance require sign lighting. Verify the requirements with the District. Prepare the sign lighting plans in accordance with Standard Drawing TC-8715 and Publication 408, Section 920 requirements. Submit sign lighting plans to Central Office, Highway Lighting Unit for approval prior to the release of the final sign lighting plans to the District for PS&E Development.

Detail Task 1 - Signing and Sign Lighting Plan

Department Details:

2.10.17
Provide all required plans and specifications as identified above.

Approach:

2.10.17
Ammann & Whitney with assistance from Pennoni will prepare the plans for the sign structures at the following locations:

Sign Structure #6 - STA 54+51.86

All work will be performed in accordance with the Department's Scope of Work.

Ammann & Whitney will complete the Final Signing and Sign Lighting Plans for the project, in accordance with applicable TC-8700 standards. This work will be a continuation of the work completed in Preliminary Engineering.

Type I, Type II, and Type III Sheets will be prepared as required in the Scope of Work for each sign. Details on sign sizes, lettering, material, and spacing will be replicated from the original plans, if available, with modifications as required. Sign Lighting Plans will be submitted to Central Office, Highway Lighting Unit for approval prior to submission to the District Traffic Unit for final approval.

As part of this task, Ammann & Whitney will complete plans for the relocation of the signs that are currently mounted to the superstructure- of the bridges. Duplication of sign movements will be eliminated to the best extent possible; with a focus on relocating signs to their permanent position in the first stage of each bridge's reconstruction.

Task 20 - Roadside Development Plan

Objective:

2.10.27 - Roadside Development Plan
This task is the development of the roadside development plan.

Scope:

2.10.27 - Roadside Development Plan
These include Wetland Mitigation Planting Plans, Wildlife Habitat Mitigation Planting Plans, Maintenance Yard or Stockpile Area Screening Plans or any other plans requiring landscape design and plans preparation.

Where no roadway construction is involved, the plans are an entity in themselves. Where roadside development is a part of highway construction, the quantities and plans are numbered in the Construction Plans and placed immediately after the Contour Grading and Drainage Plans.

Where separate plans are required, the Roadside Development Plan includes:
1. Title Sheet
2. Index Sheet
3. Typical Section Sheet
4. Summary and Tabulation of Quantities Sheet
5. Detail Sheets (required for all tree, shrub and vine plantings)

Where plans are a part of the highway construction, it is not necessary to prepare a separate Title Sheet, Index Sheet, Typical Section Sheet or Summary and Tabulation of Quantities Sheet.

Prepare plans in accordance with Publication 14M, Design Manual Part 3.

Detail Task 1 - Roadside Development Plan

Department Details:

2.10.27
Provide all plans and specifications as detailed above.

Approach:

2.10.27
LRSLA with assistance from Pennoni will develop the landscape design approved in Preliminary Engineering. The area will include paved pedestrian zones and planted zones adjacent to the roadway improvements and the park in front of the Free Library. The plans will include Landscape Demolition Plans (including existing tree and soil protection zones), Landscape Materials Plans, Landscape Layout Plans, Landscape Grading Plans, Landscape Planting Plans and Irrigation Plans. Landscape Details will include pedestrian paving sections and plan pattern details, site walls sections and elevations, site stairs, stair and ramp handrails, site furnishings, and planting sections and detail plans. Materials and details will follow the Fairmount Park Commission Benjamin Franklin Parkway Design Guidelines Manual, approved and adopted by FPC, and in accordance with Publication 14M, Design Manual Part 3. Pennoni will develop the details necessary for the connection of the irrigation system to the existing water vault or existing irrigation system on the Ben Franklin Parkway. Pennoni anticipates 1 connection for the Free Library and Shakespeare Park area will be required.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
Pennoni Associates Incorporated	No	
Ammann & Whitney Pennsylvania, Inc.	No	Pennoni Associates Incorporated
ASC Group, Inc.	Yes	Pennoni Associates Incorporated
Chilton Engineering, Inc.	Yes	Pennoni Associates Incorporated
Lager Raabe Skafte Landscape Architects,Inc.	Yes	Pennoni Associates Incorporated
Vector Corrosion Technologies, Inc.	No	Pennoni Associates Incorporated

Attachments

No records found.

Part 7 - Final Design - 19th Street and Family Court Ped Br

Description

Final Design - 19th Street and Family Court Ped Br

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.

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.

Detail Task 1 - Project Management/Administration

Department Details:

2.1.1
The consultant shall provide construction cost updates as required by the Department.
The consultant will thoroughly check all design submissions before submitting them to the Department for review.
The Department reviews will be cursory in nature and the consultant will be responsible for design and plan accuracy.
The consultant will be liable for design and plan errors in accordance with 67 PA Code, Chapter 455, Consultant Highway Design Errors.
The consultant will be responsible for DBE progress, and all submissions prepared by the DBE will be submitted through the prime consultant's office. The prime consultant will be responsible for the accuracy and quality of the DBE work.

2.1.1.1
The consultant will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
Assume there will be one (1) design related meeting per month for the duration of the final design phase of the project.

2.1.1.3
The project QC/QA plan is to be provided to the District one (1) month after NTP. Include sub-consultant QC/QA plans as appropriate.

2.1.1.5
The initial project Welcom Plan is to be provided to the District one month after NTP.

Approach:

2.1.1
This task will be a continuation of the project management effort from Preliminary Engineering. Jim Pezzotti will continue to manage the Pennoni Team, including sub-consultants Amman & Whitney Pennsylvania, Inc. (A&W), ASC Group, Inc. (ASC), Chilton Engineering, Inc. (Chilton), Lager Raabe Skafte Landscape Architects, Inc. (LRSLA) and Vector Corrosion Technologies, Inc. (Vector) as well as individual Pennoni discipline leaders. Mr. Pezzotti will continue as the main point of contact with the District and is responsible for the overall coordination of the project team as necessary to deliver a quality project PS&E package to the District by the specified time and within the designated budget.

Mr. Pezzotti will continue to serve as the primary contact with governmental agencies and other project stakeholders. For this project, these stakeholders include various City of Philadelphia agencies (Streets Department, Water Department, Philadelphia Gas Works, Fairmount Park Commission, School District, etc.), various private utility companies (PECO, Verizon, etc.) city emergency service providers, local government (City Council, etc.) and involved community groups.

Mr. Pezzotti will be responsible for ensuring that the Department's standards for invoicing are followed and that invoices are submitted correctly.

Pennoni will prepare a construction cost estimate at the Value Engineering Review, Constructability Review, and PS&E Submission stages of the project, and as required by the Department. Each cost estimate will use the latest standard item bid prices from ECMS, supplemented by additional data and engineering experience as required.

2.1.1.1
As directed by the Department, the Pennoni Team will attend all required project meetings, including public meetings, agency coordination meetings, design review meetings with District personnel, and meetings with City of Philadelphia agencies and project stakeholder groups. Pennoni will prepare agendas and minutes for every meeting, and will prepare handout and/or display materials as appropriate. For purposes of this proposal, a total of twenty-four (24) meetings are anticipated in Final Design (one design-related meeting per month for the duration of the phase).

The Pennoni Team will also attend any task-specific meeting as required, examples of which include meetings with the District Traffic Unit and the Streets Department.

2.1.1.3
Pennoni's commitment to quality includes our Project Specific Quality Assurance Plan. Mr. Pezzotti will develop a Quality Assurance Plan for this project, and will be responsible for overall project quality. Our Quality Assurance Plan will be available for District review and approval within one month from issuance of Notice-to-Proceed for Final Design, and contains a detailed approach to monitor the progress of each project task, including maintenance of project budgets and schedules, project staffing, communications with the District, sub-consultant supervision, plan reviews, quality assurance, and document control. Sub-consultants will submit their own QA/QC plan, which will be checked to ensure a uniform quality control approach for the entire project team.

2.1.1.5
Pennoni will provide an updated project design schedule using Welcom Open Plan and will submit it to the District along with our QA/QC plan within a month of issuance of Notice-to-Proceed for Final Design. The project schedule will be updated with each project status meeting and will be available for review by the Department's Project Manager.

Task 2 - 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 - Coordinate Constructability Review

Department Details:

2.1.2
It is anticipated that a Constructability Review will be required for this project. Provide all materials and services to assure this review is completed appropriately.

Approach:

2.1.2
The Pennoni Team will work with the District in developing and coordinating a constructability review team throughout the project. The Pennoni Team will submit appropriate materials for review by District personnel at various stages of project design in order to avoid costly re-engineering efforts later in the design phase. The constructability review submission will include, at a minimum:
--A full plan set (roadway, structural, traffic control, traffic signal, etc.);
--Estimated items and quantities;
--Construction cost estimate;
--Construction schedule;
--Draft Project Special Provisions
Our proposed design will be reviewed by our in-house constructability review personnel prior to submission to the District as part of our QA/QC procedures.

Pennoni will be available to meet with the District's constructability review team in order to discuss project details and concerns of the review team. One (1) District constructability meeting is assumed for this Final Design Part. Meeting minutes will be prepared to document the review discussion and required changes to the plans.

Task 3 - 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:

2.1.3
The consultant will prepare and distribute to appropriate parties the minutes of all meetings.
Assume there will be one (1) general public meeting/ public officials meeting, four (4) municipal meetings and four (6) project stakeholder meetings.

Approach:

2.1.3
The Pennoni Team will continue Public Involvement efforts from Preliminary Engineering through Final Design. Pennoni will attend all project public involvement activities during the project. Pennoni with assistance from A&W, ASC and LRSLA will prepare for the meetings specified in the Department Details. Three (3) meetings per Part are anticipated to cover the eleven (11) total meetings described in the original Part 2 Department Details. Pennoni will review the requirements for each meeting with the Department prior to the meeting, and will develop agendas, appropriate display materials/handouts, and other materials required for the meeting. Pennoni will also assist the Department in coordinating with meeting attendees as required.

All public meetings will be attended by Pennoni Professional Engineers and qualified professionals with the requisite project knowledge for the meeting agenda. Members of our sub-consultant team will attend meetings as required by the meeting agenda. If required, a "dry run" will be scheduled prior to the public meeting, allowing sufficient time to incorporate any revisions requested by Department staff.

Pennoni will publish meeting minutes from the public meeting(s) and will submit them to the Department within ten (10) working days of the meeting for the Project Manager to review. We will revise the minutes if necessary. Changes to the plans which result from these meetings will be fully documented and incorporated into the plans where applicable.

Task 4 - Value Engineering

Objective:

2.1.4 - Value Engineering
This task involves performing a value engineering review.

Scope:

2.1.4 - Value Engineering
Provide work as detailed by the Department. See Department Detail.

Detail Task 1 - Value Engineering

Department Details:

2.1.4
Prepare necessary documentation, attend and present proposed project for a Department Value Engineering review.
Provide assistance to the District Value Engineering Coordinator in documenting the process and necessary follow-up tasks.

Approach:

2.1.4
Pennoni, A&W and LRSLA will prepare the Value Engineering submission for the project, composed of appropriate plans, specifications, and associated documents for review by the District Value Engineering Review Committee. The submission will be in compliance with the procedures and criteria outlined in Design Manual 1A, Appendix H, and will be coordinated with the District Value Engineering Coordinator. Since the total project is a Federal-Aid project with a construction value greater than $20 million, a full Value Engineering review is anticipated.

Pennoni will attend the Value Engineering review meeting and will present the project to the team and review project details. One (1) Value Engineering review meeting is assumed for this Final Design Part. Team members with detailed knowledge of specific project details (structural, traffic control, etc.) will attend in order to answer specific technical questions. All proceedings will be documented by Pennoni in order to be included in the final Value Engineering Report. Pennoni will document any changes to the design (and their associated cost savings) that result from the Value Engineering Review.

Task 5 - 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.

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.

Detail Task 1 - Environmental Activities

Department Details:

2.10.1
Identify and incorporate any commitments made during Preliminary Engineering.

2.10.1.3
A re-evaluation of the environmental document will be required prior to the P.S.&E. submission.
Follow Department Policies and Strike-off Letters regarding Due Dilligence and Asbestos documentation.

Approach:

2.10.1 & 2.10.1.3
Depending on the time elapsed, and if any changes to the project occur, ASC will re-evaluate the environmental documentation in Final Design, prior to the PS&E Submission. If necessary, ASC will complete an Environmental Due Diligence (EDD) Phase I Visual Inspection form and

appropriate Asbestos Documentation, in accordance with the PennDOT Policies and Strike-Off Letters. ASC will update the Pennsylvania Natural Diversity Inventory (PNDI) and coordinate with the appropriate agencies, as required. ASC will coordinate with Pennoni and the District, as requested, to complete any coordination required for Section 6(f) clearance. ASC assumes attendance at two (2) status/design project meetings associated with this task.

If the project Scope of Work is changed to include improvements in the area of Callowhill Street (17th Street to Broad Street), ASC will incorporate this information into the environmental document or the re-evaluation of the environmental document. At least three (3) National Register Listed buildings are located adjacent to the project area. ASC will coordinate with the District 6-0 Qualified Professional to determine if any cultural resources coordination is required and with the District 6-0 Environmental Unit to determine if additional Section 4(f) coordination is required.

Task 6 - 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:

2.10.12
Investigate condition of existing local street, pedestrian and highway lighting and design lighting elements as required.

Approach:

2.10.12

Highway lighting plans will be developed by Ammann & Whitney with assistance from Pennoni as part of the project's PS&E submission. The Highway Lighting Plans will be developed in accordance with all applicable Department Standards, including Design Manual Parts 2 and 3, and AASHTO's "Roadway Lighting Design Guide".

Ammann & Whitney will coordinate development with this plan with the Central Office Highway Lighting Section. Input on required street lighting will be obtained from the Streets Department and from stakeholder coordination completed in Preliminary Engineering. Decorative or specific lighting hardware will be considered and included into the plans upon direction from the Department or if the lighting is a condition of the approved project environmental document and/or landscaping plan.

Ammann & Whitney will investigate the adequacy of the existing lighting hardware and lighting pattern for adjacent local streets and under-bridge lighting on the Vine Street Expressway, and will design upgrades as required. Special attention will be given to replacing existing mercury vapor lighting with high pressure sodium lighting systems. Under-bridge lighting details will be included on the Final Structure Plans, as discussed in Task 7.0, Final Structure Plans. Design of final Sign Lighting Plans will be included in the efforts for Task 19.0, Signing and Sign Lighting Plans.

Ammann & Whitney will coordinate and attend a pre-design meeting with the Central Office Highway Lighting Section and the Streets Department to review and establish specific design criteria prior to beginning detailed plan development.

Final plans will be submitted to the Highway Lighting Division and Streets Department for approval prior to inclusion of the plans in the PS&E package.

Task 7 - 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:

2.10.13
Incorporate additional information (as applicable) such as existing and proposed ground lines in the vicinity of the structure, approach guide rail data, existing structure layout, point of minimum vertical clearance, horizontal clearances, and utilities.
Prepare plans for the superstructure replacements (2).
There are two structures involved with this project:
1. 19th Street over I-676
2. Family Court Pedestrian Bridge over I-676

Approach:

2.10.13
Ammann & Whitney will prepare the final structure plans for the 19th St Bridge and the Family Court Pedestrian Bridge. Both will be replaced using a detour.

Final structure design will follow the guidelines in Design Manual Part 4. The design constraints and criteria contained within the approved TS&L plans and recommendations will be incorporated into the final bridge design. In addition, the following design criteria / methodologies will be used:

a) AASHTO LRFD Bridge Design Specifications, 3rd Edition 2004, U.S. units, as supplemented by the Department's Design Manual Part 4, September 2007 Edition.

b) AASHTO Standard Specifications for Highway Bridges, 15th Edition, 1992, and Interim Specifications 1993 and 1994 (existing abutment analysis).

c) The structure will be designed for the PHL-93 loading or for P-82 permit load, whichever governs.

d) We will comply with seismic analysis requirements for Design Manual Part 4 and AASHTO LRFD Bridge Design Specifications. The project structures will be designed in accordance with Seismic Zone 2 as specified by Design Manual Part 4, D-3.10.2.

e) We will use the LRFD Design Method to determine the projected inventory and operating ratings for the structures as indicated in Design Manual, Part 4 (Table 1.8.3 (A)).

We will determine the type of aesthetic treatments required, based on discussions with the Department and the project stakeholders, and

incorporate these details into the Final Structure Plan Submission.

The Final Structure Plan Submission will include the following items:

a) Complete final engineering design, including seismic criteria for the replacement structure based upon the TS&L plans and recommendations approved by the Department and the Streets Department.

b) Quantity and cost estimates for each structure, with consideration given to project-specific constraints, including construction phasing requirements, access to the project site, and constructability.

c) Standard special provisions and project specific special provisions for excavation, construction phasing, and items not covered by Department specifications. Special provisions and pay items will also be included for design alternate bidding.

d) A final submission in compliance with the guidelines outlined in Design Manual Part 4, including final structure plans, construction documents, special provisions, pay items, quantity estimates, cost estimates, design calculations and QA/QC forms will be made to the Department and, the Streets Department. We will attend any bridge design review meetings requested by the Department and/or the Streets Department. Meeting minutes will be generated which document the discussion items and required plan changes (if any).

Vector with assistance from Pennoni and A&W will provide the final corrosion mitigation / protection design services for the existing Family Court and 19th Street Bridge abutments. The design of the corrosion mitigation / protection system will be based on the results of the Preliminary Engineering Corrosion Evaluation prepared by Vector in February, 2011. The final corrosion mitigation / protection system(s) will be selected based on input from the District and designed with the goal of extending the service life of these abutments through effective corrosion mitigation. The following work will be completed by Vector.

