I-95 Betsy Ross Interchange (BRI) & Bridge Street Ramps (BSR) Project

Philadelphia, Pennsylvania

Project Management Plan

February 17, 2011

Revised June 28, 2012

Revised September 13, 2012

pennsylvania
DEPARTMENT OF TRANSPORTATION

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

Table of Contents

1. Introduction

The Federal Highway Administration (FHWA) and the Pennsylvania Department of Transportation (PennDOT) propose to reconstruct portions of Interstate Route 95 (I-95), Sections Betsy Ross Interchange (BRI) and Bridge Street Ramps (BSR) and in the City of Philadelphia, Philadelphia County, Pennsylvania. These two sections are among the first of several sections which make up the larger corridor reconstruction effort as shown in Figure 1. The reconstruction of I-95 is being undertaken by the Pennsylvania Department of Transportation (PennDOT). This Project Management Plan (PMP) establishes the framework for administering the project from detail design through construction and project closure. This document has been prepared to conform to FHWA Project Management Plan Guidance, dated January 2009. It formulates the project's management methodology and organization while providing guidance for the orderly interaction of multiple parties that are involved for the successful completion of the project. This PMP will be updated annually through the life of the project. Significant changes in the project limits, delivery schedule or budget will trigger an update of this document. The PennDOT Project Management Team will be responsible for updating the PMP. The PMP will be reviewed and approved by members of the I-95 Executive Leadership Team.

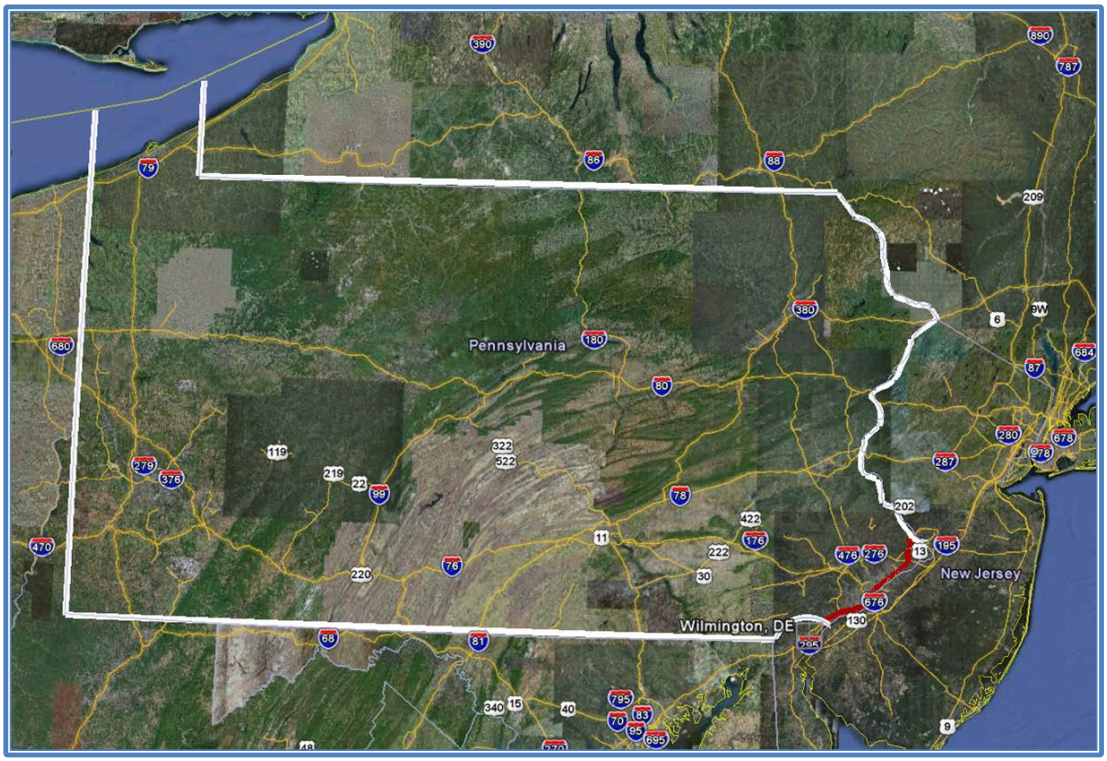


Figure 1

2. Project Description and Scope of Work

The project area extends in a linear fashion from the west side of Wheatsheaf Lane at the southwestern end of the study area to the Tacony-Palmyra Bridge Interchange at the northeastern end. The study area also includes areas of the surrounding city street network located to the north and south of S.R. 0095 (Figure 1). The surrounding city street system consists of a number of high-volume arterials including Aramingo Avenue, Richmond Street, Torresdale Avenue, Bridge Street, Harbison Avenue, and Tacony Street. The study area is extensively developed with a mix of residential, commercial, industrial, and institutional properties, and is located within a number of local northeast Philadelphia neighborhoods including Richmond, Bridesburg, Tacony, and Wissinoming. The overall project consists of two sections that are each divided into three subsections:

- The limits of the Bridge Street Ramps (BSR) section include I-95 from Orthodox Street to Levick Street, Aramingo Avenue from the Frankford Creek Crossing to Tacony Street, and Tacony Street from Aramingo Avenue to Van Kirk Street. This project will eliminate southbound lane drops at the James Street ramp, eliminate the northbound add lane at Bridge Street, and widen I-95 to four lanes in each direction from Orthodox Street to Levick Street. Six dual, mainline bridges and one ramp bridge will be replaced, and one mainline structure will be widened. The three subsections of BSR are:

    1) **BS1:** I-95 from relocated Carver Street to Levick Street. Construction is scheduled to begin in 2015.

    2) **BS2:** I-95 from Margaret Street Bridge to the new Carver Street Bridge. Construction is scheduled to begin in 2020.

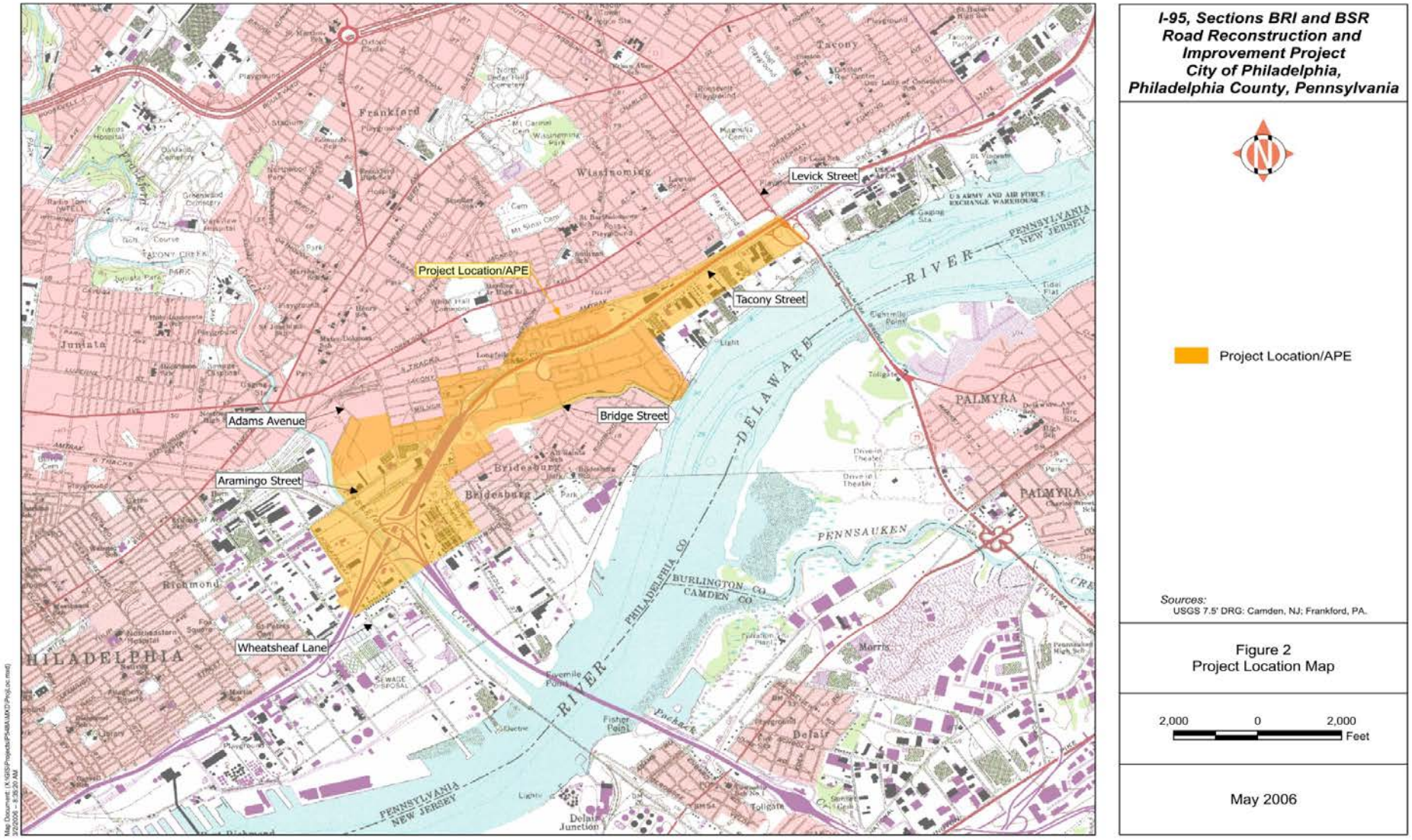
    3) **BS3:** Aramingo Avenue from Frankford Creek to Tacony Street Intersection, Adams Avenue Connector Ramps to the Betsy Ross Interchange. Construction for this stage is anticipated in 2014.