• Select applicable corrosion mitigation/protection system for each abutment.

• Obtain pre-approval for recommended system prior to working on the design.

• Prepare written specifications to cover any of the following sections where applicable:
o Description of System
o Installer Qualifications
o Materials and Equipment Requirements
o Installation Procedures
o Pre- and Post-Installation Testing
o System Operation and Maintenance
o Criteria for Termination of the ECE Treatment
o Dismantlement and Disposal of the System
o Post Treatment Cleaning and Patching of Concrete
o Surface Treatment of Concrete
o Documentation, QA/QC

• Prepare working drawings specific for each abutment.

• Develop Bill of Quantities for Bid Items.

• Provide cost estimates for each abutment based on estimated time, direct and other costs.

• Assist with answers on questions regarding incidental work.

Task 8 - 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:

2.10.14
This will be a continuation of work performed during the Preliminary Design Phase. A Detour Plan where applicable will be prepared during the Final Design Phase. This activity will include a separate plan and written narrative. All signs will berepresented with symbols. The plan will be completed in compliance with Publication 213.
Coordinate/design placement of temporary traffic signals to facilitate traffic during construction activities.

Approach:

2.10.14
This task is a continuation of the efforts, plan preparation, and coordination performed in the Preliminary Engineering part of this Agreement. Pennoni will continue to develop the final Traffic Control Plan in coordination with the District Traffic Unit, the Streets Department, and project stakeholders, along with input gained through various project reviews such as the Design Field View Meeting, the project Value Engineering Review, the project Constructability Review, and the Final Design Office Meeting.

As developed during preliminary engineering, traffic will be detoured for the 19th Street construction. Pennoni anticipates that a traffic control plan will be required for the associated Vine Street work. As requested by SEPTA and the Streets Department during preliminary engineering, Pennoni will conduct a traffic study to determine if Callowhill Street can be converted to two way traffic during the 19th Street detour. Pennoni anticipates that Callowhill Street will be converted to two way traffic and will prepare traffic control plans for Callowhill Street. For operations requiring closure of SR 676, traffic will be detoured on the local road network as developed during preliminary engineering. In addition, short term lane closure plans will be developed for SR 676.

Pennoni will prepare Traffic Control Plans showing required signs, signals, temporary pavement markings, and other details for review and approval by the Department. These plans will include detour plans and other construction staging details as required. In preparing the Traffic Control Plans, Pennoni will adhere to all applicable provisions of Publication 213 - Work Zone Traffic Control and the Manual on Uniform Traffic Control Devices (MUTCD). The Traffic Control Plan will show required stages for review and approval by the Department. Draft Contract Special

Provisions for Maintenance and Protection of Traffic, as well as Traffic Control Plan items, will be included in each submission for review and comment.

Pennoni will attend one review meeting with the Traffic Unit and the Streets Department during Final Design. Comments from these reviews will be documented via meeting minutes prepared by Pennoni.

The Final Traffic Control Plans will include index/notes sheets, tabulation of quantities sheet(s), advance signing sheets, traffic control details sheet, detour plan sheets/details, and detail sheets for each bridge requiring staged construction. A written narrative, which encapsulates the Traffic Control Plan details and Special Provisions, will be included with each Traffic Control Plan submission. The narrative will be modified as required during the development and refinement of the Traffic Control Plan. Detailed staged construction plans are anticipated for the following bridges:

Pennoni anticipates that 6 sheets will be required to show the detour plan for 19th Street and the temporary pavement marking plan for Callowhill Street. Pennoni anticipates that up to 18 sheets will be required to show I-676 advanced warning signage, I-676 detour plans, I-676 short term lane closure plans and traffic control details and quantities for this part.

Pennoni will update the Traffic Management Plan developed during preliminary engineering. The Traffic Management Plan will identify the bridges to be designed and constructed under Final Design Parts 4-8 and will be updated based on the District's bid schedule for these projects.

It is likely that changes in traffic patterns as a result of the detours will affect the operation of the existing signals along the detour route. As part of our Traffic Control Plan development, we will investigate the operations of the existing signals and recommend possible modifications to signal timings to maximize the efficiency of the existing signals. For the purpose of this proposal we anticipate up to 10 retiming's will be required and that signal plans will not be required for the 10 intersections where retiming is proposed.

Pennoni will prepare a Temporary Traffic Signal Plan in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

The following Temporary Signal Plans are anticipated:

--19th Street and Vine Street/Logan Circle
--16th Street and Callowhill Street
-- Broad Street and Callowhill Street

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption

systems)

The following task will be completed by the Pennoni Team for temporary traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Task 9 - 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:

2.10.15
Provide required plans and information for all signals impacted by the project. This includes signals adjacent to the project and any intersections designated along detour routes or Traffic Management Plan initiatives.

Approach:

2.10.15
The Pennoni Team will prepare final signal construction plans for one (1) signalized intersection within the project limits, in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

For the purpose of this proposal, the Pennoni Team assumes that the signals at 19th and Vine Street, and 19th and Logan Circle will require upgrades to existing signal hardware.

Special Provisions will 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 will be submitted with the Traffic Signal Plan as a separate entity.

Full-size drawings of the traffic signal construction plans will be submitted to the District Traffic Engineer and the Streets Department at the completion of the 60% and 90% project completion levels for review and comment. The Pennoni Team will schedule and attend one meeting with the District Traffic Engineer and/or Streets Department to discuss the review comments before advancing the design. Copies of the Special Provisions will be submitted at the 90% project completion level.

The Pennoni Team will prepare Traffic Signal Permit plans for one (1) signalized intersection by modifying the Traffic Signal Construction Plans to reflect the final permitted operation of the traffic signal. Notes specific to the signal construction will be removed and notes identifying the Permittee's responsibilities will be added along with a permit issue block to the upper right hand corner of the plan sheet. As directed, the Traffic Signal Permit Plans will be submitted to the Streets Department following construction.

The following task will be completed by the Pennoni Team for final traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume

density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Signal design for temporary traffic signals associated with detour routes will be completed as part of Task 8.0, Traffic Control Plan

Task 10 - 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

Department Details:

2.10.16
All traffic related signs will be incorporated into the Pavement Marking Plan.

Approach:

2.10.16
The Pennoni Team will continue on the work completed in preliminary engineering in preparing the final pavement marking and signing plan for this project. The plans will follow the preliminary design that was completed as part of the Design Field View Submission. The plans will be developed

in accordance with Design Manual Part 3, the Manual on Uniform Traffic Control Devices, Traffic Standards (TC-7600 Series), and Publication 68 with guidance from the Pavement Marking Handbook.

Pennoni anticipates that Callowhill Street will be converted to a two way street between 17th Street and Broad Street during the construction of the 19th Street bridge to accommodate SEPTA operations. Pennoni will prepare a pavement marking plans to return Callowhill Street to one-way operation at the conclusion of construction.

The plans will consists of a title sheet with general notes, tabulation sheets, and plan sheets. The plan sheets will show proposed pavement markings, sign locations, sign types and messages. The final submission will include:
• General Plans
• Special Details
• Quantities
• Specifications

Pennoni will review the final plans with the Streets Department prior to submission to the Department. Pennoni will coordinate with the Philadelphia Parking Authority regarding parking regulations and associated signage. Pennoni anticipates that the Parking Authority will provide the details to any non-standard parking signs. Efforts will be made to retain existing signage where possible. Special sign details will be incorporated into the plans as required.

Task 11 - 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.

Scope:

2.10.2 - Roadway
Needs completed.

Detail Task 1 - Roadway

Department Details:

2.10.2.3
Remove item 1. Item 2 is only necessary where approach work involves the reconstruction of an adjacent intersection.
Plans will be at a scale of 1"=25'.

Approach:

2.10.2 & 2.10.2.3
The Pennoni Team will complete the final design for 19th Street, Family Court and Vine Street between 18th Street and 19th Street and Callowhill Street. It is anticipated that Callowhill Street will be converted to a two way street during the construction of 19th Street to assist in SEPTA detour routing. Following the completion of 19th Street bridge, Callowhill Street will be milled and overlaid and returned to one-way operation. We will

complete the design and prepare deliverables for the project's PS&E package, including final roadway plans, specifications, engineer's estimate, and pre-bid schedule. Plans and documents will be prepared in accordance with Design Manual Parts 1A, 2, 3, 4, and 5, and applicable Department standard drawings. The construction plans will follow the formats and procedures outlined in Design Manual Part 3.

Details for each component in the PS&E package are described in our following approach for each subtask.

Ammann & Whitney will finalize the drainage design developed in Preliminary Engineering. Since the drainage is expected to be limited to the replacement of existing facilities and/or minor improvements, the final roadway plan will provide the appropriate information for the replacement of the inlets, including excavation, invert depth elevations, etc.

Hydraulic design computations will be prepared using appropriate methodologies for all roadway drainage structures. The replacement inlets will be checked to confirm that their capacity is adequate for the 10-year storm flow, and that downstream drainage capacity is sufficient for the proposed design. The proposed drainage design will be closely coordinated with our Erosion and Sedimentation Control design.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review. This submission will include design plans as well as Checklist B as described in PWD's Stormwater Management Manual. Due to the nature of project, zoning and building permits are not anticipated. In accordance with PWD policies and procedures for roadway maintenance and rehabilitation projects, therefore we will apply for a waiver from meeting the PWD Stormwater Management Regulations. A Post-Construction Stormwater Management Plan is not anticipated.

Due to the limited amount of full depth roadway construction, a simplified method of pavement design may be appropriate for this project. Pennoni will verify limits of work, existing pavement types and anticipated pavement section with the District and Streets Department prior to submission of the final pavement design documents. Pennoni anticipates that the standard Philadelphia pavement section will be utilized for the limited full depth roadway reconstruction. Pennoni will submit a pavement design letter and form D-4332A to the Pavement Design Unit for approval. Pavement items will be clearly indicated on the typical sections included with the final roadway plans.

Pennoni will prepare those sheets needed for the overall construction package and the drawings for Vine Street. Ammann & Whitney will prepare the sheets needed to represent the areas of 19th Street and Family Court.

The final PS&E package will include the preparation of the following roadway construction documents:

Typical Section Sheet - includes the typical sections developed in Preliminary Engineering. The typical sections will be updated with proposed pavement types and depths. The typical section sheets will be prepared as outlined in Design Manual Part 3.

Tabulation of Quantities Sheets - will be prepared in accordance with the guidelines specified in Design Manual Part 3. The sheets will be formatted in accordance with the sample included in Chapter 15 of Design Manual Part 3.

Plan and Profile Sheets - include roadway construction plans and profiles. The detail sheets will be prepared at a horizontal scale of 1"=25' and a vertical scale of 1"=5'. These drawings will show existing and proposed features including topography, horizontal geometry, bench marks, references, legal right-of-way, construction easements, utilities, existing and proposed structural data, and other required design information.

ADA ramp design sheets – includes an intersection plan, spot elevation plan and slope and dimension plan for each impacted ramp. Plans will be

prepared on 11x17 sheets and organized in a three ring binder with a cover letter. Additionally a CS-4401 form will be filled out for each ramp and if required, a TIF form will be submitted for ramps not meeting the current criteria. Pennoni will submit the ADA design package to the PennDOT and the Philadelphia Streets Department ADA reviewers. The approved ADA designs will be incorporated into the detail sheets of the construction set.

The submitted set of final roadway plans will include the "also" plans, including Structure Plans, Cross Sections, Erosion and Sedimentation Control Plans, Traffic Control Plans, and Pavement Marking and Signing Plans. The final plan set submission will also include any incorporated and approved utility relocation plans.

Since the existing horizontal alignments are expected to be retained, the intersection design for this project is expected to generally replicate existing conditions. The minor adjustments to the vertical profiles developed during preliminary engineering will be incorporated in the final design detail sheets.

Before final plans are completed, an in-house plan review will be performed. This review will check the plans for presentation details, plan clarity, item number and special provision references, and overall quality of the plan from a contractor's viewpoint. Any major changes to the plans that result from the plan review will be reviewed with the District prior to final submission.

The Pennoni Team will prepare all submissions for, and attend, the Final Design Office Meeting. The submission will include all plans, special provisions, preliminary special provisions, and construction cost estimate. Pennoni will prepare minutes of the meeting, documenting discussion points and required revisions to the design package.

All special provisions will be reviewed as part of the constructability and Final Design Office Meeting reviews. Every effort will be made to use pre-approved provision language to simplify this effort. Special provisions unique to utilities and the City of Philadelphia will be reviewed with the affected agency to ensure conformance with agency criteria.

Proprietary items, if any, will be identified as soon as possible in Final Design. Appropriate documentation and justification for the use of proprietary items in the bid package will submitted to the Department for review and approval.

The Pennoni Team will prepare plans, profiles, typical sections, and cost estimate for the Final Design Field View. Pennoni will prepare for the meeting at the approximate 35% completion stage of Final Design. Pennoni will attend the meeting with appropriate personnel versed in specific project details. Meeting minutes will be generated which document discussion points and required revisions to the design package.

Task 12 - Section 4(f) Mitigation Plan

Objective:

2.10.23 - Section 4(f) Mitigation Plan
This task is the development of the Section 4(f) mitigation plan.

Scope:

2.10.23 - Section 4(f) Mitigation Plan
1. Develop a mitigation plan that identifies any mitigation measures committed to in the Final Section 4(f) Evaluation and NEPA document for Section 4(f) resources.

2. Submit plan to PennDOT, PHMC and possibly FHWA for review. Revise plan if necessary.

3. Include this plan in the final design plans, specifications and estimates package to ensure that the measures are carried out during construction.

Detail Task 1 - Section 4(f) Mitigation Plan

Department Details:

2.10.23
Provide all services to complete 4(f) Mitigation as required through the environmental documentation phase.

Approach:

2.10.23
ASC will assist Pennoni in the development of a Section 4(f) mitigation plan by identifying any mitigation measures committed to in the Section 4(f) documentation. ASC will assist Pennoni in any coordination efforts required for Section 4(f). These mitigation measures will be identified on the Final Design plans and carried out during construction, as required.

Task 13 - 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:

2.10.25
Provide all required permits and approvals to advance to PS&E.

Approach:

2.10.25

Ammann & Whitney with assistance from Pennoni will prepare an Erosion and Sedimentation Control Plan and narrative for this project in accordance with Design Manual, Part 2, Chapter 13, and the guidelines set forth in the Pennsylvania Department of Environmental Protection's publication Erosion and Sedimentation (E&S) Control Program Manual, dated March 2000, as well as any revisions thereto. We will develop, establish, and maintain stringent temporary and permanent controls to restrict sediment within the project's excavated areas. The plans and narrative will be prepared with specific and positive safeguards, to protect adjacent properties from pollution by transported sediment. Both temporary as well as permanent erosion and sedimentation controls will be developed. Due to the type of construction, it is anticipated that the E&S measures will be limited to inlet protection, silt fence, seeding & mulching, or similar facilities. E&S controls that require additional right-of-way, such as sediment traps or sediment basins, are not anticipated.

Ammann & Whitney will draw upon previous experience with Erosion and Sedimentation Control design for City of Philadelphia projects in developing the final plans. We will coordinate with the Philadelphia Water Department (PWD) during final plan development, since PWD approves Erosion Control plans for projects with less than one acre of disturbance within the City. It is anticipated that the project will disturb less than 1 acre and will be exempt from the NPDES requirements. Therefore, a post-construction stormwater management plan is not anticipated.

We will submit the final erosion and sedimentation control plan to the District for their review and approval. Upon approval by the District, the plans and narrative will be forwarded to the Philadelphia Water Department review and approval.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review as described in 2.10.2.

Approved erosion control items will be incorporated into the final construction plans and special provisions, as required.

Task 14 - 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.

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."

Detail Task 1 - Assemble Final Project Documents for Contract Management

Department Details:

2.10.29
Use PENNDOT ECMS system for bid package preparation. Assist District personnel in the preparation of any addendum required for the project. Prepare bid justification documents as required.

Approach:

2.10.29
The Pennoni Team will assemble the project's bid package using the Department's ECMS system. Pennoni will thoroughly check the plans, specifications, construction cost estimates, and the project schedule for accuracy and completeness prior to submission. Pennoni will ensure that all required approvals, permits, clearances, etc. have been secured/approved by the appropriate authorities. Prior to submission, Pennoni will complete the Project Development Checklist and will produce copies of the required documents to the District for linking into ECMS.

Once the bid package is advertised, Pennoni will provide answers to bidder's questions via the ECMS system.

Pennoni will attend the pre-bid meeting at the direction of the District. Pennoni Team members with the requisite project experience will attend the meeting in order to appropriately answer questions about the bid package. Meeting minutes will be generated which document discussion points and required revisions to the design package.

If required by the District, Pennoni will create and submit addendums to the project's Bid Package. As required, changes to plans, quantities, or special provisions will be made and the project documents updated accordingly. Pennoni will coordinate this effort with the District's Project Manager and the District Contract Management Unit.

Pennoni's PS&E package will include a critical-path project construction schedule in Welcom Open Plan format. The schedule will be included in the project's constructability review for review and comment by the District Construction Unit prior to inclusion in the bid package. Both the full-logic schedule and abbreviated critical path version will be included in the submission.

Draft special provisions will be submitted to the District for review prior to the PS&E submission. The special provisions will be written in standard PennDOT format, and will be cross-checked against existing Department and District Standard Special Provisions for consistency. Items specific to City of Philadelphia construction will be reviewed with the appropriate City agency prior to inclusion in the PS&E package.