- The Betsy Ross Interchange (BRI) section extends from the northern limit of the interchange over Wheatsheaf Lane to the southern limit of the interchange over Bridge Street. In this section the mainline will be widened to four lanes in each direction and eliminate the collector/distributor roadway on each side of the mainline. Also included is the reconstruction/rehabilitation of the I-95 interchange with the Betsy Ross Bridge. Nineteen bridges structures will be constructed, replaced, or rehabilitated; five bridge structures will be

removed. Work will also include the relocation of one combination sewer for the PWD. The three subsections of BRI are:

1) **BR0**: Betsy Ross Interchange from west approach to Betsy Ross Bridge to west side of Aramingo Avenue. Construction is scheduled to begin in 2014.
2) **BR2**: Northbound I-95 from northern limit of Wheatsheaf Lane to the southern limit of Bridge Street. The construction for this segment will begin in 2018.
3) **BR3**: Southbound I-95 from northern limit of Wheatsheaf Lane to the southern limit of Bridge Street. This segment is scheduled to begin construction in 2020.

A map of the project is shown in Figure 2.


I-95, Sections BRI and BSR
Road Reconstruction and
Improvement Project
City of Philadelphia,
Philadelphia County, Pennsylvania
Project Location/APE
Levick Street
Tacony Street
Bridge Street
Adams Avenue
Aramingo Street
Wheatsheaf Lane
Sources:
USGS 7.5' DRG: Camden, NJ; Frankford, PA.
Figure 2
Project Location Map
2,000 0 2,000
Feet
May 2006

2.1. Project Purpose

The purpose of the proposed I-95, Sections BRI and BSR project is to replace the structurally deficient bridges that carry the mainline, improve safety along the mainline and surrounding city street network, to enhance mobility along the mainline, to increase capacity of the mainline, to provide an efficient transportation facility, and to improve components of the transportation system which are near the end of their design life.

2.2. Project Need

Improvements are needed to protect public safety and to maintain the transportation corridor. PennDOT, the City of Philadelphia, and local community leaders have been involved in the project since early 2000 and have discussed the project needs at various points during project development. The project needs are described below.

2.2.1. High Traffic Congestion

A high level of traffic congestion (poor levels of service) at the interchange ramps and intersections on the surrounding street system are due to the high traffic volumes along the mainline I-95. The current volumes on I-95 range from 126,100 to 166,500 vehicles per day. These Annual Average Daily Traffic (AADT) volumes are projected to increase to 152,300 to 201,700 vehicles per day in the 2030 No Build condition. Eighty percent of the interchange ramps at the Betsy Ross Interchange are level of service E or lower. In addition, all of the intersections that tie into I-95 are at a level of service F. These areas are worse than PennDOT's level of service D minimum. Also, there are fracture-critical and structurally deficient bridges carrying the mainline that are beyond their service life and in need of replacement.

2.2.2. High crash rates due to lane drops in both directions of I-95 and existing interchange configurations

The existing configuration constricts the mainline from four to three travel lanes per direction between ramps. The existing secondary streets also experience high crash rates. The crash rate for I-95 is twice as high as the state average for urban divided roadways with full access control.

2.2.3. Deficient access and egress to and from I-95 northbound and southbound to and from the local street network

There are three main interchanges servicing the surrounding city street system within the study area. These interchanges include: the Betsy Ross Bridge/Aramingo Avenue South/I-95 interchange, the Aramingo Avenue North/I-95 interchange, and the Bridge Street interchange. According to American Association of State Highway and Transportation Officials (AASHTO) criteria, interchange spacing to maintain efficient traffic movement in urban areas is one mile. The distance between each of the above-

noted interchanges is significantly less than one mile. See Figure 3 for the locations of the main interchanges. Due to the interchange spacing, there are numerous northbound and southbound lane drops at each interchange within the project limits where the corridor quickly changes from eight lanes wide to six lanes wide.

2.2.4. Deficient roadway superstructures, such as the fracture-critical Tacony Street Viaduct

The current Tacony Street Viaduct structure consists of 11 steel multi-girder spans supported by ten steel box-beam pier caps. These box girder pier caps are fracture-critical members, which means that the loss of any one due to collision damage, fire, or fatigue failure would result in the loss of both directions of traffic on I-95. Currently, there are fatigue cracks where the multi-girders frame into the webs of the box girders due to out-of-plane bending of the box girder webs.

2.3. Brief History of the Project and Proposed Improvements

The existing interchange configuration within the project area (described in Section 3.4) has evolved as a result of several construction projects over a 35-year span. The original mainline and the Bridge Street Interchange were constructed in 1966. The northbound off-ramp to Bridge Street via Aramingo Avenue, the northbound on-ramp from Bridge Street, the southbound off-ramp to Bridge Street via James Street, and the southbound on-ramp from Aramingo Avenue were then constructed. The Betsy Ross Bridge and its associated collector-distributor roadways were constructed in 1975. The Section H03 connector ramps were constructed in 1999. These ramps provide access to and from Aramingo Avenue to I-95 directly to the west of the Betsy Ross Bridge interchange; these ramps comprise the Aramingo Avenue South and Aramingo Avenue North interchange.

The proposed project will involve the rehabilitation and/or the replacement of structures and retaining walls within the BRI and BSR sections of I-95. The project also calls for the elimination of lane drops in both directions, allowing for four lanes of through-traffic throughout the project area. The project will also include roadway reconstruction as well as upgrades to drainage, lighting, signage, and pavement markings. Limited landscaping may also be required as part of the project.

The Environmental documents including the Environmental Commitment Mitigation Tracking form (ECMTS) can be found in Section 2.7 below. A Level 2 Categorical Exclusion Evaluation (CEE) was prepared for the combined BRI/BSR project. The CEE was approved by FHWA on July 26, 2011.

2.4. Extent and Location of Right-of-Way Acquisitions

The approved preliminary design document identified a total of 43 properties to be acquired. For BSR, this includes 34 residential properties and seven commercial properties. For BRI, while no residential

properties will be acquired, two commercial properties will be acquired. These are described in the project's CEE.

2.5. Involvement with Utilities

SECTION BSR

Coordination with various utilities, including; PECO, Philadelphia Gas Works, Philadelphia Water Department, and Verizon are anticipated throughout the project area. The extent of utility involvement is noted in the project's CEE. A preliminary utility meeting was held for the Section BSR on December 6, 2006. This meeting provided the necessary information to accurately locate the existing utilities. All of the utilities have been plotted and potential impacts have been recognized. The overhead conflicts have been shown on the plans. The potential underground conflicts will need to be analyzed in more detail during final design. Many of these potential conflicts will depend on the depth of the utility line.

Contact	Utility	Type	Roadway	Approximate Location	Impact
PECO	electric	overhead	Aramingo Ave	various along entire project for pole relocations	yes
PECO	electric	overhead	Bridge St	entire project LT	yes
PECO	electric	overhead	Comly St	LT	yes
PECO	electric	overhead	Ex Carver St	entire project	yes
PECO	electric	overhead	Tacony Decel/James Ext	Crossing James Street Ext at approx 52+80	potential
PECO	electric	over/under	Tacony St	entire project LT and at Aramingo intersection ADA ramps	overhead lines - yes, underground lines - potential
Phila City	unnknown	23"x9" conduit	Tacony St	1059+00 to 1096+00 CL and RT	potential
Phila Gas Works	gas	30"S	Aramingo Ave	350+15 to 353+50, 15'RT crossing at 353+50	potential
Phila Gas Works	gas	30"S	Aramingo Ave	353+50 to 356+00 RT under prop sidewalk	potential
Phila Gas Works	gas	30"S	Aramingo Ave	356+00 to 356+25 crossing at 45 deg angle	potential
Phila Gas Works	gas	30"S	Aramingo Ave	374+50 to Orthodox intersection, 5' RT	potential
Phila Gas Works	gas	20" and 6"	Aramingo Ave	387+00 intersection with Bermuda	potential
Phila Gas Works	gas	6"S and 30"S	Aramingo Ave	391+00 intersection with Margaret	potential
Phila Gas Works	gas	30"S	Aramingo Ave	391+00 to 394+00 under median	potential
Phila Gas Works	gas	6"	Bridge St	entire project LT under sidewalk	potential
Phila Gas Works	gas	20" & 6" lines	Comly St	RT under sidewalk	potential
Phila Gas Works	gas	6"S and 6"	Fraley St	LT and RT sides	potential
Phila Gas Works	gas	20"S	Tacony St	1061+50 to end RT under sidewalk	potential
Phila Gas Works	gas	unknown	Tacony St	1061+50 to 1073+75 RT under sidewalk	potential
Phila Gas Works	gas	16"	Tacony St	1082+50 to end RT under sidewalk	potential
Phila Gas Works	gas	6"	Tacony St	1066+00 RT to 1082+00 LT, crosses @ 1073+00 & 1074+50 & 1080+50	potential
Phila Gas Works	gas	6"D	Tacony St	1057+25 to 1061+50 LT	potential
Phila Gas Works	gas	16"S	Van Kirk St	RT and crosses at 330+50	potential
Phila Water Dept	water	12"	Aramingo Ave	355+70 crosses	potential
Phila Water Dept	water	12"	Aramingo Ave	355+50 to 364+50, 48' LT under ramps/shldr/sw	potential