A detailed construction cost estimate will be provided with both the constructability review and the PS&E package. The estimate will provide an estimated unit cost for each item in the proposal based on historical bid data from ECMS. Items not available in ECMS will be estimated by Pennoni using past experience in other projects and by obtaining price information from reliable contractor and supplier sources. Pennoni will provide backup data for the estimated unit costs as requested.

Pennoni will utilize the Department's ECMS system for preparation and submission of the bid package and related documents. Pennoni will provide copies and/or electronic scans of project documents for attachment to the Project Development Checklist, and will assist the District Contract Management Unit with preparation of the final bid package for advertisement.

Task 15 - 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:

2.10.3
Provide field survey to update information which may have changed since the preliminary survey as required in Publication 122M at the required intervals.
Guidance:
- Publication 122M, Surveying and Mapping Manual
- Strike Off Letter 430-99-20, QA/QC Control Checklist for Right-of-Way and Construction Plans
- Form D-428, Field Book
Scope Deliverables:
1. Recover horizontal control and vertical datum.
2. Stake final alignment.
3. Provide line book in Form D-428.
4.Establish vertical control network by setting benchmarks within project area by differential leveling.
5. Record level loops in Form D-428 field book.

6. Benchmarks set will be no greater than one half mile apart and will be set on permanent objects not subject to movement.
7. Benchmarks will be set on both sides of proposed structures and/or structures to be replaced.
8. Stake required right-of-way lines, legal right-of-way lines, temporary construction easements, slope easements, etc.

Approach:

2.10.3
Chilton Engineering, Inc. (Chilton) will perform the incidental surveys as deemed necessary to supplement the original survey performed for this project during Preliminary Design.

Chilton will perform an updated property owner search, and perform supplemental roadway and structural surveys as necessary. Survey work will be performed in accordance with the latest edition of the Surveying and Mapping Manual and any relevant Strike-Off Letters. All field surveys will be performed with modern total station instruments equipped with electronic data collectors or High Definition Survey (HDS) Scanning equipment.. As part of the survey process, standard field books will be maintained according to District requirements, including indexing.

Survey Control: Existing horizontal and vertical survey control established during Preliminary Design will be recovered. Additional survey control will be established as necessary. All survey data that is obtained during our field activities will be referenced to this control network. A final survey report will be prepared.

Traffic Control Plan for Field Activities: Any traffic control and protection of the traveling public measures necessary for the required field survey tasks will be in conformance with PennDOT Publication 213, Work Zone Traffic Control. The plan will be submitted to the District Traffic Unit for approval prior to implementation. All major traffic control devices required for major work zone traffic control measures will be furnished, erected and maintained by a firm specializing in these measures. Lane shifts on ramps and/or partial closures on side roads will be limited to off peak hours. We will advise the District's Press Office prior to any lane closures and/or encroachments.

Field Edit of Existing Base Plan Mapping: Chilton will field review the existing base plan mapping surveyed during Preliminary Design to identify any changes to the topographic features within the project limits.

Topographic Survey: Chilton will perform required topographic surveys to provide more detail or extend plan coverage as directed by Pennoni. Information gathered will be plotted on the existing base plan mapping and all additional features identified and clearly labeled.

The digital terrain model of the project will be updated to incorporate the field review. This model will be updated, with contours calculated and shown on the plan at one (1) foot intervals.

Roadway Cross Sections: We will update cross section data as deemed necessary. Measurements will be exacted to the nearest one-hundredth (0.01) of a foot on hard surfaces and pavements and to the nearest one-tenth (0.1) of a foot on ground shots.

Structural Survey: Field survey edits will be performed at the existing bridge and overhead structure sites as directed by Pennoni. Clearances measurements will be updated at the fascia beam on both sides of each bridge if required.

Stakeout Roadway and Structure Core Boring Hole Locations. If necessary, we will stakeout any additional proposed roadway core boring hole locations. The boring locations will be staked and existing ground elevations will be obtained.

Stakeout Proposed Right-of-Way Easement or Acquisition Parcels. If necessary, we will stakeout the proposed corners/lines of any right-of-way

takes or easements for property owner review. Each stake will be identified by ribbon color and labeling of Sta./Offset and point description.

Using the approved final roadway geometry layout as provided by Pennoni, Chilton's surveyors will perform the field stakeout of the proposed construction baselines when directed by Pennoni. Because of the volume of traffic in this area the use of offset base lines may be used. The offset base lines will be set in the shoulder. The staking of the actual baseline or use of offset lines will be determined after review with the Department and Pennoni. Actual control points such as PC's, PT's and PI's will be either drill hole (in concrete), PK nail (in asphalt) or iron pin (in soil).

The construction baseline or offset baseline points will be referenced after they have been set. The references will be located outside the area of proposed construction. References will be set meeting applicable Department standards, where possible. At a minimum, Chilton will reference all horizontal control points to three fixed objects located outside the limits of proposed construction with both angular and distance ties provided, showing orientation to the baseline. Reference sketches will be prepared for these points, to prepare detailed control reference circles on plans.

Task 16 - 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:

2.10.4
Develop Cross Sections as required for the project.

Approach:

2.10.4
The Pennoni Team will prepare the final cross sections following the procedures outlined in Design Manual Part 3. The sections will be prepared at a horizontal and vertical scale of 1"=5'. Proposed template areas and the limits of earthwork will also be shown on the cross sections. The earthwork quantities for these template areas will be computed and tabulated as part of the final PS&E package.

Pennoni anticipates that cross sections will be required for 19th Street and the 1800 block of Vine Street.

Roadway cross sections will be prepared at 25 foot intervals and at locations of all major terrain features. Since the roadway reconstruction is expected to be limited, the roadway sections will extend the area necessary to facilitate the reconstruction of the bridge approaches and any intersection/street reconstruction as appropriate. The existing information outlined in Preliminary Engineering will be included on the final cross sections as will the following proposed information:

• Proposed roadway template, including pavement depth
• Construction and survey baselines
• Limits of earthwork & curbing with computations
• Proposed utilities (if applicable)
• Existing and proposed drainage facilities

The cross sections will also be prepared to assist in determining limits of involvement at driveways and adjacent street intersections. The final roadway cross sections will be used to assist in the refinement of the roadway line and grade, in addition to the evaluation of the proposed improvements.

Existing and proposed ground lines will be generated utilizing the proposed alignment information and three-dimensional electronic imaging files. Existing ground lines at pavement tie-in points and along those roadways requiring surveyed cross sections will be generated using field survey data. The proposed roadway template will be added to the final roadway cross sections.

Drainage features, including pipes, inlets, and manholes, will be superimposed on the existing cross section. Existing and relocated utilities will also be included on the cross sections.

Task 17 - 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:

2.10.5
The consultant will prepare a separate right of way plan as described in Paragraph A and in accordance with all applicable Design Manuals and PA D.O.T. Strike-off Letter 430-98-26. Present no more than two plats per sheet. Verification of ownership will be rechecked just prior to the final submission.

Approach:

2.10.5
Chilton Engineering, Inc. with assistance from Pennoni will prepare the project's Final Right-of-Way Plans.

The Final Right-of-Way Plans will be prepared in accordance with Design Manual Part 3, Chapter 3, and appropriate Strike-Off Letters. As the project is located within the City of Philadelphia, the Right-of-Way Plans will also meet the requirements of the City's Board of View.

Chilton will research public records to update ownership and location of properties adjacent to the project. Chilton will conduct research of the public records at the City, as necessary, and will utilize electronic search measures where feasible.

Chilton will obtain copies of deeds, adverses, descriptions of easements, any available development plans, tax maps, etc. that have been revised to confirm the Department's existing right-of-way. The Department's record retention unit will be contacted and relevant plans requested. Private and public right-of-way and easements will be indicated and cross referenced to the appropriate legal document.

Chilton will utilize the information described above to update the mosaic of all properties.

Final Right-of-Way Plans will be developed by Chilton to show the relationship of the proposed construction to the existing and required Right-of-Way and property details. The plans will show legal and required Right-of-Way and easements including existing and relocated utilities. The final plans will show all data necessary to prepare appraisals and to acquire the properties. Topographic features that will affect the value of the takes will be shown including trees, shrubbery, drainage features, buildings, signs, drainage, fences, and other structures.

The need for Temporary Construction Easements and/or Drainage Easements will be determined. Pennoni will coordinate the need for and the location of easement areas with Chilton during Final Right-of-Way Plan development.

Final Right-of-Way Plans will be submitted to the Streets Department and the District for review. Chilton and Pennoni will attend a plan review meeting with the Department's Field Liaison Engineer as required. Revisions to the plan will be made prior to final submission for acquisition.

Copies of record plans, tax maps, deeds, lease agreements, private/public right documents, and transcribing sheets will be submitted to the District as requested.

Chilton will prepare the Right-of-Way property plats by using the Right-of-Way plans prepared under Task 17.0 as the basis. The plans will show all utilities, trees, shrubbery, buildings and other structures and other features that may impact property values. The metes and bounds of properties, easements, and Right-of-Way lines will be shown. The location of private water supplies and sanitary sewer facilities that may be affected by the proposed construction will be identified.

Task 18 - Utility Engineering

Objective:

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

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.

Detail Task 1 - Utility Engineering

Department Details:

2.9.1
Build upon coordination effort that has taken place during the Preliminary Engineering Phase of this project.

Approach:

2.10.8 & 2.9.1
Chilton with assistance from Pennoni and A&W will coordinate the utility relocations required for the project.

The PA ONE-CALL will be made and existing utility information requested. This information will be verified and checked against information received and plotted during the preliminary design phase.

Each affected utility will be contacted to determine their requirements and methods of relocation. Determinations will be made whether utilities will be relocated by the utility, by the contractor as incorporated work, or by a combination of both.

Chilton will verify whether all formal requests for agreement permits and occupancy applications are in accordance with the policies and procedures of Design Manual Part 5.

Chilton will coordinate with the Department and Pennoni to schedule an Initial Utility Design Stage Meeting to introduce the project goals, schedules, and targeted utility clearance dates. Chilton will keep each utility informed of all design changes that could impact existing or planned utilities.

As the final design plans, profiles and cross sections for the project are generated, copies will be forwarded to each utility company affected within the project limits. The utility will be asked to verify their facilities, identify any need for additional Right-of-Way or easements, and identify any potential conflicts. Each utility will receive the appropriate form for submission of bridge attachment requests. As meetings are scheduled to resolve utility conflicts, we will provide personnel familiar with project to attend and coordinate.

Chilton will maintain continuous contact with each utility company representative throughout the life of the project. We will schedule the Final Utility Design Stage Meeting with the Pennoni Team, the Department, the Streets Department, and each utility representative. The purpose of the meeting will be to resolve all outstanding issues, reinforce the utility clearance target dates, and introduce the construction schedule. Chilton will send periodic project status reports to each utility to keep all involved with the progress of utility conflict resolutions.

Upon approaching the scheduled PS&E submission, Chilton will schedule a utility meeting to review all utility issues and resolutions. At this meeting a task schedule will be developed for utility work to be completed prior to construction. This meeting will also be used to identify any outstanding design issues.

Chilton will work with the utility providers to complete and file all required forms and permits including Form D-419, Utility Clearance and Form D4181X for bridge occupancy where applicable. This work will be coordinated with the District Utility Unit.

Chilton will invite all utility representatives to attend all pre-bid, pre-construction and construction status meetings.

Task 19 - Signing and Sign Lighting Plan

Objective:

2.10.17 - Signing and Sign Lighting Plan
This task is the development of the signing & sign lighting plan.

Scope:

2.10.17 - Signing and Sign Lighting 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.

The final submission will include:
- A Title Sheet
- Index Sheet
- An Index-Location Map
- Tabulation of Quantities Sheet(s)
- Summary of Quantities (used only if signing plan is a stand alone plan)
- Detail Sheets
- Specifications

Type I Detail Sheets (general plans) 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.

Type II Detail Sheet includes sign structure details. These plans include:
- A location plan
- Plan, elevation and end view of the sign structure
- Details
- Sign schematic
- Sections and steel sizes for Type A signs
- Estimated quantities
- Design criteria
- General notes.

Type III Detail Sheet consists of sign fabrication information and includes:
- Length of sign
- Height of sign
- Sign legend details including letter spacing, letter size and series, and sign color)
- Size of border and radii of corners
- Sign lighting design
- Quantities

Refer to TC-8701A for sign lighting requirements. In general, all overhead signs that do not have a 800' tangent sight distance require sign lighting. Verify the requirements with the District. Prepare the sign lighting plans in accordance with Standard Drawing TC-8715 and Publication 408, Section 920 requirements. Submit sign lighting plans to Central Office, Highway Lighting Unit for approval prior to the release of the final sign lighting plans to the District for PS&E Development.

Detail Task 1 - Signing and Sign Lighting Plan

Department Details:

2.10.17
Provide all required plans and specifications as identified above.

Approach:

All work will be performed in accordance with the Department's Scope of Work.

2.10.17
Ammann & Whitney will complete the Final Signing and Sign Lighting Plans for the project, in accordance with applicable TC-8700 standards. This work will be a continuation of the work completed in Preliminary Engineering.

Type I, Type II, and Type III Sheets will be prepared as required in the Scope of Work for each sign. Details on sign sizes, lettering, material, and spacing will be replicated from the original plans, if available, with modifications as required. Sign Lighting Plans will be submitted to Central Office, Highway Lighting Unit for approval prior to submission to the District Traffic Unit for final approval.

As part of this task, Ammann & Whitney will complete plans for the relocation of the signs that are currently mounted to the superstructure- of the bridges. Duplication of sign movements will be eliminated to the best extent possible; with a focus on relocating signs to their permanent position in

the first stage of each bridge's reconstruction.

Task 20 - Roadside Development Plan

Objective:

2.10.27 - Roadside Development Plan
This task is the development of the roadside development plan.

Scope:

2.10.27 - Roadside Development Plan
These include Wetland Mitigation Planting Plans, Wildlife Habitat Mitigation Planting Plans, Maintenance Yard or Stockpile Area Screening Plans or any other plans requiring landscape design and plans preparation.

Where no roadway construction is involved, the plans are an entity in themselves. Where roadside development is a part of highway construction, the quantities and plans are numbered in the Construction Plans and placed immediately after the Contour Grading and Drainage Plans.

Where separate plans are required, the Roadside Development Plan includes:
1. Title Sheet
2. Index Sheet
3. Typical Section Sheet
4. Summary and Tabulation of Quantities Sheet
5. Detail Sheets (required for all tree, shrub and vine plantings)

Where plans are a part of the highway construction, it is not necessary to prepare a separate Title Sheet, Index Sheet, Typical Section Sheet or Summary and Tabulation of Quantities Sheet.

Prepare plans in accordance with Publication 14M, Design Manual Part 3.

Detail Task 1 - Roadside Development Plan

Department Details:

2.10.27
Provide all plans and specifications as detailed above.

Approach:

2.10.27
LRSLA with assistance from Pennoni will develop the landscape design approved in Preliminary Engineering. The area will include paved pedestrian zones and planted zones adjacent to the roadway improvements, including the planting on both sides of 19th Street and the park in front of the Family Court. The plans will include Landscape Demolition Plans (including existing tree and soil protection zones), Landscape Materials Plans, Landscape Layout Plans, Landscape Grading Plans, Landscape Planting Plans and Irrigation Plans. Landscape Details will include pedestrian paving sections and plan pattern details, site walls sections and elevations, site furnishings, and planting sections and detail plans. Materials and details will follow the Fairmount Park Commission Benjamin Franklin Parkway Design Guidelines Manual, approved and

adopted by FPC, and in accordance with Publication 14M, Design Manual Part 3. Pennoni will develop the details necessary for the connection of the irrigation system to the existing water vault or existing irrigation system. Pennoni anticipates 1 connection for the 19th Street, Family Court Bridge and associated improvements between the structure and Logan Circle will be required.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
Pennoni Associates Incorporated	No	
Ammann & Whitney Pennsylvania, Inc.	No	Pennoni Associates Incorporated
ASC Group, Inc.	Yes	Pennoni Associates Incorporated
Chilton Engineering, Inc.	Yes	Pennoni Associates Incorporated
Lager Raabe Skafte Landscape Architects,Inc.	Yes	Pennoni Associates Incorporated
Vector Corrosion Technologies, Inc.	No	Pennoni Associates Incorporated

Attachments

No records found.

Part 8 - Final Design - 18th Street

Description

Final Design - 18th Street

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.

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.

Detail Task 1 - Project Management/Administration

Department Details:

2.1.1
The consultant shall provide construction cost updates as required by the Department.
The consultant will thoroughly check all design submissions before submitting them to the Department for review.
The Department reviews will be cursory in nature and the consultant will be responsible for design and plan accuracy.
The consultant will be liable for design and plan errors in accordance with 67 PA Code, Chapter 455, Consultant Highway Design Errors.

The consultant will be responsible for DBE progress, and all submissions prepared by the DBE will be submitted through the prime consultant's office. The prime consultant will be responsible for the accuracy and quality of the DBE work.

2.1.1.1
The consultant will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
Assume there will be one (1) design related meeting per month for the duration of the final design phase of the project.

2.1.1.3
The project QC/QA plan is to be provided to the District one (1) month after NTP. Include sub-consultant QC/QA plans as appropriate.

2.1.1.5
The initial project Welcom Plan is to be provided to the District one month after NTP.

Approach:

2.1.1
This task will be a continuation of the project management effort from Preliminary Engineering. Jim Pezzotti will continue to manage the Pennoni Team, including sub-consultants Amman & Whitney Pennsylvania, Inc. (A&W), ASC Group, Inc. (ASC), Chilton Engineering, Inc. (Chilton), Lager Raabe Skafte Landscape Architects, Inc. (LRSLA) and Vector Corrosion Technologies, Inc. (Vector) as well as individual Pennoni discipline leaders. Mr. Pezzotti will continue as the main point of contact with the District and is responsible for the overall coordination of the project team as necessary to deliver a quality project PS&E package to the District by the specified time and within the designated budget.