Contact	Utility	Type	Roadway	Approximate Location	Impact
Phila Water Dept	sanitary/combo		Aramingo Ave	entire project due to separation of combo system and reconstruction/widening	yes
Phila Water Dept	storm sewer		Aramingo Ave	entire project due to separation and tie-in and reconstruction/widening	yes
Phila Water Dept	water	12"	Aramingo Ave	355+70 to Church then crossing Aramingo	potential
Phila Water Dept	water		Aramingo Ave	375+00 to 384+00 crossing then along LT	potential
Phila Water Dept	water	12"	Aramingo Ave	380+00 RT to Orthodox St	potential
Phila Water Dept	water	6" and 12"	Aramingo Ave	crossing at intersection of Orthodox/Aramingo	potential
Phila Water Dept	water	6"	Aramingo Ave	crossing at 387+00 intersection with Bermuda	potential
Phila Water Dept	water	6"	Aramingo Ave	crossing at 391+00 intersection with Margaret	potential
Phila Water Dept	water		Aramingo Ave	387+00 to 391+00 LT under sidewalk	potential
Phila Water Dept	water	8"	Aramingo Ave	404+00 to 407+00 LT	potential
Phila Water Dept	water	1-12", 2-6"	Aramingo Ave	407+00 intersection with James/Wakeling	potential
Phila Water Dept	water	20" and 12"	Bridge St	entire project LT	potential
Phila Water Dept	sanitary	4'-6" Dia BR	Bridge St	entire project LT	yes
Phila Water Dept	water	12"	Bridge St	intersection of Bridge/Bridge St accel ramp	potential
Phila Water Dept	water	2-12"	Comly St	LT	potential
Phila Water Dept	sanitary	4'X2'-8" Br	Comly St	LT	potential
Phila Water Dept	water	12"	Ex Carver St	Note: will be filled replaced with relocated Carver	potential
Phila Water Dept	water	12" and 8"	Fraley St	RT & LT	potential
Phila Water Dept	sanitary	3'X2' Br	Fraley St	RT	potential
Phila Water Dept	sanitary	5'x6' RC or 6' BR	Tacony Decel/James Ext	Crossing James Street Extension	potential
Phila Water Dept	sanitary/combo		Tacony St	entire project due to separation of combo system and reconstruction/widening	yes

Contact	Utility	Type	Roadway	Approximate Location	Impact
Phila Water Dept	storm sewer		Tacony St	entire project due to separation and tie-in and reconstruction/widening	yes
Phila Water Dept	water	3-60"	Tacony St	entire project	potential
Phila Water Dept	water	10" to 12"	Tacony St	entire project RT	potential
Phila Water Dept	water	6"	Tacony St	1050+00 to 1056+50 LT & 1059+00 to end LT	potential
Phila Water Dept	sanitary		Van Kirk St	CL	potential
Phila Water Dept	water	12"	Van Kirk St	RT	potential
Unknown	unknown	conduit	Tacony St	1084+00 CL	potential
Unknown	unkown	15"DPTT conduit	Tacony St	1059+00 to 1061+00	potential
Unknown	unknown	2'x3' & 2'x10" DPTT conduit	Tacony St	1052+00 to 1079+50 LT	potential
Unknown	storm sewer	2 - 8'x12' lines	Van Kirk St	LT and RT	potential
Verizon	telephone	underground	Aramingo Ave	intersection of Orthodox/Aramingo	potential
Verizon	telephone	underground	Aramingo Ave	387+00 intersection with Bermuda	potential
Verizon	telephone	2 underground	Aramingo Ave	391+00 intersection with Margaret	potential
Verizon	telephone	2-underground	Bridge St	intersection of Tacony/Bridge	potential
Verizon	telephone	underground	Comly St	RT	potential
Verizon	telephone	underground	Ex Carver St	Note: will be filled replaced with relocated Carver	potential
Verizon	telephone	underground	Fraley St	RT	potential
Verizon	telephone	2-underground	Tacony St	entire project LT	potential
Verizon	telephone	underground	Van Kirk St	RT	potential
NOTE: Currently do not have full survey and utility information for proposed Adams Ave.					

SECTIONS BRI

Existing utility verification was performed by Chilton Engineering, Inc and is plotted on the plans. The PA One-call series numbers are also listed on the plans. So-Deep, Inc provided Quality Level A tests to verify selected subsurface utility lines underneath Aramingo Avenue. This was completed during the preliminary alternative investigation for the relocation of Philadelphia Water Department box culvert which runs under I-95, during which the culvert was to be relocated under Aramingo Avenue. Since then, the culvert relocation alignment has been revised with close coordination with PWD. Additional Quality level A tests will be performed in Final Design to ensure that each subsurface utility conflict are accurately identified and relocated.

There will be water line, hydrant and storm sewer relocations at Orthodox and Pearce Streets. Also, several grade adjustments will be needed for Gas, Electric, Telephone, Water and Sewer valves and manholes. Some utility poles will need to be relocated along Ramp YY.

2.6. Involvement with Railroads

SECTION BSR

Coordination with Conrail to avoid the impacts to the Conrail Meadows Yard are associated with the BR0 project are anticipated. Additionally, an existing at-grade railroad crossing that services the Sun Chemical Plant will be impacted. Coordination with the railroad and Sun Chemical is anticipated throughout final design. The extent of railroad involvement is noted in the project's CEE. Currently, an existing at-grade railroad exists at the Orthodox Street intersection with Aramingo Avenue. The rail line connects from the Sun Chemical Plant to an existing rail yard. This line is approximately 3500 feet long. As part of the project, Aramingo Avenue is being widened to provide left and tight turn lanes at intersections, where necessary. Because of this widening, the at-grade crossing will be impacted. The existing crossing can be shifted to the south t provide an at–grade crossing across Orthodox Street. This shift will also require approximately 1500 feet of track realignment.

SECTION BRI

The impacts to the railroad are associated with the SR 0095 Section BR0 construction of the ramps over, and relocated culvert within, the Conrail Meadows Yard. The Conrail Meadows Yard is leased by Sunoco, Inc. as a storage yard for the nearby Sun Chemical Plant. Planned development of the Conrail Meadows Yard includes the construction of a trash transfer station which would include access points to Aramingo Avenue. Proposed Section BR0 structures within the limits of the planned trash transfer facility align the piers with existing to avoid potential conflicts and provide flexibility for future development. SR 0095 Sections BR2 and BR3 have no impacts within the Conrail Meadows Yard.

Currently, an existing at-grade railroad crossing exists at the Orthodox St intersection with Aramingo Avenue. The rail line connects from the Sun Chemical Plant to an existing rail yard. This line is

approximately 3500 feet long. As part of the SR 0095 Section BSR project, Aramingo Avenue is being widened to provide left and right turn lanes at intersections where necessary. Because of this widening, the at-grade crossing will be impacted and a portion of this rail line will be realigned. The existing crossing can be shifted to the south to provide an at-grade crossing across Orthodox St. This shift will also require approximately 1500 feet of track realignment. SR 0095 Sections BR2 and BR3 have no impacts with this track.

2.7. Environmental Summary

Throughout Preliminary Design, the project team worked to design the improvements to avoid, minimize, or mitigate the environmental and cultural resource impacts. Environmental resources and impacts to them are described in the project's CEE, on the following ECMTS, and in Section 13 of this Project Management Plan.

Project Name: I-95 BSR/BRI Project

Project Location: Philadelphia County, PA

MITIGATION CATEGORY	RESOURCE/ REFERENCE NUMBER	RESPONSIBLE PARTY	SOURCE DOCUMENTS	PART 1 OF 5: PRELIMINARY ENGINEERING			
				BEGIN STATION	END STATION	IMPACT	MITIGATION COMMITMENT
NATURAL RESOURCES							
Streams, Rivers, and Watercourses	Frankford Creek/Old Frankford Creek	PennDOT consultant/USACE	CEE Part B, A-1			TBD	Frankford Creek and Old Frankford Creek are located within the project area. Approximately 310LF of permanent impacts and 44 LF of temporary impacts. There are no impacts to Old Frankford Creek anticipated.
Navigable Waterways	Frankford Creek/Old Frankford Creek	PennDOT consultant/US Coast Guard	CEE Part B, A-1: Coast Guard Coordination			None anticipated	Frankford Creek is considered navigable by the US Coast Guard but not the U.S. Army Corps of Engineers. No navigability will be effected by the project. Coordination with the Coast Guard was received for Thompson Street, Ramp A and I-95.
Wetlands	Finding of No Wetland Letter	PennDOT consultant/USACE	CEE Part B, A-1: Finding of No Wetlands Letter			None anticipated	A "Finding of No Wetlands" Letter Report was prepared and submitted in July 2009.
Coastal Zone	Delaware Estuary Zone	PennDOT consultant/DEP	CEE Part B, A-1: PADEP Coastal Zone Management Office Coordination			None anticipated	The project is located within the Delaware Estuary Zone. No impacts to the coastal zone are anticipated. Coordination with the PADEP Coastal Zone Management Office will occur for each section when the project goes to construction.
Floodplains/Floodways	100-year floodplain	PennDOT consultant	CEE Part B, A-1			None anticipated	The project is located within the 100-year floodplain of Frankford Creek and Old Frankford Creek. It is determined that no significant floodplain encroachment will occur.
Soil Erosion and Sedimentation	E&S Control Plan, NPDES permit	PennDOT consultant	CEE Part B, A-1			None anticipated	Coordination with County Conservation District. NPDES Permit expected. An Erosion & Sedimentation Control Plan will be prepared and submitted to PADEP Southeast Region. During construction the approved E&S plan will be implemented. There will be no permanent effects due to construction activities.
Threatened and Endangered Plants and Animals	Threatened and Endangered Species Queries	PennDOT consultant	CEE Part B, A-3			None anticipated	PAFBC concurred that there will be no adverse impacts to red-bellied turtles as a result of the construction activities.
Landscaping/Vegetation	Landscaping plan	PennDOT consultant	CEE Part B, A-2			N/A	Landscaping plan is proposed
AIR, NOISE, AND VIBRATION							
Sensitive Air Quality Receptors	Air Quality Survey	PennDOT consultant	CEE Part B, A-6			None anticipated	Air Quality Non-Attainment area for ozone. The project complies with regional conformity analysis associated with non-attainment area. There are sensitive receptors located with the project area. A quantitative CO analysis was completed, there is no significant adverse impact on air quality as a result of CO emissions. A qualitative PM 2.5 analysis was conducted and it was determined the project is not part of air quality concern, qualitative MSAT completed and there is no meaningful increase in MSAT emissions.

Project Name: I-95 BSR/BRI Project

Project Location: Philadelphia County, PA

MITIGATION CATEGORY	RESOURCE/ REFERENCE NUMBER	RESPONSIBLE PARTY	SOURCE DOCUMENTS	PART 1 OF 5: PRELIMINARY ENGINEERING			
				BEGIN STATION	END STATION	IMPACT	MITIGATION COMMITMENT
Sensitive Noise Receptors	Noise Survey	PennDOT consultant	CEE Part B, A-6			TBD	400+ noise receptors present in the project area. An existing noise barrier will be replaced but the initial noise analysis shows an increase in noise levels, therefore the analysis will be repeated at final design to determine mitigation.
HAZARDOUS OR RESIDUAL WASTE SITES							
UST/AST	Phase I ESA	PennDOT consultant	CEE Part B, A-2			TBD	Phase I ESA completed for both sections. Section BSR 46 sites of concern were identified, eight are recommended for further study. A Phase I ESA was conducted for Section BRI. A Phase III survey was recommended for soil and groundwater at areas of excavation.
COMMUNITY RESOURCES							
Regional and Community Growth Plans	Conceptual Stage Survey	PennDOT consultant	CEE Part B, A-7			Displacements	Project will have some impacts on planned growth, land development and development patterns in the area resulting from residential displacements.
Residences, Businesses, or Farms	Conceptual Stage Survey	PennDOT consultant	CEE Part B, A-2			Displacements	Conceptual survey was prepared and is attached to the CEE. A total of 43 properties will be acquired. For BSR, 34 residential properties and 7 commercial properties will be acquired. For BRI, while no residential properties will be acquired, 2 commercial properties will be acquired.
Parks and Recreation Facilities	American Legion park	PennDOT consultant	CEE Part B, A-2			One potential resource impacted	American Legion Memorial along Aramingo Avenue below the I-95 Aramingo South ramp. A community park is located on the south side of Richmond Street, adjacent to the southeastern limit of the project area. Temporary impacts during construction may occur to the American Legion memorial along Aramingo Avenue directly beneath the I-95 Aramingo South ramp. This will be further evaluated during final design.
CULTURAL RESOURCES							
Archaeological Sites	Phase I Archeology Report		CEE Part B, A-4			None anticipated	The Phase I Archeology Survey was completed in 2006. A potential archeology site was identified and has been avoided by the proposed design.
National Register Listed or Eligible Sites/Districts	Eligible & Listed Resources identified in Historic Structures Survey and Effects Report	PennDOT CRP	CEE Part B, A-4			One potential resource impacted	A Listed structure (Henry Longfellow School) is located within the project area and will be demolished. The PA Railroad Bridge (Eligible for Listing), is considered a non-contributing element to the PA Railroad-Philadelphia to New York Main Line will be repaired and painted. There is a finding of No Adverse Affect for this property. The Frankford Arsenal, which is Listed, will not be impacted as part of the project. The MOA was prepared for the adverse effects to the properties and was approved September 2010. Stipulations are listed in the CEE document. A Historic Structures Survey and Determination of Effects Report was completed.

Project Name: I-95 BSR/BRI Project

Project Location: Philadelphia County, PA

MITIGATION CATEGORY	RESOURCE/ REFERENCE NUMBER	RESPONSIBLE PARTY	SOURCE DOCUMENTS	PART 1 OF 5: PRELIMINARY ENGINEERING			
				BEGIN STATION	END STATION	IMPACT	MITIGATION COMMITMENT
Section 4(f) Resources	Eligible & Listed Resources	PennDOT CRP	CEE Part B, A-5			3 resources effected	3 Section 4(f) resources within project, Henry Longfellow School, the PA Railroad Bridge, and the Frankford Arsenal. A Section 4(f) Use will occur at the school and RR. An individual Section 4(f) Evaluation was approved in February 2011.
SAFETY AND MOBILITY							
Bike/Pedestrian Facilities	Bike/Ped Checklist	PennDOT consultant	CEE Part B, A-7			None anticipated	Checklist was prepared. Project incorporated Bike/Ped in design.


I-95 SECTIONS BSR / BRI - PHILADELPHIA, PA
ADAMS AVE CONNECTOR
AMTRAK / NJ TRANSIT
AMTRAK
SUN CHEMICAL
ARSENAL BUSINESS CENTER
BETSY ROSS BRIDGE
TACONY-PALMYRA BRIDGE
LEGEND
- ROADWAY WIDENING - RECONSTRUCTION
- STRUCTURE REPLACEMENT
- FACILITY TO BE REMOVED
- PROPOSED TRAFFIC SIGNAL
- TRAFFIC SIGNAL RETIMING
- TRAFFIC SIGNAL MODIFICATIONS

Figure 3

3. Goals and Objectives

The project's purpose and needs are described in Section 3 of this PMP. This section focuses on overall project goals and objectives and identifies how the requirements of the project will be met. The project objectives are as follows:

a. **Rehabilitate and reconstruct I-95 structures.** Rehabilitate and reconstruct to improve the facility that provides regional access to the greater Philadelphia area. Eliminate lane drops in both directions, allowing for four lanes of through-traffic throughout the project area. Reconstruct the I-95 roadway within the project area.

   Metric: Reduction of crashes and congestion on the interstate

b. **Timely design and construction of the Project.** As described in the Project Phases section of this PMP, Section BRI and BSR will each be divided into three construction sections with separate construction let dates. PennDOT and its consultants will meet the targeted completion date for Final Design for the first construction section in 2014. The project schedule will be reviewed on a monthly basis at Project Team Meetings. The program team has developed a Design Schedule Management Review Process to provide additional guidance for the Schedule Update and Review Process. A complete copy of the document is included in the Appendix A. The Design Schedule Management Review Process document addresses the following key areas:

   - Schedule Development/Redevelopment Workshop
   - Schedule Update Process
   - Schedule Performance Metrics

   In addition to the design Schedule Management Review Process, review meetings and team meetings will be used to minimize rework and to enhance project quality and adherence to budget and schedule. The objective is to discuss and resolve specific design, coordination, schedule, quality, and financial issues for each design/construction section.

   The overall process is centered on a series of design-related "Milestone Submissions". Additional milestone submissions are included for environmental, right of way, and utility clearances. The design milestone submissions are designed to facilitate overall project reviews, across all disciplines, at regular intervals throughout the project development process. The milestone reviews include:

   - Milestone Meeting - Featuring a presentation by designers outlining major project components, issues, and changes since the previous submission. The meeting will be held prior to any reviews and attended by Department and Consultant reviewers.