Mr. Pezzotti will continue to serve as the primary contact with governmental agencies and other project stakeholders. For this project, these stakeholders include various City of Philadelphia agencies (Streets Department, Water Department, Philadelphia Gas Works, Fairmount Park Commission, School District, etc.), various private utility companies (PECO, Verizon, etc.) city emergency service providers, local government (City Council, etc.) and involved community groups.

Mr. Pezzotti will be responsible for ensuring that the Department's standards for invoicing are followed and that invoices are submitted correctly.

Pennoni will prepare a construction cost estimate at the Value Engineering Review, Constructability Review, and PS&E Submission stages of the project, and as required by the Department. Each cost estimate will use the latest standard item bid prices from ECMS, supplemented by additional data and engineering experience as required.

2.1.1.1
As directed by the Department, the Pennoni Team will attend all required project meetings, including public meetings, agency coordination meetings, design review meetings with District personnel, and meetings with City of Philadelphia agencies and project stakeholder groups. Pennoni will prepare agendas and minutes for every meeting, and will prepare handout and/or display materials as appropriate. For purposes of this proposal, a total of twenty-four (24) meetings are anticipated in Final Design (one design-related meeting per month for the duration of the phase).

The Pennoni Team will also attend any task-specific meeting as required, examples of which include meetings with the District Traffic Unit and the Streets Department.

2.1.1.3

Pennoni's commitment to quality includes our Project Specific Quality Assurance Plan. Mr. Pezzotti will develop a Quality Assurance Plan for this project, and will be responsible for overall project quality. Our Quality Assurance Plan will be available for District review and approval within one month from issuance of Notice-to-Proceed for Final Design, and contains a detailed approach to monitor the progress of each project task, including maintenance of project budgets and schedules, project staffing, communications with the District, sub-consultant supervision, plan reviews, quality assurance, and document control. Sub-consultants will submit their own QA/QC plan, which will be checked to ensure a uniform quality control approach for the entire project team.

2.1.1.5
Pennoni will provide an updated project design schedule using Welcom Open Plan and will submit it to the District along with our QA/QC plan within a month of issuance of Notice-to-Proceed for Final Design. The project schedule will be updated with each project status meeting and will be available for review by the Department's Project Manager.

Task 2 - 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 - Coordinate Constructability Review

Department Details:

2.1.2
It is anticipated that a Constructability Review will be required for this project. Provide all materials and services to assure this review is completed appropriately.

Approach:

2.1.2
The Pennoni Team will work with the District in developing and coordinating a constructability review team throughout the project. The Pennoni

Team will submit appropriate materials for review by District personnel at various stages of project design in order to avoid costly re-engineering efforts later in the design phase. The constructability review submission will include, at a minimum:
--A full plan set (roadway, structural, traffic control, traffic signal, etc.);
--Estimated items and quantities;
--Construction cost estimate;
--Construction schedule;
--Draft Project Special Provisions
Our proposed design will be reviewed by our in-house constructability review personnel prior to submission to the District as part of our QA/QC procedures.

Pennoni will be available to meet with the District's constructability review team in order to discuss project details and concerns of the review team. One (1) District constructability meeting is assumed for this Final Design Part. Meeting minutes will be prepared to document the review discussion and required changes to the plans.

Task 3 - 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:

2.1.3
The consultant will prepare and distribute to appropriate parties the minutes of all meetings.
Assume there will be one (1) general public meeting/ public officials meeting, four (4) municipal meetings and four (6) project stakeholder meetings.

Approach:

2.1.3
The Pennoni Team will continue Public Involvement efforts from Preliminary Engineering through Final Design. Pennoni will attend all project public involvement activities during the project. Pennoni with assistance from A&W, ASC and LRSLA will prepare for the meetings specified in the Department Details. Three (3) meetings per Part are anticipated to cover the eleven (11) total meetings described in the original Part 2 Department Details. Pennoni will review the requirements for each meeting with the Department prior to the meeting, and will develop agendas, appropriate display materials/handouts, and other materials required for the meeting. Pennoni will also assist the Department in coordinating with meeting attendees as required.

All public meetings will be attended by Pennoni Professional Engineers and qualified professionals with the requisite project knowledge for the meeting agenda. Members of our sub-consultant team will attend meetings as required by the meeting agenda. If required, a "dry run" will be scheduled prior to the public meeting, allowing sufficient time to incorporate any revisions requested by Department staff.

Pennoni will publish meeting minutes from the public meeting(s) and will submit them to the Department within ten (10) working days of the meeting for the Project Manager to review. We will revise the minutes if necessary. Changes to the plans which result from these meetings will be fully documented and incorporated into the plans where applicable.

Task 4 - Value Engineering

Objective:

2.1.4 - Value Engineering
This task involves performing a value engineering review.

Scope:

2.1.4 - Value Engineering
Provide work as detailed by the Department. See Department Detail.

Detail Task 1 - Value Engineering

Department Details:

2.1.4
Prepare necessary documentation, attend and present proposed project for a Department Value Engineering review.
Provide assistance to the District Value Engineering Coordinator in documenting the process and necessary follow-up tasks.

Approach:

2.1.4
Pennoni, A&W and LRSLA will prepare the Value Engineering submission for the project, composed of appropriate plans, specifications, and associated documents for review by the District Value Engineering Review Committee. The submission will be in compliance with the procedures and criteria outlined in Design Manual 1A, Appendix H, and will be coordinated with the District Value Engineering Coordinator. Since the total project is a Federal-Aid project with a construction value greater than $20 million, a full Value Engineering review is anticipated.

Pennoni, A&W and LRSLA will attend the Value Engineering review meeting and will present the project to the team and review project details. One (1) Value Engineering review meeting is assumed for this Final Design Part. Team members with detailed knowledge of specific project details

(structural, traffic control, etc.) will attend in order to answer specific technical questions. All proceedings will be documented by Pennoni in order to be included in the final Value Engineering Report. Pennoni will document any changes to the design (and their associated cost savings) that result from the Value Engineering Review.

Task 5 - 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.

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.

Detail Task 1 - Environmental Activities

Department Details:

2.10.1
Identify and incorporate any commitments made during Preliminary Engineering.

2.10.1.3
A re-evaluation of the environmental document will be required prior to the P.S.&E. submission.
Follow Department Policies and Strike-off Letters regarding Due Dilligence and Asbestos documentation.

Approach:

2.10.1 &2.10.1.3
Depending on the time elapsed, and if any changes to the project occur, ASC will re-evaluate the environmental documentation in Final Design, prior to the PS&E Submission. If necessary, ASC will complete an Environmental Due Diligence (EDD) Phase I Visual Inspection form and appropriate Asbestos Documentation, in accordance with the PennDOT Policies and Strike-Off Letters. ASC will update the Pennsylvania Natural Diversity Inventory (PNDI) and coordinate with the appropriate agencies, as required. ASC will coordinate with Pennoni and the District, as requested, to complete any coordination required for Section 6(f) clearance. ASC assumes attendance at two (2) status/design project meetings associated with this task.

If the project Scope of Work is changed to include improvements in the area of Callowhill Street (17th Street to Broad Street), ASC will incorporate this information into the environmental document or the re-evaluation of the environmental document. At least three (3) National Register Listed buildings are located adjacent to the project area. ASC will coordinate with the District 6-0 Qualified Professional to determine if any cultural resources coordination is required and with the District 6-0 Environmental Unit to determine if additional Section 4(f) coordination is required.

Task 6 - 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:

2.10.12
Investigate condition of existing local street, pedestrian and highway lighting and design lighting elements as required.

Approach:

2.10.12
Highway lighting plans will be developed by Ammann & Whitney with assistance from Pennoni as part of the project's PS&E submission. The Highway Lighting Plans will be developed in accordance with all applicable Department Standards, including Design Manual Parts 2 and 3, and AASHTO's "Roadway Lighting Design Guide".

Ammann & Whitney will coordinate development with this plan with the Central Office Highway Lighting Section. Input on required street lighting will be obtained from the Streets Department and from stakeholder coordination completed in Preliminary Engineering. Decorative or specific lighting hardware will be considered and included into the plans upon direction from the Department or if the lighting is a condition of the approved project environmental document and/or landscaping plan.

Ammann & Whitney will investigate the adequacy of the existing lighting hardware and lighting pattern for adjacent local streets and under-bridge lighting on the Vine Street Expressway, and will design upgrades as required. Special attention will be given to replacing existing mercury vapor lighting with high pressure sodium lighting systems. Under-bridge lighting details will be included on the Final Structure Plans, as discussed in Task 7.0, Final Structure Plans. Design of final Sign Lighting Plans will be included in the efforts for Task 19.0, Signing and Sign Lighting Plans.

Ammann & Whitney will coordinate and attend a pre-design meeting with the Central Office Highway Lighting Section and the Streets Department to review and establish specific design criteria prior to beginning detailed plan development.

Final plans will be submitted to the Highway Lighting Division and Streets Department for approval prior to inclusion of the plans in the PS&E package.

Task 7 - 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:

2.10.13
Incorporate additional information (as applicable) such as existing and proposed ground lines in the vicinity of the structure, approach guide rail

data, existing structure layout, point of minimum vertical clearance, horizontal clearances, and utilities.
Prepare plans for the superstructure replacement of 18th Street over I-676.

Approach:

2.10.13
Ammann & Whitney will prepare the final structure plans for the 18th St Bridge. The bridge will be replaced using a detour.

Final structure design will follow the guidelines in Design Manual Part 4. The design constraints and criteria contained within the approved TS&L plans and recommendations will be incorporated into the final bridge design. In addition, the following design criteria / methodologies will be used:

a) AASHTO LRFD Bridge Design Specifications, 3rd Edition 2004, U.S. units, as supplemented by the Department's Design Manual Part 4, September 2007 Edition.

b) AASHTO Standard Specifications for Highway Bridges, 15th Edition, 1992, and Interim Specifications 1993 and 1994 (existing abutment analysis).

c) The structure will be designed for the PHL-93 loading or for P-82 permit load, whichever governs.

d) We will comply with seismic analysis requirements for Design Manual Part 4 and AASHTO LRFD Bridge Design Specifications. The project structures will be designed in accordance with Seismic Zone 2 as specified by Design Manual Part 4, D-3.10.2.

e) We will use the LRFD Design Method to determine the projected inventory and operating ratings for the structures as indicated in Design Manual, Part 4 (Table 1.8.3 (A)).

We will determine the type of aesthetic treatments required, based on discussions with the Department and the project stakeholders, and incorporate these details into the Final Structure Plan Submission.

The Final Structure Plan Submission will include the following items:

a) Complete final engineering design, including seismic criteria for the replacement structure based upon the TS&L plans and recommendations approved by the Department and the Streets Department.

b) Quantity and cost estimates for each structure, with consideration given to project-specific constraints, including construction phasing requirements, access to the project site, and constructability.

c) Standard special provisions and project specific special provisions for excavation, construction phasing, and items not covered by Department specifications. Special provisions and pay items will also be included for design alternate bidding.

d) A final submission in compliance with the guidelines outlined in Design Manual Part 4, including final structure plans, construction documents, special provisions, pay items, quantity estimates, cost estimates, design calculations and QA/QC forms will be made to the Department and, the Streets Department. We will attend any bridge design review meetings requested by the Department and/or the Streets Department. Meeting minutes will be generated which document the discussion items and required plan changes (if any).

Vector with assistance from Pennoni and A&W will provide the final corrosion mitigation / protection design services for the existing 18th Street Bridge abutments. The design of the corrosion mitigation / protection system will be based on the results of the Preliminary Engineering Corrosion Evaluation prepared by Vector in February, 2011. The final corrosion mitigation / protection system(s) will be selected based on input from the District and designed with the goal of extending the service life of these abutments through effective corrosion mitigation. The following work will be completed by Vector.

• Select applicable corrosion mitigation/protection system for each abutment.

• Obtain pre-approval for recommended system prior to working on the design.

• Prepare written specifications to cover any of the following sections where applicable:
o Description of System
o Installer Qualifications
o Materials and Equipment Requirements
o Installation Procedures
o Pre- and Post-Installation Testing
o System Operation and Maintenance
o Criteria for Termination of the ECE Treatment
o Dismantlement and Disposal of the System
o Post Treatment Cleaning and Patching of Concrete
o Surface Treatment of Concrete
o Documentation, QA/QC

• Prepare working drawings specific for each abutment.

• Develop Bill of Quantities for Bid Items.

• Provide cost estimates for each abutment based on estimated time, direct and other costs.

• Assist with answers on questions regarding incidental work.

Task 8 - 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:

2.10.14
This will be a continuation of work performed during the Preliminary Design Phase. A Detour Plan where applicable will be prepared during the Final Design Phase. This activity will include a separate plan and written narrative. All signs will be represented with symbols. The plan will be completed in compliance with Publication 213.
Coordinate/design placement of temporary traffic signals to facilitate traffic during construction activities.

Approach:

2.10.14
This task is a continuation of the efforts, plan preparation, and coordination performed in the Preliminary Engineering part of this Agreement. Pennoni will continue to develop the final Traffic Control Plan in coordination with the District Traffic Unit, the Streets Department, and project stakeholders, along with input gained through various project reviews such as the Design Field View Meeting, the project Value Engineering Review, the project Constructability Review, and the Final Design Office Meeting.

As developed during preliminary engineering, traffic will be detoured for the 18th Street construction. Pennoni anticipates that a traffic control plan will be required for the associated Vine Street work. For operations requiring closure of SR 676, traffic will be detoured on the local road network as developed during preliminary engineering. In addition, short term lane closure plans will be developed for SR 676.

Pennoni will prepare Traffic Control Plans showing required signs, signals, temporary pavement markings, and other details for review and approval by the Department. These plans will include detour plans and other construction staging details as required. In preparing the Traffic Control Plans, Pennoni will adhere to all applicable provisions of Publication 213 - Work Zone Traffic Control and the Manual on Uniform Traffic Control Devices (MUTCD). The Traffic Control Plan will show required stages for review and approval by the Department. Draft Contract Special Provisions for Maintenance and Protection of Traffic, as well as Traffic Control Plan items, will be included in each submission for review and comment.

Pennoni will attend one review meeting with the Traffic Unit and the Streets Department during Final Design. Comments from these reviews will be documented via meeting minutes prepared by Pennoni.

The Final Traffic Control Plans will include index/notes sheets, tabulation of quantities sheet(s), advance signing sheets, traffic control details sheet, detour plan sheets/details, and detail sheets for each bridge requiring staged construction. A written narrative, which encapsulates the Traffic Control Plan details and Special Provisions, will be included with each Traffic Control Plan submission. The narrative will be modified as required during the development and refinement of the Traffic Control Plan. Detailed staged construction plans are anticipated for the following bridges:

Pennoni anticipates that 2 sheets will be required to show the detour plan for 18th Street and the traffic control for Vine Street. Pennoni anticipates that up to 18 sheets will be required to show I-676 advanced warning signage, I-676 detour plans, I-676 short term lane closure plans and traffic control details and quantities for this part.

Pennoni will update the Traffic Management Plan developed during preliminary engineering. The Traffic Management Plan will identify the bridges to be designed and constructed under Final Design Parts 4-8 and will be updated based on the District's bid schedule for these projects.

It is likely that changes in traffic patterns as a result of the detours will affect the operation of the existing signals along the detour route. As part of our Traffic Control Plan development, we will investigate the operations of the existing signals and recommend possible modifications to signal timings to maximize the efficiency of the existing signals. For the purpose of this proposal we anticipate up to 10 retiming's will be required and that

signal plans will not be required for the 10 intersections where retiming is proposed.

Pennoni will prepare a Temporary Traffic Signal Plan in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

A Temporary Signal Plans are anticipated for 18th Street and Vine Street.

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

The following task will be completed by the Pennoni Team for temporary traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Task 9 - 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:

2.10.15
Provide required plans and information for all signals impacted by the project. This includes signals adjacent to the project and any intersections designated along detour routes or Traffic Management Plan initiatives.

Approach:

2.10.15
The Pennoni Team will prepare final signal construction plans for one (1) signalized intersection within the project limits, in accordance with Publication 14M, Design Manual Part 3, Publication 148, Traffic Standards (TC-7800), Publication 149M (Traffic signal Design Handbook), and City of Philadelphia Traffic Signal Guidelines and standards. The Traffic Signal Construction Plans will include a title sheet, an index sheet, a summary of quantities sheet, a traffic signal construction plan sheet for each intersection, a tabulation of quantities sheet for each intersection, and Special Provisions.

A tabulation of quantities sheet will be prepared. Individual tabulation of quantities will be provided for the following items:
- Signs
- Traffic Signal Supports
- Electrical Distribution (conduit, trench, cable, junction boxes, and electrical service).
- Detectors
- Pavement Markings
- Miscellaneous Equipment (controller assemblies, systems and communications equipment, signal heads, luminaires, emergency pre-emption systems)

For the purpose of this proposal, the Pennoni Team assumes that the signals at 18th and Vine (eastbound), and 18th and Vine (westbound) will require upgrades to existing signal hardware.

Special Provisions will 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 will be submitted with the Traffic Signal Plan as a separate entity.