- Interdisciplinary Design Review – A review to ensure compatibility between technical disciplines and consistency with overall program goals and objectives.
- Constructability Review – A traditional constructability review by members of the independent construction management team assigned to the project's geographic location along the corridor. This would include a review of the cost estimate and construction schedules.
- Environmental Compliance Review – An evaluation of the project plans and documents for compliance with environmental documents, as well as for compliance with and documentation of environmental commitments

Appropriate members of the Executive Leadership Team, PennDOT Management Team, Project Delivery Team and Technical Reviewers will participate in the review meetings.

Metric: Complete construction within schedule of approved Statewide Transportation Improvement Program.

c. **Maintain Mobility in the work areas**. A Transportation Management Plan (TMP) for the I-95 corridor has been developed to minimize the impacts to the flow of transportation and traffic through the corridor during construction of these projects. A project specific TMP will be prepared during the Final Design phases for BRI/BSR that will identify strategies to minimize the impacts. Strategies typically include temporary traffic control measures and devices, public information/outreach, and operational strategies such as travel demand management and traffic incident management.

   Metric: Implementation of TMP strategies during construction, continuous traffic flow during construction.

d. **Completion of the Project within design and construction estimates**. The Final Design engineering budget and the total project construction budget will be met. Currently, these budgets are based on information provided in the CEE. The current design engineering budget is $70 million and the total project construction estimate is $954 million based on performing an FHWA cost evaluation workshop on the preliminary engineering construction estimates . A Baseline project cost estimate will be developed for each construction project within BRI/BSR based on the final designs and updated unit prices.

   Design Estimates

   The Design budgets are tracked on a monthly basis when the consultant prepares its estimated progress report (EPR). The EPR defines percent budget spent to date and compares that to the actual progression of the project to date. The EPR is a tool that allows the PennDOT project

manager to track the budget to work progress. The PennDOT project manager reviews and approves the EPR on a monthly basis.

Construction Estimates

The FHWA, PennDOT, and their consultants conducted a workshop to review the cost estimate for the I-95 BRI and BSR Project. The workshop was held at the FHWA Division Office in Harrisburg, Pennsylvania on October 18-21, 2011. The closeout presentation was conducted on October 21, 2011. The objective of the review was to verify the accuracy and reasonableness of the current project total cost estimate and schedule and to develop a probability range for the cost estimate that represents the project's current stage of development. Significant results of the review are as follows:

- PennDOT submitted an estimate for the project of $901.7 million Year of Expenditure (YOE) dollars. The anticipated completion date was January 17, 2023.
- Approximately $74 million in net adjustments were made to the estimate during the week of the review. The modifications included increases to the allowances for construction engineering and preliminary engineering, as well as additional cost for line items such as structures, retaining walls, drainage, signage, and maintenance and protection of traffic.

The following recommendations were made for incorporation into budget updates:

- Update estimates to reflect estimate changes made during review
- Revise estimate contingency to reflect risks and unknowns identified during review
- Identify management reserve components
- Continue coordination between design consultants for BSR & BRI
- Coordination with adjacent I-95 Corridor Projects
- Continue coordination with third party entities such as Conrail Railroad, Philadelphia Water Department (PWD), and Delaware River Port Authority (DRPA) to minimize or eliminate potential project delays
- Continue utilizing risk management practices
- Establish procedures for risk management & risk-based estimation
- Continue documenting and managing risk with use of risk register
- Continue updating estimate based on risk management
- Consider techniques for advancing schedule
- Alternative contracting techniques
- Innovative financing techniques
- Manage the contingency process through construction

Metric: Complete construction within the $954 million estimate approved by the FHWA after the first Cost Estimate Review.

e. **Completion of a quality project**. Each design firm is responsible to adhering to their QA/QC plan. The Design Review Consultant is responsible for verifying that the submitted design is in compliance with State and Federal laws and regulations. They will also review the design submitted for conformance to PennDOT's standards and procedures. The consultant review teams will utilize design checklists to ensure that all elements of the design meet PennDOT's standards. Each design reviewer will be audited to ensure that the completed reviews have followed the review protocol and have used the correct checklists as a quality assurance mechanism. The Quality Assurance Tracking form is included in Appendix B and copies of the design consultants' quality plans are included in Appendix D.

   Metric: Design revisions due to errors/omissions are less than 1%.

f. **Safe and Secure Environment**. Completion of the Project in a manner that will provide a safe and secure environment before, during and after construction for individuals working on the project, people using facilities near the project, as well as for the people traveling along the new roadway.

   Metric: Construction incidents are less than the Statewide average; no public injuries during construction.

g. **Satisfy all Federal and State statutory requirements and meet DBE goals**. The PennDOT Management Team will establish processes to ensure DBE compliance. This includes requirements for the designer as well as compliance by PennDOT in State and FHWA matters. The Consultant Team and the Contractor are required to meet or exceed the DBE goals established at the time of advertisement.

   Metric: Project is designed and constructed with DBE goals met and/or exceeded.

h. **Maintain public trust, support, and confidence throughout the life of the project**. Maintaining public trust, support, and confidence will occur by continually and adequately informing the media and public about the project; minimizing the inconvenience to commuters, residents, and businesses; accomplishing all the environmental and other commitments in the CEE that are listed in the ECMTS; maintaining integrity and competence in regards to the stewardship and oversight of public funds; and maintaining Congressional and public expectations. The Public Information and Outreach Plan developed by the Public Information Team (further discussed in Section 10) , in concert with the Environmental Mitigation Form will ensure public trust and support throughout the life of the project.

Metric: No schedule delays due to public opposition.

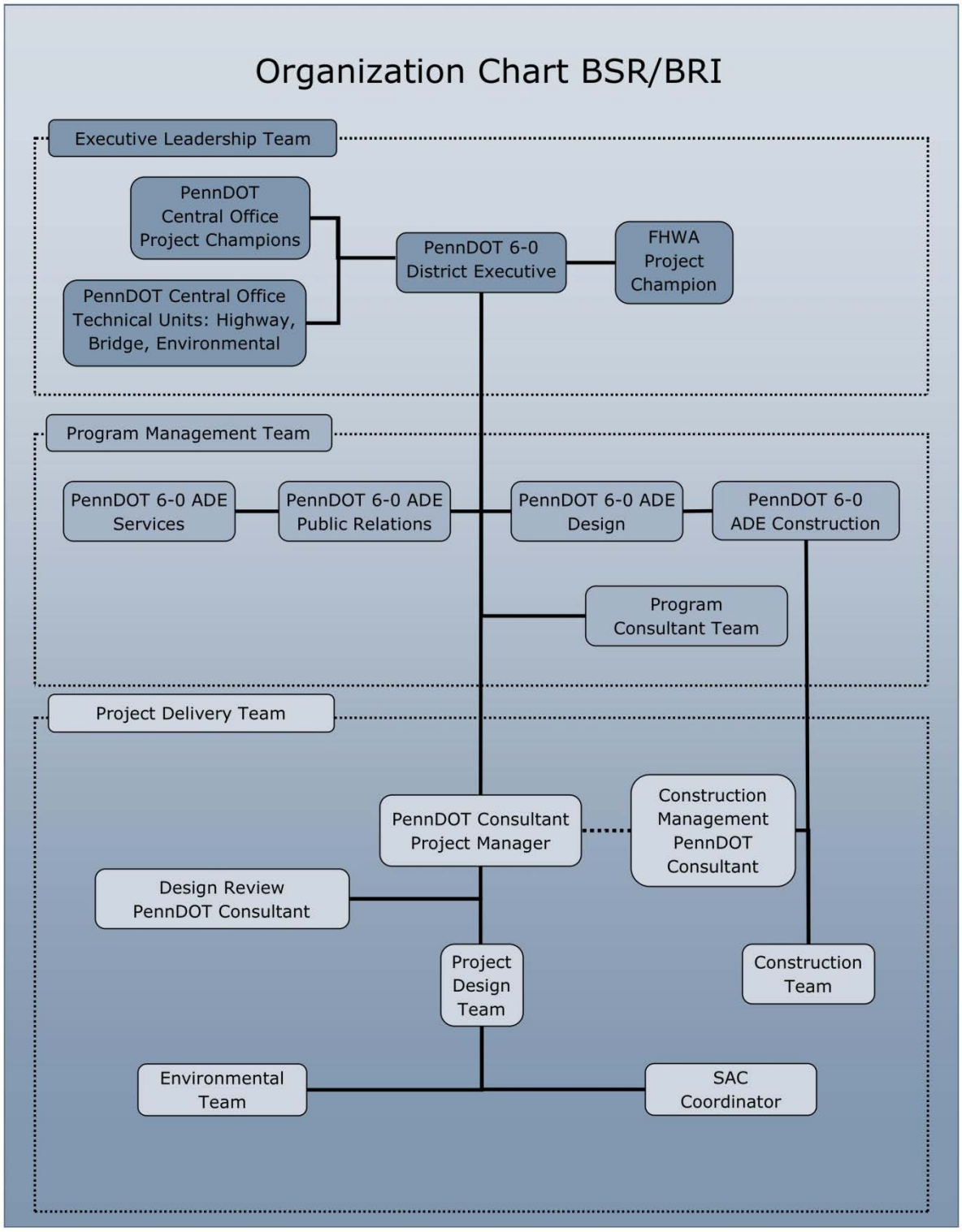
Ultimately the opening of the Project to traffic will be evidence of success. The degree of success will be measured on how well the project objectives are completed. Cost and schedule tracking will play a very important role in monitoring the progress of the project. The cost and schedule tracking will also be used as an early warning system for any issues that might arise during the project's development. PennDOT will use these methods throughout the life of the project: in the Preliminary and Final Design Phases, right-of-way acquisition, and construction.

4. Project Organizational Chart, Roles, and Responsibilities

The project leadership team has been decided by PennDOT and consists of PennDOT leadership, Project Managers, designers, and design reviewers. The team will provide leadership under the following guidelines:

- Create a team that functions well, with clear expectations and effective communications
- Meet approved project goals and metrics and strive for high performance
- Integrate innovations into the delivery of the project

PennDOT has implemented an I-95 PennDOT Management Team and a Project Delivery Team (design management and review team structure) for BRI/BSR, as depicted in the following high level organizational chart. The organization chart illustrates the structure of the BRI/BSR Project Teams.


Organization Chart BSR/BRI
Executive Leadership Team
PennDOT Central Office Project Champions
PennDOT Central Office Technical Units: Highway, Bridge, Environmental
PennDOT 6-0 District Executive
FHWA Project Champion
Program Management Team
PennDOT 6-0 ADE Services
PennDOT 6-0 ADE Public Relations
PennDOT 6-0 ADE Design
PennDOT 6-0 ADE Construction
Program Consultant Team
Project Delivery Team
PennDOT Consultant Project Manager
Construction Management PennDOT Consultant
Design Review PennDOT Consultant
Project Design Team
Construction Team
Environmental Team
SAC Coordinator

4.1. Project Team Organization

This structure features one Consultant Project Manager dedicated to each ongoing project. Each Consultant Project Manager is supported by a team of senior technical experts and reviewers from their respective organizations. The primary function of this team is to conduct technical design reviews. The Consultant Project Managers are also supported by a team of Corridor Coordinators who are charged with coordinating project elements that span multiple projects along the corridor. The total group is managed by senior members of the Program Team and various support staff.

The project Team consists of three levels: Executive Leadership, PennDOT Management and Project Delivery, with roles as described in the table that follows:

Name	Role on this Project	Company
Executive Leadership Team		
Les Toaso	District 6-0 Executive	PennDOT District 6-0
George Fleagle	FHWA I-95 Project Champion	FHWA
Thomas Macioce	PennDOT Central Office Technical Unit-Bridge	PennDOT Central Office
Keith Highlands	PennDOT Central Office Technical Unit-Highway	PennDOT Central Office
Gary Fawver	PennDOT Central Office Technical Unit-Environmental	PennDOT Central Office
Lydia Peddicord	PennDOT Central Office Technical Unit-Pavement	PennDOT Central Office
Mark Chapel	PennDOT Central Office Technical Unit-ROW	PennDOT Central Office
PennDOT Management Team		
Chuck Davies	Assistant District Executive-Design	PennDOT 6-0
Scott Fletcher	Assistant District Executive-Services	PennDOT 6-0
George Dunheimer	Assistant District Executive-Construction	PennDOT 6-0
Nicholas Martino	Assistant District Executive-Maintenance	PennDOT 6-0
Eugene Blaum	Assistant Press Secretary	PennDOT 6-0
Elaine Elbich	Portfolio Manager	PennDOT 6-0
Project Delivery Team		
Paul Shultes	PennDOT Project Manager-BSR/BRI	AECOM
Kenneth R. Reber, Jr.	Design Review Consultant	Michael Baker Corporation
David Marchese	Project Design Manager – BSR	CDM Smith

Leonard Smith	Project Design Manager – BRI	STV Incorporated
Elizabeth Lankenau	SAC Coordinator-BSR	KSK Architects Planners Historians, Inc.
Leonard Smith, PE	SAC Coordinator-BRI	STV Incorporated

4.2. Project Team Responsibilities

The **Executive Leadership Team** will provide regional oversight for the entire I-95 Program and act as the final authority on major revisions. The Executive Leadership Team, lead by the PennDOT District Executive, is made up of the PennDOT Project Champions, the FHWA Project Champion, and PennDOT Central Office Technical Unit Leads. Les Toaso the **District Executive** has the following responsibilities for the project:

- Overall leadership for PennDOT Management/Design/Construction
- Resolve coordination issues within the Project Team
- Communication with PennDOT executive level management
- Point of contact for senior leaders of key stakeholders

PennDOT Central Office Technical Unit Leads identified for the I-95 Program are responsible for technical reviews and approvals of the projects in accordance with PennDOT and I-95 requirements and guidelines.

The **PennDOT Management Team** includes the PennDOT District 6-0 Assistant District Executives for Services, Design, Construction and Public Relations, and the Program Consultant Team. The PennDOT Management Team will provide oversight on a program level for the projects and provide continuity between all projects in the I-95 Program. The **PennDOT Portfolio Manager** has the following responsibilities:

- Development of innovative strategies for implementation during the project
- Cost, schedule, document management, and reporting of the I-95 Program
- Establish program processes and procedures to be implemented in coordination with PennDOT delivery processes for the project
- Monitor project performance and assist project delivery team to maintain consistency with I-95 program processes and procedures
- Provide technical and other support to the project delivery team as necessary

The **Assistant District Executives** have the following responsibilities for the project:

- Manage District 6-0 staff working on the project

- Ensure compliance with State and Federal laws and regulations
- Monitor performance of the Project Delivery Team
- Verify compliance with PennDOT standards and requirements

Project Delivery Teams

The **Project Delivery Teams**, led by the PennDOT Consultant Project Manager, includes the Design Review PennDOT Consultant, and the Design Consultant Project Team. The **Project Delivery Teams** are directly involved with the everyday activities of managing the design projects including: preliminary engineering through final design plan preparation, right of way acquisition, utility and third party coordination, public and stakeholder involvement, and construction. Each member of the Project Delivery Team will have the authority to make decisions within their area of technical expertise and level of authority. However, this authority comes with the responsibility to consult with each group that will be affected by the decision and to identify, address and resolve issues or concerns.

The **PennDOT Consultant Project Manager** has the following responsibilities:

- Complete the design project within schedule, budget and meeting approved project metrics
- Project management of design by design consultant
- Liaison between the Project Delivery Team and the PennDOT Management Team
- Liaison between the Project Delivery Team and the FHWA Major Projects Oversight Manager
- As the project progresses, sets goals and provides guidance and advice to project team members
- Manages design review process by consultant design reviews
- Reports to the PennDOT Management Consultant about the status of the project
- Ensures best practices are deployed by the team while executing a project
- Manages integration of approved innovations into the project t delivery
- Verify project complies with program processes and procedures

The **PennDOT Design Review Consultant** has the following responsibilities:

- Verify design compliance with State and Federal laws and regulations
- Reviews design submissions for conformance to PennDOT standards and I-95 guidance and procedures

The **Design Consultant Team**, led by a Project Manager, is responsible for preparing preliminary and final designs for the project in conformance with PennDOT standards, Federal, State, and local laws and regulations, and I-95 corridor program guidelines. This includes responsibilities for:

- Environmental compliance
- Project development
- Construction administration
- Business and financial reporting
- Public outreach and communications
- Sustainable Action Committee (SAC) Coordination
- Civil design
- Structural design
- Transportation Management and traffic modeling
- Maintenance and protection of traffic
- Geotechnical
- Drainage, stormwater management and erosions & sedimentation control
- Hydraulics and Hydrology
- Constructability
- Estimating and scheduling

The **Sustainable Action Committee (SAC)**, led by SAC Coordinators' to ensure that the open space along and under the highway will be maintained and accounted for after construction has concluded – either by PennDOT, City agencies, and/or civic organizations with the capacity for stewardship (or a combination thereof) – so that the highway is no longer a barrier between the adjacent communities and the Delaware River.

The **SAC Coordinators** have the following responsibilities:

- External communications
- Address local issues specifically related to the open space

The **Consultant Environmental Manager** has the following responsibilities:

- Ensure compliance with State and Federal environmental laws and regulations
- Lead NEPA environmental process for the project

The **Construction Management Consultant** has the following responsibilities.

- Construction Management
- Providing PennDOT constructability perspective during design phase

Contractual authority to make decisions during construction will be defined in the construction managers Scope of Work as defined in PennDOT Publication 8, Construction manual.