Full-size drawings of the traffic signal construction plans will be submitted to the District Traffic Engineer and the Streets Department at the completion of the 60% and 90% project completion levels for review and comment. The Pennoni Team will schedule and attend one meeting with

the District Traffic Engineer and/or Streets Department to discuss the review comments before advancing the design. Copies of the Special Provisions will be submitted at the 90% project completion level.

The Pennoni Team will prepare Traffic Signal Permit plans for one (1) signalized intersection by modifying the Traffic Signal Construction Plans to reflect the final permitted operation of the traffic signal. Notes specific to the signal construction will be removed and notes identifying the Permittee's responsibilities will be added along with a permit issue block to the upper right hand corner of the plan sheet. As directed, the Traffic Signal Permit Plans will be submitted to the Streets Department following construction.

The following task will be completed by the Pennoni Team for final traffic signal timings:

1. Using the latest version of "Synchro" capacity analysis software, which is based upon the Federal Highway Administrations 2003 Highway Capacity Manual, The Pennoni Team will evaluate the traffic capacity of the signalized intersections. An initial optimized timing and phasing operation for each individual intersection will be identified.

2. Design calculations will be completed for cycle lengths, green splits, and actuation timings for four coordinated timing programs using Synchro software. Design calculation worksheets will be completed to determine the required pedestrian intervals, change and clearance intervals, volume density timings, left turn phase warrants, cable and conduit sizing, and preemption timings in accordance with Publication 149, Traffic Signal Design Handbook.

The Pennoni Team will compile the traffic analysis and design worksheets into a bound document that will be submitted to the District Traffic Unit and the Streets Department at the 90% project completion level.

Signal design for temporary traffic signals associated with detour routes will be completed as part of Task 8.0, Traffic Control Plan

Task 10 - 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

Department Details:

2.10.16
All traffic related signs will be incorporated into the Pavement Marking Plan.

Approach:

2.10.16
The Pennoni Team will continue on the work completed in preliminary engineering in preparing the final pavement marking and signing plan for this project. The plans will follow the preliminary design that was completed as part of the Design Field View Submission. The plans will be developed in accordance with Design Manual Part 3, the Manual on Uniform Traffic Control Devices, Traffic Standards (TC-7600 Series), and Publication 68 with guidance from the Pavement Marking Handbook.

The plans will consists of a title sheet with general notes, tabulation sheets, and plan sheets. The plan sheets will show proposed pavement markings, sign locations, sign types and messages. The final submission will include:
• General Plans
• Special Details
• Quantities
• Specifications

Pennoni will review the final plans with the Streets Department prior to submission to the Department. Pennoni will coordinate with the Philadelphia Parking Authority regarding parking regulations and associated signage. Pennoni anticipates that the Parking Authority will provide the details to any non-standard parking signs. Efforts will be made to retain existing signage where possible. Special sign details will be incorporated into the plans as required.

Task 11 - 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.

Scope:

2.10.2 - Roadway
Needs completed.

Detail Task 1 - Roadway

Department Details:

2.10.2.3
Remove item 1. Item 2 is only necessary where approach work involves the reconstruction of an adjacent intersection.
Plans will be at a scale of 1"=25'.

Approach:

2.10.2 & 2.10.2.3
The Pennoni Team will complete the final design for 18th Street and Vine Street between 18th Street and 19th Street. We will complete the design and prepare deliverables for the project's PS&E package, including final roadway plans, specifications, engineer's estimate, and pre-bid schedule. Plans and documents will be prepared in accordance with Design Manual Parts 1A, 2, 3, 4, and 5, and applicable Department standard drawings. The construction plans will follow the formats and procedures outlined in Design Manual Part 3.

Details for each component in the PS&E package are described in our following approach for each subtask.

Ammann & Whitney will finalize the drainage design developed in Preliminary Engineering. Since the drainage is expected to be limited to the replacement of existing facilities and/or minor improvements, the final roadway plan will provide the appropriate information for the replacement of the inlets, including excavation, invert depth elevations, etc.

Hydraulic design computations will be prepared using appropriate methodologies for all roadway drainage structures. The replacement inlets will be checked to confirm that their capacity is adequate for the 10-year storm flow, and that downstream drainage capacity is sufficient for the proposed design. The proposed drainage design will be closely coordinated with our Erosion and Sedimentation Control design.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review. This submission will include design plans as well as Checklist B as described in PWD's Stormwater Management Manual. Due to the nature of project, zoning and building permits are not anticipated. In accordance with PWD policies and procedures for roadway maintenance and rehabilitation projects, therefore we will apply for a waiver from meeting the PWD Stormwater Management Regulations. A Post-Construction Stormwater Management Plan is not anticipated.

Due to the limited amount of full depth roadway construction, a simplified method of pavement design may be appropriate for this project. Pennoni will verify limits of work, existing pavement types and anticipated pavement section with the District and Streets Department prior to submission of the final pavement design documents. Pennoni anticipates that the standard Philadelphia pavement section will be utilized for the limited full depth roadway reconstruction. Pennoni will submit a pavement design letter and form D-4332A to the Pavement Design Unit for approval. Pavement items will be clearly indicated on the typical sections included with the final roadway plans.

Pennoni will prepare those sheets needed for the overall construction package and the drawings for Vine Street. Ammann & Whitney will prepare the sheets needed to represent the areas of 18th Street.

The final PS&E package will include the preparation of the following roadway construction documents:

Typical Section Sheet - includes the typical sections developed in Preliminary Engineering. The typical sections will be updated with proposed pavement types and depths. The typical section sheets will be prepared as outlined in Design Manual Part 3.

Tabulation of Quantities Sheets - will be prepared in accordance with the guidelines specified in Design Manual Part 3. The sheets will be formatted in accordance with the sample included in Chapter 15 of Design Manual Part 3.

Plan and Profile Sheets - include roadway construction plans and profiles. The detail sheets will be prepared at a horizontal scale of 1"=25' and a vertical scale of 1"=5'. These drawings will show existing and proposed features including topography, horizontal geometry, bench marks, references, legal right-of-way, construction easements, utilities, existing and proposed structural data, and other required design information.

ADA ramp design sheets – includes an intersection plan, spot elevation plan and slope and dimension plan for each impacted ramp. Plans will be prepared on 11x17 sheets and organized in a three ring binder with a cover letter. Additionally a CS-4401 form will be filled out for each ramp and if required, a TIF form will be submitted for ramps not meeting the current criteria. Pennoni will submit the ADA design package to the PennDOT and the Philadelphia Streets Department ADA reviewers. The approved ADA designs will be incorporated into the detail sheets of the construction set.

The submitted set of final roadway plans will include the "also" plans, including Structure Plans, Cross Sections, Erosion and Sedimentation Control Plans, Traffic Control Plans, and Pavement Marking and Signing Plans. The final plan set submission will also include any incorporated and approved utility relocation plans.

Since the existing horizontal alignments are expected to be retained, the intersection design for this project is expected to generally replicate existing conditions. The minor adjustments to the vertical profiles developed during preliminary engineering will be incorporated in the final design detail sheets.

Before final plans are completed, an in-house plan review will be performed. This review will check the plans for presentation details, plan clarity, item number and special provision references, and overall quality of the plan from a contractor's viewpoint. Any major changes to the plans that result from the plan review will be reviewed with the District prior to final submission.

The Pennoni Team will prepare all submissions for, and attend, the Final Design Office Meeting. The submission will include all plans, special provisions, preliminary special provisions, and construction cost estimate. Pennoni will prepare minutes of the meeting, documenting discussion points and required revisions to the design package.

All special provisions will be reviewed as part of the constructability and Final Design Office Meeting reviews. Every effort will be made to use pre-approved provision language to simplify this effort. Special provisions unique to utilities and the City of Philadelphia will be reviewed with the affected agency to ensure conformance with agency criteria.

Proprietary items, if any, will be identified as soon as possible in Final Design. Appropriate documentation and justification for the use of proprietary items in the bid package will submitted to the Department for review and approval.

The Pennoni Team will prepare plans, profiles, typical sections, and cost estimate for the Final Design Field View. Pennoni will prepare for the meeting at the approximate 35% completion stage of Final Design. Pennoni will attend the meeting with appropriate personnel versed in specific project details. Meeting minutes will be generated which document discussion points and required revisions to the design package.

Task 12 - Section 4(f) Mitigation Plan

Objective:

2.10.23 - Section 4(f) Mitigation Plan
This task is the development of the Section 4(f) mitigation plan.

Scope:

2.10.23 - Section 4(f) Mitigation Plan
1. Develop a mitigation plan that identifies any mitigation measures committed to in the Final Section 4(f) Evaluation and NEPA document for Section 4(f) resources.

2. Submit plan to PennDOT, PHMC and possibly FHWA for review. Revise plan if necessary.

3. Include this plan in the final design plans, specifications and estimates package to ensure that the measures are carried out during construction.

Detail Task 1 - Section 4(f) Mitigation Plan

Department Details:

2.10.23
Provide all services to complete 4(f) Mitigation as required through the environmental documentation phase.

Approach:

2.10.23
ASC will assist Pennoni in the development of a Section 4(f) mitigation plan by identifying any mitigation measures committed to in the Section 4(f) documentation. ASC will assist Pennoni in any coordination efforts required for Section 4(f). These mitigation measures will be identified on the Final Design plans and carried out during construction, as required.

Task 13 - 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:

2.10.25
Provide all required permits and approvals to advance to PS&E.

Approach:

2.10.25
Ammann & Whitney with assistance from Pennoni will prepare an Erosion and Sedimentation Control Plan and narrative for this project in accordance with Design Manual, Part 2, Chapter 13, and the guidelines set forth in the Pennsylvania Department of Environmental Protection's publication Erosion and Sedimentation (E&S) Control Program Manual, dated March 2000, as well as any revisions thereto. We will develop, establish, and maintain stringent temporary and permanent controls to restrict sediment within the project's excavated areas. The plans and narrative will be prepared with specific and positive safeguards, to protect adjacent properties from pollution by transported sediment. Both temporary as well as permanent erosion and sedimentation controls will be developed. Due to the type of construction, it is anticipated that the E&S measures will be limited to inlet protection, silt fence, seeding & mulching, or similar facilities. E&S controls that require additional right-of-way, such as sediment traps or sediment basins, are not anticipated.

Ammann & Whitney will draw upon previous experience with Erosion and Sedimentation Control design for City of Philadelphia projects in developing the final plans. We will coordinate with the Philadelphia Water Department (PWD) during final plan development, since PWD approves Erosion Control plans for projects with less than one acre of disturbance within the City. It is anticipated that the project will disturb less than 1 acre and will be exempt from the NPDES requirements. Therefore, a post-construction stormwater management plan is not anticipated.

We will submit the final erosion and sedimentation control plan to the District for their review and approval. Upon approval by the District, the plans and narrative will be forwarded to the Philadelphia Water Department review and approval.

In accordance with PWD policies and procedures, Ammann & Whitney will prepare and submit a Full Technical Submission to PWD for technical review as described in 2.10.2.

Approved erosion control items will be incorporated into the final construction plans and special provisions, as required.

Task 14 - 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.

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."

Detail Task 1 - Assemble Final Project Documents for Contract Management

Department Details:

2.10.29
Use PENNDOT ECMS system for bid package preparation. Assist District personnel in the preparation of any addendum required for the project. Prepare bid justification documents as required.

Approach:

2.10.29
The Pennoni Team will assemble the project's bid package using the Department's ECMS system. Pennoni will thoroughly check the plans, specifications, construction cost estimates, and the project schedule for accuracy and completeness prior to submission. Pennoni will ensure that all required approvals, permits, clearances, etc. have been secured/approved by the appropriate authorities. Prior to submission, Pennoni will complete the Project Development Checklist and will produce copies of the required documents to the District for linking into ECMS.

Once the bid package is advertised, Pennoni will provide answers to bidder's questions via the ECMS system.

Pennoni will attend the pre-bid meeting at the direction of the District. Pennoni Team members with the requisite project experience will attend the meeting in order to appropriately answer questions about the bid package. Meeting minutes will be generated which document discussion points and required revisions to the design package.

If required by the District, Pennoni will create and submit addendums to the project's Bid Package. As required, changes to plans, quantities, or special provisions will be made and the project documents updated accordingly. Pennoni will coordinate this effort with the District's Project Manager and the District Contract Management Unit.

Pennoni's PS&E package will include a critical-path project construction schedule in Welcom Open Plan format. The schedule will be included in the project's constructability review for review and comment by the District Construction Unit prior to inclusion in the bid package. Both the full-logic schedule and abbreviated critical path version will be included in the submission.

Draft special provisions will be submitted to the District for review prior to the PS&E submission. The special provisions will be written in standard

PennDOT format, and will be cross-checked against existing Department and District Standard Special Provisions for consistency. Items specific to City of Philadelphia construction will be reviewed with the appropriate City agency prior to inclusion in the PS&E package.

A detailed construction cost estimate will be provided with both the constructability review and the PS&E package. The estimate will provide an estimated unit cost for each item in the proposal based on historical bid data from ECMS. Items not available in ECMS will be estimated by Pennoni using past experience in other projects and by obtaining price information from reliable contractor and supplier sources. Pennoni will provide backup data for the estimated unit costs as requested.

Pennoni will utilize the Department's ECMS system for preparation and submission of the bid package and related documents. Pennoni will provide copies and/or electronic scans of project documents for attachment to the Project Development Checklist, and will assist the District Contract Management Unit with preparation of the final bid package for advertisement.

Task 15 - 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:

2.10.3
Provide field survey to update information which may have changed since the preliminary survey as required in Publication 122M at the required intervals.
Guidance:
- Publication 122M, Surveying and Mapping Manual

- Strike Off Letter 430-99-20, QA/QC Control Checklist for Right-of-Way and Construction Plans
- Form D-428, Field Book

Scope Deliverables:
1. Recover horizontal control and vertical datum.
2. Stake final alignment.
3. Provide line book in Form D-428.
4.Establish vertical control network by setting benchmarks within project area by differential leveling.
5. Record level loops in Form D-428 field book.
6. Benchmarks set will be no greater than one half mile apart and will be set on permanent objects not subject to movement.
7. Benchmarks will be set on both sides of proposed structures and/or structures to be replaced.
8. Stake required right-of-way lines, legal right-of-way lines, temporary construction easements, slope easements, etc.

Approach:

2.10.3
Chilton Engineering, Inc. (Chilton) will perform the incidental surveys as deemed necessary to supplement the original survey performed for this project during Preliminary Design.

Chilton will perform an updated property owner search, and perform supplemental roadway and structural surveys as necessary. Survey work will be performed in accordance with the latest edition of the Surveying and Mapping Manual and any relevant Strike-Off Letters. All field surveys will be performed with modern total station instruments equipped with electronic data collectors or High Definition Survey (HDS) Scanning equipment.. As part of the survey process, standard field books will be maintained according to District requirements, including indexing.

Survey Control: Existing horizontal and vertical survey control established during Preliminary Design will be recovered. Additional survey control will be established as necessary. All survey data that is obtained during our field activities will be referenced to this control network. A final survey report will be prepared.

Traffic Control Plan for Field Activities: Any traffic control and protection of the traveling public measures necessary for the required field survey tasks will be in conformance with PennDOT Publication 213, Work Zone Traffic Control. The plan will be submitted to the District Traffic Unit for approval prior to implementation. All major traffic control devices required for major work zone traffic control measures will be furnished, erected and maintained by a firm specializing in these measures. Lane shifts on ramps and/or partial closures on side roads will be limited to off peak hours. We will advise the District's Press Office prior to any lane closures and/or encroachments.

Field Edit of Existing Base Plan Mapping: Chilton will field review the existing base plan mapping surveyed during Preliminary Design to identify any changes to the topographic features within the project limits.

Topographic Survey: Chilton will perform required topographic surveys to provide more detail or extend plan coverage as directed by Pennoni. Information gathered will be plotted on the existing base plan mapping and all additional features identified and clearly labeled.

The digital terrain model of the project will be updated to incorporate the field review. This model will be updated, with contours calculated and shown on the plan at one (1) foot intervals.

Roadway Cross Sections: We will update cross section data as deemed necessary. Measurements will be exacted to the nearest one-hundredth (0.01) of a foot on hard surfaces and pavements and to the nearest one-tenth (0.1) of a foot on ground shots.

Structural Survey: Field survey edits will be performed at the existing bridge and overhead structure sites as directed by Pennoni. Clearances measurements will be updated at the fascia beam on both sides of each bridge if required.

Stakeout Roadway and Structure Core Boring Hole Locations. If necessary, we will stakeout any additional proposed roadway core boring hole locations. The boring locations will be staked and existing ground elevations will be obtained.

Stakeout Proposed Right-of-Way Easement or Acquisition Parcels. If necessary, we will stakeout the proposed corners/lines of any right-of-way takes or easements for property owner review. Each stake will be identified by ribbon color and labeling of Sta./Offset and point description.

Using the approved final roadway geometry layout as provided by Pennoni, Chilton's surveyors will perform the field stakeout of the proposed construction baselines when directed by Pennoni. Because of the volume of traffic in this area the use of offset base lines may be used. The offset base lines will be set in the shoulder. The staking of the actual baseline or use of offset lines will be determined after review with the Department and Pennoni. Actual control points such as PC's, PT's and PI's will be either drill hole (in concrete), PK nail (in asphalt) or iron pin (in soil).

The construction baseline or offset baseline points will be referenced after they have been set. The references will be located outside the area of proposed construction. References will be set meeting applicable Department standards, where possible. At a minimum, Chilton will reference all horizontal control points to three fixed objects located outside the limits of proposed construction with both angular and distance ties provided, showing orientation to the baseline. Reference sketches will be prepared for these points, to prepare detailed control reference circles on plans.

Task 16 - 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:

2.10.4
Develop Cross Sections as required for the project.

Approach:

2.10.4
The Pennoni Team will prepare the final cross sections following the procedures outlined in Design Manual Part 3. The sections will be prepared at a horizontal and vertical scale of 1"=5'. Proposed template areas and the limits of earthwork will also be shown on the cross sections. The earthwork quantities for these template areas will be computed and tabulated as part of the final PS&E package.

Pennoni anticipates that cross sections will be required for 18th Street and Vine Street.

Roadway cross sections will be prepared at 25 foot intervals and at locations of all major terrain features. Since the roadway reconstruction is expected to be limited, the roadway sections will extend the area necessary to facilitate the reconstruction of the bridge approaches and any intersection/street reconstruction as appropriate. The existing information outlined in Preliminary Engineering will be included on the final cross sections as will the following proposed information:

• Proposed roadway template, including pavement depth
• Construction and survey baselines
• Limits of earthwork & curbing with computations
• Proposed utilities (if applicable)
• Existing and proposed drainage facilities

The cross sections will also be prepared to assist in determining limits of involvement at driveways and adjacent street intersections. The final roadway cross sections will be used to assist in the refinement of the roadway line and grade, in addition to the evaluation of the proposed improvements.

Existing and proposed ground lines will be generated utilizing the proposed alignment information and three-dimensional electronic imaging files. Existing ground lines at pavement tie-in points and along those roadways requiring surveyed cross sections will be generated using field survey data. The proposed roadway template will be added to the final roadway cross sections.

Drainage features, including pipes, inlets, and manholes, will be superimposed on the existing cross section. Existing and relocated utilities will also be included on the cross sections.

Task 17 - 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:

2.10.5
The consultant will prepare a separate right of way plan as described in Paragraph A and in accordance with all applicable Design Manuals and PA D.O.T. Strike-off Letter 430-98-26. Present no more than two plats per sheet. Verification of ownership will be rechecked just prior to the final submission.

Approach:

2.10.5
Chilton Engineering, Inc. with assistance from Pennoni will prepare the project's Final Right-of-Way Plans.

The Final Right-of-Way Plans will be prepared in accordance with Design Manual Part 3, Chapter 3, and appropriate Strike-Off Letters. As the project is located within the City of Philadelphia, the Right-of-Way Plans will also meet the requirements of the City's Board of View.

Chilton will research public records to update ownership and location of properties adjacent to the project. Chilton will conduct research of the public records at the City, as necessary, and will utilize electronic search measures where feasible.

Chilton will obtain copies of deeds, adverses, descriptions of easements, any available development plans, tax maps, etc. that have been revised to confirm the Department's existing right-of-way. The Department's record retention unit will be contacted and relevant plans requested. Private and public right-of-way and easements will be indicated and cross referenced to the appropriate legal document.

Chilton will utilize the information described above to update the mosaic of all properties.

Final Right-of-Way Plans will be developed by Chilton to show the relationship of the proposed construction to the existing and required Right-of-Way and property details. The plans will show legal and required Right-of-Way and easements including existing and relocated utilities. The final plans will show all data necessary to prepare appraisals and to acquire the properties. Topographic features that will affect the value of the takes will be shown including trees, shrubbery, drainage features, buildings, signs, drainage, fences, and other structures.

The need for Temporary Construction Easements and/or Drainage Easements will be determined. Pennoni will coordinate the need for and the location of easement areas with Chilton during Final Right-of-Way Plan development.

Final Right-of-Way Plans will be submitted to the Streets Department and the District for review. Chilton and Pennoni will attend a plan review meeting with the Department's Field Liaison Engineer as required. Revisions to the plan will be made prior to final submission for acquisition.

Copies of record plans, tax maps, deeds, lease agreements, private/public right documents, and transcribing sheets will be submitted to the District as requested.

Chilton will prepare the Right-of-Way property plats by using the Right-of-Way plans prepared under Task 17.0 as the basis. The plans will show all utilities, trees, shrubbery, buildings and other structures and other features that may impact property values. The metes and bounds of properties, easements, and Right-of-Way lines will be shown. The location of private water supplies and sanitary sewer facilities that may be affected by the proposed construction will be identified.

Task 18 - Utility Engineering

Objective:

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

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.

Detail Task 1 - Utility Engineering

Department Details:

2.9.1
Build upon coordination effort that has taken place during the Preliminary Engineering Phase of this project.

Approach:

2.10.8 & 2.9.1
Chilton with assistance from Pennoni and A&W will coordinate the utility relocations required for the project.

The PA ONE-CALL will be made and existing utility information requested. This information will be verified and checked against information received and plotted during the preliminary design phase.

Each affected utility will be contacted to determine their requirements and methods of relocation. Determinations will be made whether utilities will

be relocated by the utility, by the contractor as incorporated work, or by a combination of both.

Chilton will verify whether all formal requests for agreement permits and occupancy applications are in accordance with the policies and procedures of Design Manual Part 5.

Chilton will coordinate with the Department and Pennoni to schedule an Initial Utility Design Stage Meeting to introduce the project goals, schedules, and targeted utility clearance dates. Chilton will keep each utility informed of all design changes that could impact existing or planned utilities.

As the final design plans, profiles and cross sections for the project are generated, copies will be forwarded to each utility company affected within the project limits. The utility will be asked to verify their facilities, identify any need for additional Right-of-Way or easements, and identify any potential conflicts. Each utility will receive the appropriate form for submission of bridge attachment requests. As meetings are scheduled to resolve utility conflicts, we will provide personnel familiar with project to attend and coordinate.

Chilton will maintain continuous contact with each utility company representative throughout the life of the project. We will schedule the Final Utility Design Stage Meeting with the Pennoni Team, the Department, the Streets Department, and each utility representative. The purpose of the meeting will be to resolve all outstanding issues, reinforce the utility clearance target dates, and introduce the construction schedule. Chilton will send periodic project status reports to each utility to keep all involved with the progress of utility conflict resolutions.

Upon approaching the scheduled PS&E submission, Chilton will schedule a utility meeting to review all utility issues and resolutions. At this meeting a task schedule will be developed for utility work to be completed prior to construction. This meeting will also be used to identify any outstanding design issues.

Chilton will work with the utility providers to complete and file all required forms and permits including Form D-419, Utility Clearance and Form D4181X for bridge occupancy where applicable. This work will be coordinated with the District Utility Unit.

Chilton will invite all utility representatives to attend all pre-bid, pre-construction and construction status meetings.

Task 19 - Signing and Sign Lighting Plan

Objective:

2.10.17 - Signing and Sign Lighting Plan
This task is the development of the signing & sign lighting plan.

Scope:

2.10.17 - Signing and Sign Lighting 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.

The final submission will include:
- A Title Sheet
- Index Sheet
- An Index-Location Map

- Tabulation of Quantities Sheet(s)
- Summary of Quantities (used only if signing plan is a stand alone plan)
- Detail Sheets
- Specifications

Type I Detail Sheets (general plans) 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.

Type II Detail Sheet includes sign structure details. These plans include:
- A location plan
- Plan, elevation and end view of the sign structure
- Details
- Sign schematic
- Sections and steel sizes for Type A signs
- Estimated quantities
- Design criteria
- General notes.

Type III Detail Sheet consists of sign fabrication information and includes:
- Length of sign
- Height of sign
- Sign legend details including letter spacing, letter size and series, and sign color)
- Size of border and radii of corners
- Sign lighting design
- Quantities

Refer to TC-8701A for sign lighting requirements. In general, all overhead signs that do not have a 800' tangent sight distance require sign lighting. Verify the requirements with the District. Prepare the sign lighting plans in accordance with Standard Drawing TC-8715 and Publication 408, Section 920 requirements. Submit sign lighting plans to Central Office, Highway Lighting Unit for approval prior to the release of the final sign lighting plans to the District for PS&E Development.

Detail Task 1 - Signing and Sign Lighting Plan

Department Details:

2.10.17
Provide all required plans and specifications as identified above.

Approach:

Ammann & Whitney will prepare the plans for the sign structures at the following locations:

Sign Structure #7 - Relocating sign structure from 18th St to the 17th St. Bridge

All work will be performed in accordance with the Department's Scope of Work.

Ammann & Whitney will complete the Final Signing and Sign Lighting Plans for the project, in accordance with applicable TC-8700 standards. This work will be a continuation of the work completed in Preliminary Engineering.

Type I, Type II, and Type III Sheets will be prepared as required in the Scope of Work for each sign. Details on sign sizes, lettering, material, and spacing will be replicated from the original plans, if available, with modifications as required. Sign Lighting Plans will be submitted to Central Office, Highway Lighting Unit for approval prior to submission to the District Traffic Unit for final approval.

As part of this task, Ammann & Whitney will complete plans for the relocation of the signs that are currently mounted to the superstructure- of the bridges. Duplication of sign movements will be eliminated to the best extent possible; with a focus on relocating signs to their permanent position in the first stage of each bridge's reconstruction.

Task 20 - Roadside Development Plan

Objective:

2.10.27 - Roadside Development Plan
This task is the development of the roadside development plan.

Scope:

2.10.27 - Roadside Development Plan
These include Wetland Mitigation Planting Plans, Wildlife Habitat Mitigation Planting Plans, Maintenance Yard or Stockpile Area Screening Plans or any other plans requiring landscape design and plans preparation.

Where no roadway construction is involved, the plans are an entity in themselves. Where roadside development is a part of highway construction, the quantities and plans are numbered in the Construction Plans and placed immediately after the Contour Grading and Drainage Plans.

Where separate plans are required, the Roadside Development Plan includes:
1. Title Sheet
2. Index Sheet
3. Typical Section Sheet
4. Summary and Tabulation of Quantities Sheet
5. Detail Sheets (required for all tree, shrub and vine plantings)

Where plans are a part of the highway construction, it is not necessary to prepare a separate Title Sheet, Index Sheet, Typical Section Sheet or Summary and Tabulation of Quantities Sheet.

Prepare plans in accordance with Publication 14M, Design Manual Part 3.

Detail Task 1 - Roadside Development Plan

Department Details:

2.10.27
Provide all plans and specifications as detailed above.

Approach:

2.10.27
LRSLA with assistance from Pennoni will develop the landscape design approved in Preliminary Engineering. The area will include paved pedestrian zones and planted zones adjacent to the roadway improvements. The plans will include Landscape Demolition Plans (including existing tree and soil protection zones), Landscape Materials Plans, Landscape Layout Plans, Landscape Grading Plans, Landscape Planting Plans and Irrigation Plans. Landscape Details will include pedestrian paving sections, planter walls sections and elevations, and planting sections and detail plans. Materials and details will follow the Fairmount Park Commission Benjamin Franklin Parkway Design Guidelines Manual, approved and adopted by FPC, and in accordance with Publication 14M, Design Manual Part 3. Pennoni will develop the details necessary for the connection of the irrigation system to the existing water vault or existing irrigation system. Pennoni anticipates 1 connection for the irrigation system in the vicinity of 18th Street area will be required.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
Pennoni Associates Incorporated	No	
Ammann & Whitney Pennsylvania, Inc.	No	Pennoni Associates Incorporated
ASC Group, Inc.	Yes	Pennoni Associates Incorporated
Chilton Engineering, Inc.	Yes	Pennoni Associates Incorporated
Lager Raabe Skafte Landscape Architects,Inc.	Yes	Pennoni Associates Incorporated
Vector Corrosion Technologies, Inc.	No	Pennoni Associates Incorporated

Attachments

No records found.

Part 9 - Prelim Eng - Spring Garden o/ Schulkill Rv & Expwy

Description

Prelim Eng - Spring Garden o/ Schulkill Rv & Expwy

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.

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.

Detail Task 1 - Project Management/Administration

Department Details:

2.1.1
The consultant shall provide construction cost updates as required by the Department. The consultant will thoroughly check all design submissions before submitting them to the Department for review. The Department reviews will be cursory in nature and the consultant will be responsible for design and plan accuracy. The consultant will be liable for design and plan errors in accordance with 67 PA Code, Chapter 455, Consultant Highway Design Errors.
The consultant will be responsible for DBE progress, and all submissions prepared by the DBE will be submitted through the prime consultant's office. The prime consultant will be responsible for the accuracy and quality of the DBE work.

2.1.1.1
The consultant will prepare and distribute to appropriate parties the minutes of all meetings and telephone conversations where directions or decisions are made.
Assume there will be one (1) design related meeting per month for the duration of the preliminary design phase of the project.

2.1.1.3
The project QC/QA plan is to be provided to the District one (1) month after NTP. Include sub-consultant QC/QA plans as appropriate.

2.1.1.5
The initial project Welcom Plan is to be provided to the District one month after NTP.

Approach:

Ammann & Whitney will perform project management and administration in accordance with the Departments Scope of Work and as detailed below. Pennoni, as the prime consultant, will be responsible for overall contract administration.

2.1.1 Project Management/Administration
Ammann & Whitney's project manager, Joseph Sullivan, PE, will be the main point of contact with the Department's Consultant Project Manager and the design team. Pennoni, as the prime consultant, will be responsible for overall contract administration and invoicing.

Ammann & Whitney will provide cost estimates with each submission and as requested by the Department.

2.1.1.1 Meetings
Ammann & Whitney will attend meetings as required throughout preliminary design. We will prepare an agenda and appropriate display information and handouts for each meeting. We will prepare and distribute meeting minute in a timely manner.

Ammann & Whitney will record and distribute e-mails and records of phone conversations where directions or decisions are made.

2.1.1.3 Quality Control/Quality Assurance
Joseph Riley, P.E. will serve as the project quality assurance officer. All work will be performed in accordance with the project specific Quality

Management Plan for the project. Mr. Riley will ensure that all work is performed and produced in accordance with PennDOT's quality management plan in addition to Ammann & Whitney's corporate quality plan and job specific quality development plan. Mr. Riley will incorporate and administer quality control and quality assurance practices and procedures in accordance with the Department's scope of work. In addition, all subconsultants will be required to follow the project specific quality assurance plan in addition to their own PennDOT QA/QC plan.

2.1.1.5 Project Schedule Development and Maintenance
Ammann & Whitney will prepare and maintain the project schedule in accordance with the Department's Scope of Work.

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:

2.1.3
The consultant will prepare and distribute to appropriate parties the minutes of all meetings.
Assume there will be one (1) public officials meeting, one (1) general public meeting, two (2) municipal meetings and three (3) general stakeholder meetings.

Approach:

2.1.3
The purpose of this Public Involvement Plan is to ensure impacted communities are aware of PennDOT plans for the rehabilitation of this bridge, have an opportunity to comment on those plans, and are kept informed as design and construction activities are scheduled and completed.
The goals are to stimulate a dialogue about this project that generates public input early in the design process in a manner that reduces unplanned costs throughout the bridge's rehabilitation.

Ammann & Whitney will participate in the public involvement process in accordance with the scope of work. We will participate in one public officials meeting. It is anticipated that these meetings will be with members of the City of Philadelphia Streets Department.

We will also reach out to the list of stakeholders that have already been identified for the project. We will update them on the need to rehabilitate this bridge in conjunction with the Vine Street Bridges. We will add the Philadelphia Art Museum and Drexel University to the stakeholder list for this project. Drexel will be able to help identify additional stakeholders on the west side of the river.

Task 3 - Level 1B CE

Objective:

2.3.2 - Level 1B CE
This task consists of the assembly and approval of the Level 1B Categorical Exclusion

Scope:

2.3.2 - Level 1B CE
Complete Part A and B, of the Categorical Exclusion Evaluation (CEE) form (Publication 294), that includes a Project Description and, may also include a location map(s) and/or illustrations.

Sheet C-2 will also require completion.

Submit the completed CEE form and pertinent supporting documents for review, concurrence, and approval to the District Office. If necessary, revise the CEE form and or supporting documentation as directed.

Detail Task 1 - Level 1B CE

Department Details:

2.3.2
The consultant will be responsible to gather project environmental information and complete all tasks associated with acquiring an approved environmental document.

Approach:

2.3.2
This task will be lead by ASC. Ammann & Whitney will assist ASC and provide existing and proposed engineering data required for the CE document.

ASC is prepared to complete and submit a Categorical Exclusion Evaluation (CEE) Scoping Field View Form for the proposed project using the CEE/EA Expert System. ASC will complete the Scoping Field View Form prior to the Scoping Field View. The Scoping Field View Form will be updated with any comments or additional information provided during the Scoping Field View. The Scoping Field View Form will then be submitted to the District 6-0 Environmental Unit for their review and approval

Upon approval of the Scoping Field View Form, ASC is prepared to complete and submit a Categorical Exclusion Evaluation (CEE) in accordance

with The Transportation Project Development Process Categorical Exclusion Evaluation Handbook, Publication No. 294, using the CEE/EA Expert System. PennDOT District 6-0 has anticipated this project to be a Level 1B CEE.

ASC will prepare a preliminary draft CEE Form, Parts A and B for submission to the District for review. Part A of the CEE will address the project description, purpose, project setting and engineering information while Part B will present the environmental evaluation findings. ASC will address all comments received on the Draft CEE and submit a revised Draft CEE for District review and submission to the Bureau of Design (BOD). Upon BOD review, comments will be addressed and a Final CEE will be submitted to the District for Federal Highway Administration (FHWA) review and approval. If FHWA has any comments on the CEE, we will revise and resubmit for approval.