The **Public Information Team,** led by the ADA for Public Relations, has the following responsibilities:

- The development of the Public Participation Plan
- Update the SAC Commitment Tracking form
- SAC Coordination

5. Project Phases

Each project in BRI/BSR will follow PennDOT's Transportation Program Development and Project Delivery Process. The Project Delivery Process consists of several phases of design outlined in Publication 10, Design Manual Part 1, *Transportation Program Development and Project Delivery Process*. Preliminary Engineering concludes with the Design Field View Submission (DFV). The DFV Submission contains pans, profiles, typical sections, representative cross sections, cost estimates and other supporting documents prepared to support the engineering analysis of the selected alternative developed during preliminary engineering. This report is the main engineering product of Preliminary Engineering and is filed as support for the project's environmental document.

As of the date of this PMP the BRI/BSR project has completed the NEPA Decision phase. Two of the six projects, BRO and BS3, are in Final Design. The other four projects (BR 2, BR3, BS1, BS2) are in Preliminary Engineering, Step 6 of PennDOT's Transportation Program Development and Project Delivery Process.

Final Design occurs during Step 7 of the Transportation Project Delivery Process and involves the development of detailed working drawings, specifications, and estimates for approved transportation projects. Final Design follows the receipt of necessary design and/or environmental approval and it includes right-of-way acquisitions, utility relocation, and construction contract advertisement and award. During the Final Design process, final Right-of-Way plans are prepared and approved. The Right-of-Way process is completed and the ROW plans are recorded prior to the advertisement of the individual construction projects. Figure 4, on the following page, illustrates the tasks that are completed in Steps 6 and 7 of PennDOT's project delivery process.

Transportation Program Development and Project Delivery Process

Publication 10 (DM-1)

pennsylvania
DEPARTMENT OF TRANSPORTATION

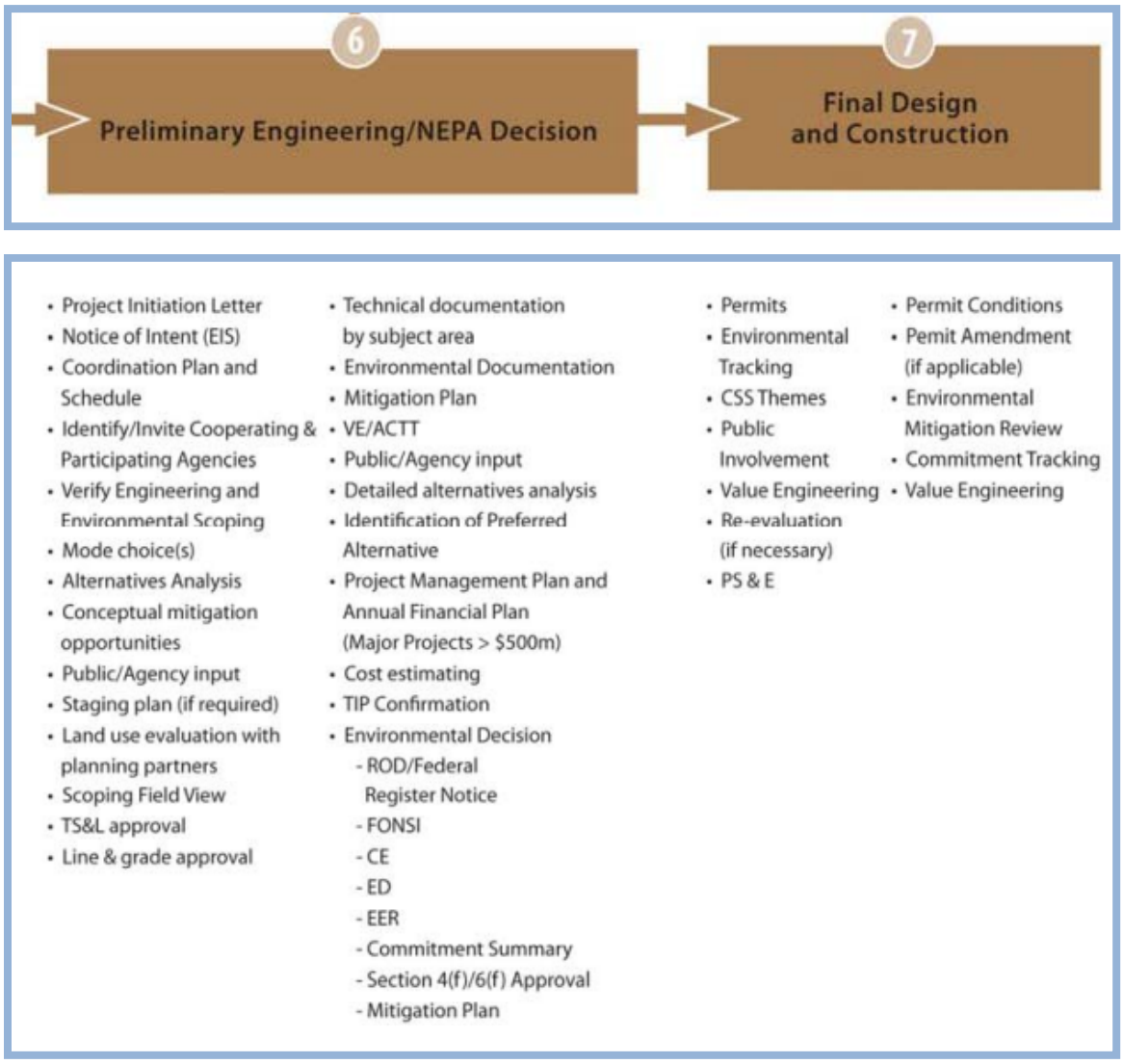


Figure 4

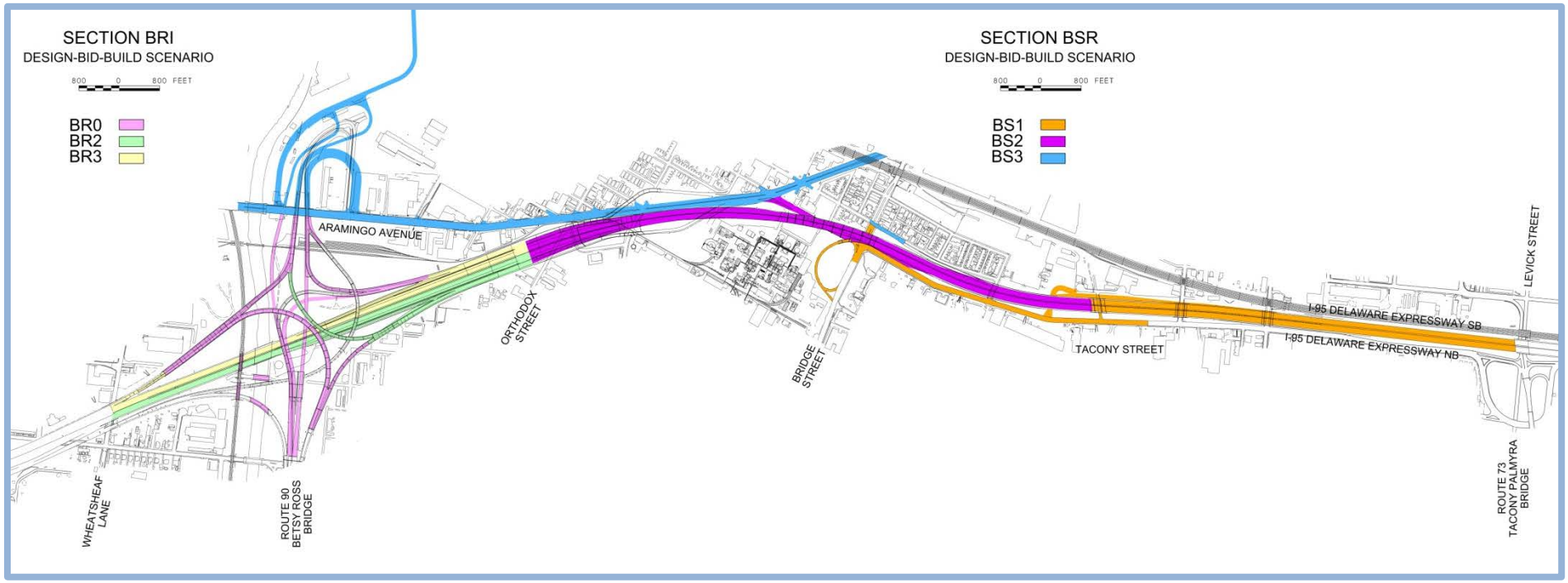

SECTION BRI
DESIGN-BID-BUILD SCENARIO
800 0 800 FEET
BR0
BR2
BR3
SECTION BSR
DESIGN-BID-BUILD SCENARIO
800 0 800 FEET
BS1
BS2
BS3
ARAMINGO AVENUE
ORTHODOX STREET
BRIDGE STREET
TACONY STREET
I-95 DELAWARE EXPRESSWAY SB
I-95 DELAWARE EXPRESSWAY NB
LEVICK STREET
WHEATSHEAF LANE
ROUTE 90 BETSY ROSS BRIDGE
ROUTE 73 TACONY PALMYRA BRIDGE

Figure 5

BRI/BRI consists of two sections that are each divided into three subsections or projects. The six construction projects are illustrated in Figure 5 and are described below:

SR 0095 Section BSR - Bridge Street Ramps from Orthodox St. to Levick St.