ASC has begun a preliminary data collection and are positioned to begin organizing a Technical File and to start work on this project. During our preliminary investigations of the project area, and based on the District's Scope of Work, it appears that there will be minor to no permanent impacts to soil erosion and sedimentation, geologic resources, streams, rivers and watercourses, floodplains, wetlands, other surface waters, groundwater resources, vegetation, wildlife habitat, threatened and endangered species, productive agricultural lands, parks or recreational areas, aesthetic and other values, community cohesion, environmental justice, and maintenance and operating costs of the project and related facilities. Temporary minor impacts to air quality, noise levels, soil erosion and sedimentation, and streams, rivers and watercourses may occur during construction. Project sequencing and erosion and sedimentation controls will minimize the temporary minor impacts to these resources.

ASC will perform the secondary data source reviews and necessary field surveys in order to verify the presence or absence of resources listed in the CEE that are not listed as a separate tasks in this scope of work, with the exception of any wetland surveys, threatened and endangered species habitat surveys or formal or informal consultations, or hazardous waste site investigations, or any reviews, field surveys or other tasks assigned to other members of the project team. If it is determined that wetland surveys, threatened and endangered species habitat surveys or formal or informal consultations, or hazardous waste site investigations are necessary a separate scope of work will be prepared.

The CEE will be prepared as though the project will be under Federal oversight. The CEE document will include supporting data and/or attachments, technical files, and appropriate correspondence. Attachments to the CEE form will include, but not be limited to, a project location map, photographs, detour route plans, etc. ASC will complete the CEE in close coordination with the Department and A&W. Based on our current understanding of the project and the location; we anticipate the following to be included in the CEE document:

a. ASC will coordinate with resource agencies to obtain updated information on threatened and endangered species within the project area, including:

• U.S Fish & Wildlife Service (federally-listed species)
• Pennsylvania Fish and Boat Commission (regarding fish, amphibians, reptiles, and aquatic organisms)
• Pennsylvania Bureau of Forestry (regarding plants)
• Pennsylvania Game Commission (regarding birds and mammals)
• Pennsylvania Natural Diversity Index (regarding plants and animals)

Based on a preliminary PNDI Review, there is one potential impact with threatened and endangered species within the project area. The potential impact is under the jurisdiction of the Pennsylvania Fish and Boat Commission (PFBC). ASC will coordinate with the PFBC to obtain clearance for the proposed project.

b. This bridge is on a navigable section of the Schuylkill River. It is part of a twin bridge crossing. It is the upper bridge. West River Drive (MLK

Blvd) is the lower bridge. We anticipate the Coast Guard will approve the project as rehabilitation. We will provide them a letter with a detailed project description and request their concurrence.

The Federal requirements of Section 4(f) of the Department of Transportation Act of 1966 states that the Secretary of Transportation can only approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area or wildlife and waterfowl refuge, or land of an historic site of national, state or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, recreation area, refuge or site) if:

• There is no feasible and prudent alternative to using that land; and

• The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

In accordance with Section 4(f) DOT Act of 1966 and PENNDOT's Section 4(f) Handbook, Publication No. 349, we will ensure that the project design process takes into account precious natural and cultural resources and acts to minimize impacts to them. The Section 4(f) documentation, therefore, is not independent of the efforts of the team as a whole. If impacts to 4(f) resources cannot be avoided, then the report will evaluate the least harm alternatives to determine the amount of impacts caused by the alternatives to those resources.

Information we have to-date regarding 4(f) resources in the study area:

Wildlife and Waterfowl Refuges: There are no Wildlife or Waterfowl refuges within the project area.

Publicly Owned Parks or Recreation Areas: Publicly Owned Parks and Recreation Areas within the project area include:

• Fairmount Park
• The Schuylkill River Water Trail

Cultural Resources: The Fairmount Park Historic District is present within the project area. It is anticipated that the District 6-0 Qualified Professional will determine the effect, if any, that the proposed project will have on the Historic District. ASC does not anticipate completing an Effects Report for the proposed project.

The Alternative Processing Procedures for Section 4(f) Evaluation Guidance issued by the Federal Highway Administration in April of 2007 allows for reduced processing time and streamlined procedures for certain Federal actions involving temporary and/or permanent occupation of minor amounts of publicly owned parks, recreation areas, wildlife or waterfowl refuges or historic sites that are adjacent to existing highways, or those projects that would result in a net beneficial use of these resources.

We anticipate that the contractor will require temporary access to the area under the bridge. In the western section of the project area, the property is owned by Fairmount Park and is part of the Fairmount Park Historic District. The Temporary Use/Occupancy Programmatic will need to be completed and coordination with Fairmount Park will be required for the Temporary Construction Easement. The Temporary Use/Occupancy will:

1. be temporary and less than the time needed for construction of the project, and not change the ownership or result in the retention of long-term or indefinite interests in the land for transportation purposes;

2. be minor, both the nature and the magnitude of the changes to the Section 4(f) property will be minimal;

3. not have anticipated permanent adverse physical impacts, nor will it cause interference with the activities or purposes of the property, on either a temporary or permanent basis; and

4. be fully restored to a condition which is at least as good as that which existed prior to the project.

The Schuylkill River is designated as a Water Trail by the Pennsylvania Fish and Boat Commission (PFBC) and is therefore considered a Section 4 (f) Resource. The Temporary Use/Occupancy Programmatic will need to be completed for this project and signed by the PFBC. An Aids to Navigation (ATON) Plan is required to be included in this document and will need to be completed by either Ammann & Whitney.

If it is determined that an individual Section 4(f) evaluation is required a separate scope of work and cost proposal will be prepared.

The project is located within the Delaware Estuary Coastal Zone. Coordination with the Pennsylvania Department of Environmental Protection Department of Coastal Zone Management will be required to verify that the project is consistent with Pennsylvania's Coastal Resources Management Program.

Based on our current understanding of the project and the location, we do not anticipate the following to be included in ASC's efforts:

a. Asbestos Inspection and Testing; Lead based paint (LBP) – It is ASC's understanding that Pennoni is contracted to perform the above referenced services; therefore we anticipate no involvement in relation to performing this task. ASC will coordinate with Pennoni to include the relevant information in the CE document.

b. Wetlands - ASC does not anticipate the presence of wetlands in the project area; therefore no wetland related work is anticipated.

c. Agricultural resources

d. No railroad coordination is anticipated to complete any of the environmental tasks.

Task 4 - Surveys

Objective:

2.4.1 - Surveys
This task consists of providing the survey requirements associated with specific PennDOT projects designated for studies, reports, design and construction.

Scope:

2.4.1 - 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
- Design Manual 3, Plans Presentation
- Referencing alignments should be in agreement with Pub 122M, Ch. 3.1 and DM3 Figure 3.214

Scope:
Surveys may consist of either conventional data collection, Three-Dimensional data collection, or a combination, as directed by the District. Obtain published horizontal and vertical control data for project use.

The Quality Assurance/Quality Control Checklist will be completed and discussed with the District Chief of Survey for all preliminary 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 - Surveys

Department Details:

2.4.1
Provide appropriate services to complete tasks defined above.

2.4.1.2
The vertical datum will be established on N.A.V.D. 88 (Pub 122M Ch. 3.1), or other datum such as N.G.V.D 29, assumed, etc. as directed by the Department. Vertical control requirements will be discussed with District Chief of Surveys.

2.4.1.3
Survey data will be collected by means of one or a combination of the following methods (which ever is deemed most suitable for project delivery):
a. Conventional survey
b. 3-D data collection survey
c. R.T.K. G.P.S. survey
Provide or obtain profiles and cross sections along each of the project's established roadways, baselines, and centerlines

Approach:

2.4.1
There will be limited hard survey done for the project. All work will be based on existing plans. Chilton will provide survey data at the intersection with the I-76 ramps for the installation of ADA ramps.

Surveys for this work will be performed by Chilton Engineering, Inc. (Chilton). All survey work, including plan preparation and units of measure will be in U.S. standard units. Field measurements will be exacted to the nearest 0.01 of a foot on hard surfaces and pavements and to the nearest 0.1 of a foot on ground shots.

The limits of the topographic survey are defined as follows:

• In length, coverage will extend from the end of each ramp at 50' in both directions on Spring Garden Street and 50' down the ramps
• In width, coverage will extend from parapet to parapet

2.4.1.2 & 2.4.1.3
Horizontal and vertical survey control at the project site will be established utilizing GPS equipment, with horizontal control based on NAD 83 and vertical control based on NAVD 88. Chilton will establish a survey traverse throughout the project limits, as require, based on these control points. All survey data which is obtained will be referenced to the survey traverse or GPS control points. All major survey control points will be referenced to make future recovery possible. Vertical control elevations will be established throughout the project area, with benchmarks being established outside the limits of proposed construction.

Chilton will perform a topographic survey and locate and identify all major features as well as types and limits of pavements, parapets, types and limits of fencing, curbs, sidewalks, utility poles, traffic signal poles, control boxes, inlets, manholes, headwalls, pavement markings, and other existing elements within the project limits.

Existing rim, top of grate and invert elevations will be obtained for any storm or sanitary sewer facilities within the project limits. Existing pipe type and size will also be obtained for these facilities.

Chilton's office staff will reduce and check all field data obtained during the field survey operation. Chilton will prepare an existing conditions plan of the area utilizing Pennoni's graphic standards. The completed existing conditions plan and relevant survey data will be forwarded to Pennoni for their use in preparing the design documents.

No property research or utility research or notification will be performed at this site by Chilton.

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.

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.

Detail Task 1 - Design Field View

Department Details:

2.4.10.4
District 6-0 Design Exception and Safety Review procedures will be followed.

2.4.10.5
Basins are not required as part of this project.
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 if required.

Approach:

Ammann & Whitney will complete this task as indicated in the Department's Scope of Services with the following additions and modifications:

2.4.10.1 Submission Development
The following elements will not be part of the Design Field View submission:
2. Alternate Interchange Schematics
6. Approximate pavement depth
7. Mass diagrams of grading quantities
8. Draft of Soils and Geological Engineering Report and Profile.
11. Service road justification
13. Preliminary traffic signals plan
15. Agreements with Cities and other Political Subdivisions

Ammann &Whitney will coordinate with the City of Philadelphia regarding the existing highway lighting. The bridge has two different styles of lights. The main highway lighting is cobra style fixtures. These are dated and do not match the brown-round City standard fixture on the approaches. We will coordinate with the City to determine if the parapet mounted fixtures should be replaced. The second type of fixture is the Millennium fixtures that are period fixtures that were attached to the outside face of the parapet. It is anticipated that these fixtures will be maintained.

2.4.10.4 Design Exceptions
It is anticipated that there will be no design exceptions prepared.

2.4.10.5 Preliminary E&S Plan/NPDES Permit
Ammann & Whitney will prepare E&S Plans in accordance with the scope of work. It is anticipated that the PADEP will be the reviewing agency for the plans.

Ammann & Whitney will also prepare and submit an ERSA (Existing Resources and Site Analysis) Plan to PWD for conceptual review. This submission will include design plans as well as Checklist A as described in PWD's Stormwater Management Manual. Due to the nature of project, zoning and building permits are not anticipated. In accordance with PWD policies and procedures for roadway maintenance and rehabilitation projects, Ammann & Whitney will apply for a waiver from meeting the PWD Stormwater Management Regulations. A Post-Construction Stormwater Management Plan is not anticipated.

Task 6 - Typical Sections

Objective:

2.4.7 - Typical Sections

This task consists of the development of typical sections. Publication 10A, Design Manual Part 1A and Publication 13M, Design Manual Part 2 apply to this task.

Scope:

2.4.7 - Typical Sections
The following items should be included on each typical section:

- Pavement width and cross slope (clarify lane widths to two decimal places to match existing pavement width)

- Pavement depths
- Shoulder type, width, depth and cross slope
- Median type, width and cross slope
- Embankment and cut slopes
- Swales and contiguous gutters as applicable
- Subbase drainage treatment
- Rate of superelevation
- Unusual design conditions (i.e., special treatment of subgrade, subbase or under-drain)
- Median barrier and guide rail
- Point of profile grade
- Centerline or baseline
- Limits of variable widths
- Base course and subbase widths and depths (and slopes if not parallel with pavement)
- Seeding treatment
- Station Control

The following work elements are required for the successful completion of this task:
1. Develop superelevation rates and place on the related typical section.
2. Develop pavement design and list on each typical section.
3. Label all items in accordance with the item description on the summary of quantities sheet.
4. Submit typical sections for review and approval by the Department.

Detail Task 1 - Typical Sections

Department Details:

2.4.7
Provide appropriate services to complete tasks defined above.

Approach:

2.4.7
Ammann & Whitney will perform this task in accordance with the Department's Scope of Work.

Task 7 - Other Structures Activities

Objective:

2.7.99 - Other Structures Activities
This includes any other necessary PennDOT structure activities for the project which are not otherwise covered under the standard structure tasks.

Scope:

2.7.99 - Other Structures Activities
Provide work as detailed by the Department. See Below.

Detail Task 1 - Other Structures Activities

Department Details:

Provide the necessary inspection, hazardous waste investigation, analysis, and cost estimating to prepare a structural assesment report in advance of the preparation of the TS&L submission.

Approach:

Ammann & Whitney will perform this task in accordance with the Department's scope of work and as detailed below.

2.7.99
This task is a detailed assessment of the SR 3014 Spring Garden Street over the Schuylkill River and I-76, BMS No. 67-3014-0030-0229 and 67-3014-0030-0000.

Ammann & Whitney will assess the condition of the structure by field inspection and analysis.

Field Inspections
Ammann & Whitney will prepare a work plan that details all the field inspection times and locations. All inspection work will be coordinated with the Bridge Unit, Traffic Unit and District Press Office.

Field inspections will include:
• All substructure units. Each unit will receive a 100% hands-on inspection to determine the limits of concrete deterioration. Many of the substructure units are masonry faced. We will evaluate the condition of the masonry facing to determine the need to remove and reattach to the existing concrete or re-point the masonry.
• The condition of the bearings. We will evaluate site conditions and take field measurements needed to jack the bridge to reset the bearings. We will also assess constructability issues with resetting the bearings.
• To the extent possible, the condition of the existing structural steel. We will focus on the areas under the expansion dams and deck expansion joints that exhibit section loss. We will also examine the connection plate welds to the main girder.
• The condition of the drainage system.

The field inspections will include an evaluation of the condition of the deck. It is assumed the deck will be rehabilitated using the Flexo-grid system. We will identify areas in need of Type 1 and Type 2 repairs. It is assumed that full depth Type 3 repairs will be used to eliminate the strip seals at the deck expansion joints. We will also delineate areas in the sidewalk that need to be rehabilitated, particularly the curb faces.

Ammann & Whitney's field inspection staff will be supplemented by staff from Pennoni.

Hazardous Material Investigations
Asbestos Inspection and Testing - Pennoni will complete the inspection to identify the presence of asbestos-containing material (ACM) and to plan for its abatement prior to the structure repair. These inspections are required by 40 CFR 61, Subpart M: the National Emissions Standard for Hazardous Air Pollutants and communicated to the Pennsylvania Department of Transportation by strike-off letter "PADOT's Asbestos NESHAP Policy for Bridge Demolition and Renovation Projects," dated December7, 2006.

A team of Pennoni United States Environmental Protection Agency (USEPA) accredited and City of Philadelphia licensed Asbestos Building Inspectors will conduct an asbestos survey of the accessible portions of the Spring Garden Street Bridge for suspect, accessible ACM, in accordance with guidelines established by the USEPA. Representative bulk samples of suspect friable and non-friable ACM will be collected per homogeneous material for analysis by an independent accredited laboratory. We assume that no more than twenty (20) bulk samples will be collected and analyzed for asbestos content.

Samples will be analyzed by an American Industrial Hygiene Association accredited laboratory using Polarized Light Microscopy (PLM) analysis for the determination of asbestos in bulk samples.

Asbestos Inspection Report - Pennoni will prepare an Asbestos Inspection Report summarizing the bridge/structure inspection, included within the report will be the laboratory analytical results. The report will also recommend asbestos abatement measures if abatement measures are warranted.

The PADEP Form 2700-FM-AQ0021 - "Asbestos Abatement and Demolition/Renovation Notification Form" will be completed and included in the report for the District Environmental Unit (the Department) to submit to the Environmental Protection Agency (EPA). A copy of the Inspector's certifications will be attached to the form.

Field Coating Condition Assessment –
It is assumed that there will be spot and zone painting. This work will be performed in accordance with the special provisions for painting existing structural steel. Areas to be painted will be blast cleaned and painted with the three coat system.

Relative Risk Characterization (Lead Paint Hazards) –Pennoni will complete an inspection of the structure in general accordance with the guidelines established by the U.S. Department of Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of Lead Based Paint (LBP) Hazards in Housing. Our survey will focus on accessible painted surfaces of the structure and accessible from the ground and will identify the presence of LBP and will assess the condition of any identified LBP.

The inspection will utilize state-of-the-art technology. One primary method for the detection of LBP is through the use of an x-ray fluorescence (XRF) lead-in-paint analyzer. This instrument uses x-rays that penetrate the surface being tested and produces an instantaneous read-out describing the lead content in milligrams per square centimeter (mg/cm2). Instantaneous results will allow our team to determine the lead content of the paint, if any. Representative surfaces will be tested. If the reading is greater than or equal to 0.7 mg/cm2, then the reading is considered to be positive for lead.
Specifically Pennoni will review the following:

1. Potential Public Impact – The potential public health impact can be determined based on the proximity of the public to the project and the frequency with which such presence occurs. Proximity will be based on both the structure itself and the likely dispersion paths of paint chips or dust, if any, that might be dislodged from the structure.

2. Potential Environmental Effect – The potential impact on the environment at the structure will be determined based on the proximity of the structure to bodies of water, or areas where water run-off could carry debris into bodies of water or storm sewers. Proximity to soils and the use of those soils (e.g., park, farm, playground, etc.) will also be assessed.

3. Potential Adjacent Worker Impact – An assessment of the degree of risk of exposure to adjacent workers will be conducted based on their proximity to the work area and the frequency of their presence.

Pennoni will prepare a Lead Paint Hazard Report documenting the results of our investigation. The report will include a summary of our findings and recommendations.

Analysis
Ammann & Whitney will prepare a load rating of the superstructure in accordance with the DM4 Section 5.5.5. The rating will be done for both before and after rehabilitation. We will update the existing load ratings that are on file with the Department for the load rating of the curved box beams. We will not do a full load rating of the box beams. Activity will be limited to reviewing the load rating that is on file and making any necessary updates for the rehabilitation. Engineering judgment will be used if necessary.

Ammann & Whitney will also perform seismic assessment of the structure in accordance with the DM4 Section 5.5.2.8.

Cost Estimate
Ammann & Whitney will prepare a cost estimate for rehabilitation strategies stated above.

Structural Assessment Report
Ammann & Whitney will compile a report that summarizes the finding of the field inspection and structural analysis. This report will also provide recommendations for the rehabilitation of the structure. This report will be submitted for District for review. This report will serve as a basis for the TS&L development.

Task 8 - Preliminary Type, Size and Location (TS&L)

Objective:

2.7.2 - Preliminary Type, Size and Location (TS&L)
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:

2.7.2 - Preliminary Type, Size and Location (TS&L)
Review any previous studies or preliminary designs with respect to the selection of structure type, span arrangements, horizontal and vertical clearances, design controls and type 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 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 constructability, 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 - Preliminary Type, Size and Location (TS&L)

Department Details:

2.7.2
There are two structures involved with this project:
1. Spring Garden Street over the Schuylkill River
2. Spring Garden Street over the Schuylkill Expressway

Approach:

2.7.2
Ammann & Whitney will complete this task as indicated in the Department's Scope of Services. The TS&L will be prepared in accordance with the DM4 Section 1.9.3 with consideration to structure rehabilitations. Based on our current understanding of the structure condition, the TS&L should address the following items at a minimum:

• Bridge Deck – The deck will be overlaid using Epoxy Based Surface Treatment for Bridge Decks, Flexo-grid.

• Bridge Joints – All strip seal expansion dams at deck expansion joints will be eliminated using Type 3 repairs. All plate dams will be removed and replaced with an expansion dam system with the appropriate movement class. All tooth dams will be cleaned and evaluated for repair as necessary. If the tooth dam does not have an effective trough, one will be designed for inclusion in the rehabilitation.

• Bearing Rehabilitation – The interior bearing appear to be in good condition. The end bearings of the river bridge need to be rehabilitated. The east bearings have heavy rust. These bearings will be blast cleaned and painted to return them to their original function. The west side bearings are on a shared pier with the I-76 structure. These bearings have rotated beyond an acceptable limit. There are three recommended approaches for bearings in this condition. Alternative #1 would be to reposition the sole plate. Alternative #2 would be to reposition the masonry plate. Alternative #3 would be to replace the bearing. The bearings on the I-76 western span will be rehabilitated by blast cleaning and painting.

• Bridge Drainage – All scuppers will be cleaned. The downspouting will be evaluated and replaced as necessary.

• Bridge Painting – We anticipate that at a minimum the structure requires spot and zone painting. We will assess the condition of the paint and make a recommendation.

• Seismic Assessment - Perform a seismic evaluation in accordance with the DM4.

• Substructures – The common pier between the river I-76 is a concern. The rotation of the bearings may indicate that there is a problem with the substructure. We will evaluate the substructure in the field and look for rotation and settlement. The pier has a masonry facing. We will evaluate the pier. Areas where the stone facing needs to be removed and replaced, and the concrete underneath rehabilitated, will be delineated on the plans. Use the standard details to repair all concrete substructures. The remaining piers will also be evaluated. If a geotechnical investigation is required it will be performed by Pennoni via a supplement. There was a past repair performed on the southern pier adjacent to I-76 EB lanes. This pier will be examined as will the northern pier at this location. All other substructures will be examined but based upon initial reports they appear to be in good condition.

All TS&L rehabilitation alternatives will be assessed for cost, constructability and the traffic control measures needed.

Task 9 - Preliminary Pavement Marking Plan

Objective:

2.8.4 - Preliminary Pavement Marking Plan
This task consists of developing preliminary pavement marking plans in accordance with Publication 14M, Design Manual Part 3, the Manual on Uniform Traffic Control Devices, Traffic Standards (TC 7600 Series), and Publication 68 with guidance from the Pavement Marking Handbook.

Scope:

2.8.4 - Preliminary Pavement Marking Plan
Preliminary pavement marking plans will be developed depicting longitudinal lane lines and delineators on roadway sections. For interchange areas, pavement markings and delineators will be indicated for gore areas, islands, and other miscellaneous special markings. For intersections, the locations of stop bars, legends, and crosswalks will be indicated.

Plans will be prepared at an appropriate scale. The type, size, and color of pavement markings and delineators will be noted on the plans.

Specific details will not be developed.

The plan will include a title sheet with general notes and index map, blank tabulation sheets, and plan sheets for all roadway sections within the limits of work. Where roadway sections are consistent and repetitive, typical details may be developed to eliminate unnecessary and repetitive design sheets.

Detail Task 1 - Preliminary Pavement Marking and Sigining Plan

Department Details:

2.8.4
Develop Preliminary Pavement Marking and Signing Plan in accordance with applicable Department Manuals

Approach:

2.8.4
Ammann & Whitney will complete this task as indicated in the Department's Scope of Services. It is anticipated that the pavement marking plan will be combined with the signing plan.

Task 10 - Preliminary ROW Activities

Objective:

2.6.1 - Preliminary ROW Activities
This task includes the requirements as stipulated under Publication 14M, Design Manual Part 3.

Scope:

2.6.1 - Preliminary ROW Activities
A preliminary right-of-way plan will be prepared for all Department projects where the construction activities require property acquisition beyond the footprint of existing Department of transportation property. The right-of-way plan shall be prepared in accordance with the requirements and contents as stipulated in Design Manual Part 3.

The right-of-way plan(s) is(are) subject to a plan check review by the District Right-of Way Unit, Chief of Surveys and the Central Office Bureau of Design, Field Liaison Engineer, Highway Quality Control Division. The plan and all supporting data shall be submitted to the District in advance of the scheduled plan check review meeting. The person(s) responsible for the plan preparation will attend the review meeting. Departments and comments stemming from the plan review shall be addressed and incorporated in the subsequent right-of-way plan submission.

The right-of-way plan will be prepared on mylar with appropriate Pennsylvania professional engineer and surveyor seals affixed.

Until NEPA clearance has been obtained, the Department may not perform final negotiations and acquisitions of property.

A right-of-way certificate is issued when the Department has adequately acquired right-of-way to allow project construction.

Detail Task 1 - Preliminary ROW Activities

Department Details:

2.6.1.2
Assume that 4 parcels will be impacted by this project.

Approach:

This task will be lead by Pennoni. Ammann & Whitney will work with Pennoni in identifying parcels that will be impacted by construction.

2.6.1

Pennoni will determine the existing right-of-way width information based on plans and documents recorded in the Philadelphia City Hall or on file in the offices of PennDOT District 6-0 and involved agencies. The right-of-way information will be delineated and labeled on the plans and the general notes will include a description of, and the establishment data for the legal right-of-way.

Pennoni will review and purchase copies of tax maps and records at the Philadelphia County Courthouse, and obtain property owner data and property assessment information based on anticipated project impacts. Pennoni will research and verify property ownership to a point that exhibits best available data, and purchase copies of the necessary deeds as backup for the right-of-way plan submission.

Pennoni will plot the property deeds, and prepare the property mosaic. As this project appears to abut portions of property owned by Amtrak, PennDOT and Fairmount Park, the property mosaic will only include limited portions of the property belonging to these agencies. If overlaps or gaps occur in the property mosaic, we will notify the District Right-of-Way Administrator and solicit direction for resolution. As necessary, Pennoni will perform additional deed research related to changes in property ownership or issues with deed discrepancies. Pennoni will provide the property mosaic to Ammann & Whitney for their use in preparing the construction plans.

Pennoni understands that a right-of-way plan will not be prepared during Preliminary Engineering. Ammann & Whitney will determine the anticipated required right-of-way and/or easement needs and show them on the construction plan sheets only. The right-of-way plan and plats will be prepared during the Final Design phase, once the preliminary engineering is completed and impacts are better identified.

2.6.1.2
It is anticipated that Fairmount Park will be the only impacted property. We will need a letter from them detailing the conditions for using their property to access the site. This information is also required to obtain the CE document approval.

Task 11 - Safety Review/Audit

Objective:

2.8.7 - Safety Review/Audit
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 - Safety Review/Audit
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 1 - Safety Review/Audit

Department Details:

2.8.7
Provide the required information for a District 6-0 Safety Review Submission. Attend meeting and document discussions and conclusions of such with detailed meeting minutes. Complete and submit the required Safety Review Submission Checklists for consideration.

Approach:

2.8.7
A&W will complete this task as indicated in the Department's Scope of Services. Ammann & Whitney will attend the District Safety Review Meeting and prepare the associated minutes of the meeting. The approved meeting minutes will be included in the DFV submission.

Task 12 - Preliminary Maintenance and Protection of Traffic

Objective:

2.8.2 - Preliminary Maintenance and Protection of Traffic
This task consists of developing preliminary maintenance and protection of traffic plans in accordance with Publication 14M, Design Manual Part 3, the Manual on Uniform Traffic Control Devices and Publication 213, Work Zone Traffic Control to maintain safe and efficient traffic operations through the construction work zone.

Scope:

2.8.2 - Preliminary Maintenance and Protection of Traffic
Prepare a preliminary Maintenance and Protection of Traffic plan for anticipated work areas involving existing roads. The plans will include a conceptual sequence of operations and identify the type of traffic control needed for each roadway impacted by the anticipated work zones.

Plans will be developed at an appropriate scale.

Drawings will show the work areas and note the traffic control requirements for each area.

A conceptual sequence of operations will be developed identifying the anticipated phases and stages of work necessary to control traffic during hours of construction and at all other times during construction. Illustration of traffic control signs and devices, temporary pavement markings, temporary roads, detours, and other necessary details will not be developed.

The plans will include a title sheet with index map and general notes, and a listing of anticipated traffic control devices without quantities. The plan will also include the sequence of operations and plans sheets depicting the work areas.

Detail Task 1 - Preliminary Maintenance and Protection of Traffic

Department Details:

2.8.3
Identify temporary traffic signals that may be required as a result of construction stages and or phases.

Approach:

Ammann & Whitney will complete this task as indicated in the Department's Scope of Services.

2.8.2 & 2.8.3
All work will be performed in stages. Two lanes will be maintained at all peak times during construction. The bike lanes may need to be removed during construction and replaced with a shared bike and vehicle lane. Every effort will be made to maintain the turning lanes to the I-76 ramp. It is anticipated that select operations will require closing one travel lane. This will only occur during off-peak hours. Traffic will be flagged through the work zone during these operations.

We do not anticipate any impacts to I-76 that will require long term traffic control. Impacts to I-76 will be limited to off-peak single lane closure. A preliminary Traffic Management Plan and an Incident Management Plan will be developed and submitted with the preliminary MPT plans.

Task 13 - Utilities

Objective:

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

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.

Detail Task 1 - Utilities

Department Details:

2.9.1
Coordinate all activities through the District 6-0 Utility Unit.

Approach:

A&W will complete this task as indicated in the Department's Scope of Services.

2.9.1
It is anticipated that there are no utilities attached to the structure. The bridge has conduit for highway lighting and traffic signals. Highway lighting and the traffic signals must be maintained throughout construction.

Task 14 - Waterway Permits

Objective:

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

Scope:

2.7.4 - Waterway Permits
Needs completed.

Detail Task 1 - Waterway Permits

Department Details:

Assume a GP-11 Permit will be required for this project.

Approach:

2.7.4
Ammann & Whitney, with the assistance of ASC will prepare the permit application. We assume that the preparation of a GP-11 will be sufficient for this project. We will work with the District, and the PADEP to organize and participate in a Pre-application meeting to discuss the project.

Ammann & Whitney will use the DEP's expert system to prepare and submit the application.

Task 15 - Transportation Management Plan (TMP)

Objective:

2.8.8 - Transportation Management Plan (TMP)
The purpose of this task is to develop the Transportation Management Plan

Scope:

2.8.8 - Transportation Management Plan (TMP)
Guidance:
- Publication 46 (Traffic Engineering Manual, Chapter 6.3) □ also see SOL 470-07-06

The scope of work will include the following ctivities:
1. Determine work zone traffic impacts by performing capacity analysis of each conceptual traffic control alternative. The following methods and/or software programs to perform the traffic analysis are considered acceptable: Simple graphical and comparative methods (volume to capacity comparisons used to calculate queue length and expected delay not using traffic analysis software) and Quickzone, Synchro/SimTraffic, HCS (software programs). More information is provided in the Details Section.

The work zone traffic impacts analysis will be used to determine the level of impacts and "significant project" status for the selected traffic control concepts prior to the Design Field View submission. Should the resultant traffic analysis consider the work zone impacts "unacceptable", additional effort required for the submission to FHWA or PennDOT, as detailed in Pub 46 - Section 6.3.2.4 (c), shall be considered an additional service.

Materials are anticipated to be submitted for review/comment by Bureau of Design (BOD) and the Federal Highway Administration (FHWA) for Federal Oversight Projects and by the PennDOT District for PennDOT oversight projects. Comments received at this level will be carried into the (final) version of the reports for Final Design.

For the purpose of estimating man-hours commensurate with the size of this project, the following assumptions are made:

Traffic analysis of work zone impacts:
- Source of traffic volume data used in the analysis is provided in the Details Section.
- This project will be considered a "significant project"
- Analysis will be performed to a "basic" level of detail to determine expected delays.
- Analysis of interchanges, side roads, intersections, and analysis to accommodate concurrent projects in the area will be considered an additional service.
- Analysis for traffic control alternatives is anticipated. The number of traffic control alternatives to be analyzed is provided in the Details Section.
- Analysis of traffic control alternatives from historical experience of similar types of roadways.
- Analysis of additional alternatives recommended by FHWA, BOD, and the District during their review will be considered an additional service.

2. Develop the Draft Transportation Management Plan (TMP), which will include the preliminary Traffic Control Plan (TCP), the draft Transportation Operations Plan (TOP) and the Draft Public Information Plan (PIP).

As described in Exhibit 6.3-E in Chapter 6.3 of Publication 46, in addition to the draft TOP and PIP, the Draft TMP will also include sections on: the project's TMP roles and responsibilities; project description, traffic conditions description; the Work Zone Impacts Assessment; Work Zone Impacts Management Strategies; TMP performance; Contingency Plans; and preliminary costs to implement the TMP. Items in the TMP, such as the TCP, should be included by reference to other documents/plans wherever possible.

Items to be included in the Draft Transportation Operations Plan (TOP) are provided in the Details Section.

Items to be included in the Draft Public Information Plan (PIP) are provided in the Details Section.

The Draft Transportation Management Plan is to be included with the Design Field View submission. The anticipated length of the Draft Transportation Management Plan is provided in the details.

3. Final design: Develop Final Transportation Management Plan by utilizing the draft TMP created during preliminary engineering. The draft TMP will be refined for a more detailed assessment of the work zone impacts and more detail in the TOP and PIP. Design refinements will be carried into the (Final) versions of the TOP, PIP, and TMP. Minimal effort is anticipated.

Copies of the final TMP will be provided for the Final Design Office Meeting and PS&E submissions. It will be necessary to remove costs and other information that is not needed for the project's bid package from the TMP that is included with the PS&E submission. To achieve this, items in the TMP should be included by reference to other documents/plans wherever possible.

The PS&E provisions that are included from the TMP will be those that are necessary for implementing the TMP as part of the construction contract.

Scope Deliverables:
1. Work Zone Impact Assessment: Documentation of expected work zone impacts used to determine □significant project□ status. This will be completed prior to the Design Field View Submission.
2. Draft Transportation Management Plan (TMP) (includes Transportation Operations Plan (TOP) and Public Information Plan (PIP)). This will be included with the Design Field View Submission.
3. Final Transportation Management Plan (TMP) (includes final Transportation Operations Plan (TOP) and Public Information Plan (PIP). This will be included with the FDOM and PS&E submission.

Detail Task 1 - Transportation Management Plan (TMP)

Department Details:

2.8.8
Provide appropriate services to complete tasks defined above.

Approach:

2.8.8
Ammann & Whitney will complete this task in accordance with the Department's Scope of Work. It is anticipated that the rehabilitation of the spans over I-76 will be completed using off-peak lane closures on I-76.

Ammann & Whitney will prepare a draft MPT plan that will be submitted in conjunction with the preliminary Traffic Control Plans. We will also develop a Draft Traffic Operations Plan and a draft Public Information Plan (PIP). During the Public Involvement meetings with the stakeholders we will gather names and contact information of key individuals that will be included in the PIP.

Consultant Hierarchy

Business Partner	DBE Type	Supervising BP
Pennoni Associates Incorporated	No	
Ammann & Whitney Pennsylvania, Inc.	No	Pennoni Associates Incorporated
ASC Group, Inc.	Yes	Pennoni Associates Incorporated
Chilton Engineering, Inc.	Yes	Pennoni Associates Incorporated

Attachments

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