This section of I-95 will eliminate the SB lane drop at the James Street Ramp, eliminate the NB add lane at Bridge Street, and widen I-95 to four lanes in each direction from Orthodox Street to Levick Street. Exclusive acceleration/ deceleration lanes will be added at the interchanges. Six dual mainline bridges and one ramp br

idge will be replaced and one mainline structure will be widened. Long retaining walls will line I-95 through much of this section and two sound barriers will be constructed. It is anticipated that Section BSR will be constructed in three stages or subsections as follows:

- **BS1:** From relocated Carver Street (Sta. 568+00) to Levick Street (Sta. 615+00), including:
    - Widening and reconstructing SR 0095 from Station 568+00 to 615+00.
    - Constructing new southbound off-ramp to Tacony Street.
    - Removing existing southbound off-ramp to James Street.
    - Reconstructing Tacony Street north of Bridge Street.
    - Replacing Carver, Van Kirk and Comly Street bridges.
    - Constructing new traffic signal at intersection of Carver and Tacony.
    - Modifying the traffic signals at the intersections of Tacony and Vankirk , Tacony and Comly, and Richman and Lefevre Streets
- **BS2:** From the Margaret Street Bridge (Sta. 524+48) to the new Carver Street Bridge (Sta. 568+00) including:
    - Widening and reconstructing I-95 from Station 524+48 to 568+00
    - Reconstructing Tacony Street from Aramingo Avenue to Bridge Street.
    - Replacing the Margaret Street Bridge, Tacony Street Viaduct, Bridge Street on-ramp, and Fraley Street Bridge.
    - Constructing nine Northbound and eight Southbound retaining Walls
    - Constructing two structure mounted noise walls
    - Installing a new traffic signal at the intersection of Tacony and Bridge Streets.
    - Installing a new traffic signal at the intersection of James and Bridge Streets
- **BS3:** Aramingo Avenue from Frankford Creek to Tacony Street Intersection, Adams Avenue Connector/Betsy Ross Interchange including:
    - Widening and reconstructing Aramingo Avenue.
    - Widening the Frankford Creek Bridge

- Widening and Reconstructing Harbison Avenue from the Tacony Street Intersection to the Pratt Street Intersection.
- Constructing the Adams Avenue Connector from Aramingo Avenue to north of the Betsy Ross Bridge Interchange.
- Completing Ramps J, D, F, and K of the Betsy Ross Bridge Interchange
- Reconstructing Margaret Street below I-95
- Installing the following new traffic signals
- Aramingo Avenue and Adams Connector
- Aramingo Avenue and Ramp F
- Aramingo Avenue and Church Street
- Aramingo Avenue and Orthodox Street
- Aramingo Avenue and Margaret Street
- Aramingo Avenue and Tacony Street
- Aramingo Avenue and James Street
- Church and Tacony Streets
- Torresdale Avenue and Adams Avenue Connector
    - Richmond Street and the Betsy Ross Bridge off-ramp
    - Torresdale Avenue and Harbison Street
    - Bridge Street and Harbison Avenue
- Modifying the traffic signal at Torresdale Avenue and Bridge Street

SR 0095 Section BRI – Betsy Ross Interchange and Mainline from Wheatsheaf Lane to Bridge Street in the City of Philadelphia.

Description - The project, SR 0095, Section BRI extends from the northern limit of the structure over Wheatsheaf Lane at Segment 0254, Offset 1771 and Segment 0255, Offset 1771 to the southern limit of the structure over Bridge Street at Segment 0270, Offset 0487 and Segment 0271, Offset 0529. The approximate mainline construction length is 6,995 feet. The mainline will be widened to carry four lanes in each direction and eliminate the Collector/Distributor roadway on each side of the mainline. Included within the project area is the reconstruction/rehabilitation of the interchange with the Betsy Ross Bridge, including two new ramps from Aramingo Avenue to the Betsy Ross Bridge. Section BRI consists of 19 bridge structures as either new, replacement, or rehabilitation, five bridge structures for removal, one combination sewer relocation for the Philadelphia Water Department, four retaining walls for removal and replacement, one retaining wall for removal, and sound walls along the eastern side of I-95 for removal and replacement. Section BRI will be subdivided into three separate construction sections: BR0, BR2, and BR3.

- **BR0**: Betsy Ross Interchange from west approach to Betsy Ross Bridge to west side of Aramingo Avenue including:
  - Ramp A over Frankford Creek – Bridge Rehabilitation
  - Ramp B over I-95 – Bridge Rehabilitation
  - Ramp C over I-95 – Partial Bridge Widening
  - Ramp D over Aramingo Avenue/Conrail/Frankford Creek – Bridge Widening and Deck Replacement
  - Ramp EE over I-95 – Bridge Replacement on New Alignment
  - Ramp F over Open Ground – Bridge Rehabilitation.
  - Ramp I over Aramingo Avenue/Conrail – Bridge Widening and Deck Replacement
  - Ramp I over I-95 and Ramp C – New Bridge
  - Ramp JJ over Aramingo Avenue/Conrail/SR 0095/Ramp C – New Bridge
  - Combination Sanitary/Storm Sewer Culvert (Philadelphia Water Department) – Removal and Relocate with New Culvert
  - Installing a new traffic signal at intersection of Richmond Street and Westbound Exit Ramp from Betsy Ross Bridge
  - Installing a new traffic signal at intersection of Richmond Street and Lefevre Street.
  - Conrail Shared Assets Railroad Bridge over Ramps A and C – Bridge Rehabilitation
  - Conrail Shared Assets Railroad Bridge over I-95 – Bridge Rehabilitation or Replacement
  - Thompson Street Bridge over Frankford Creek – Bridge Replacement
- **BR2**: Northbound SR 0095 from northern limit of Wheatsheaf Lane to the southern limit of Bridge Street including:
  - Widening and reconstructing NB I-95 from the northern limit of the structure over Wheatsheaf Lane at Segment 0254, Offset 1771 and Segment 0255, Offset 1771 to the northern limit of the structure over Orthodox Street at Segment 0264, Offset 2740 and Segment 0265, Offset 2740.
  - Constructing new NB Ramp Y off-ramp to Orthodox Street
  - Realigning Pearce Street to connect to Orthodox Street
  - Reconstructing Orthodox Street from the east side of SR 0095 to the intersection with Aramingo Avenue
  - NB SR 0095 over Frankford Creek – Bridge Replacement
  - NB SR 0095 over Earth Fill (From Betsy Ross Interchange to Orthodox Street) – Removal and Replacement with Geotechnical-Engineered Compensating Fill
  - NB SR 0095 over Orthodox Street and Pearce Street – Bridge Replacement

- Ramp G over I-95 – Bridge Rehabilitation
- Ramp H over Juniata and Almond Streets – Bridge Rehabilitation
- Ramp GH over Ramp Y – Bridge Replacement
- Existing Ramp Y over Earth Fill – Bridge Removal
- NB Collector/Distributor over Earth Fill – Bridge Removal
- Ramp J over Orthodox and Pearce Streets – Bridge Removal
- Curtain Wall B and C (Ramp H to NB Collector/Distributor) – Wall Replacement (New Wall A)
- Retaining Wall Ramp J (Pearce to Margaret Street) – Wall Replacement (New Wall B)
- Constructing approximately 1,000 feet of ground-mounted sound walls and 3,000 feet of structure-mounted sound walls along NB I-95

➢ **BR3**: Southbound SR 0095 from northern limit of Wheatsheaf Lane to the southern limit of Bridge Street including:

- Widening and reconstructing SB I-95 from the northern limit of the structure over Wheatsheaf Lane at Segment 0254, Offset 1771 and Segment 0255, Offset 1771 to the northern limit of the structure over Orthodox Street at Segment 0264, Offset 2740 and Segment 0265, Offset 2740
- SB SR 0095 over Frankford Creek – Bridge Replacement
- SB SR 0095 over Earth Fill (From Betsy Ross Interchange to Orthodox Street) – Removal and Replacement with Geotechnical-Engineered Compensating Fill
- SB SR 0095 over Orthodox Street and Pearce Street – Bridge Replacement
- Existing Ramp X over Earth Fill – Bridge Removal
- SB Collector/Distributor over Earth Fill – Bridge Removal
- Curtain Wall A (SB Collector/Distributor to Ramp F) – Wall Replacement (New Wall C)
- Retaining Wall M Inner (I-95 SB near Margaret to Pearce Street) – Wall Replacement (New Wall D)
- Retaining Wall M Outer (I-95 SB near Margaret to Pearce Street) – Wall Removal

6. Procurement and Contract Management

Currently, the entirety of BRI and BSR is planned to be delivered via the traditional Design/Bid/Build process. Preliminary Engineering, Final Design, and some elements of Right of Way Acquisition have already been contracted and work is underway. Construction contracts will be let for the projects individually, beginning in 2014.

6.1. Design Phase

PennDOT has developed and follows Publication 93 (February 2011) *Policy and Procedures for the Administration of Consultant Agreements* for all design phase related procurements.

PennDOT currently has two Design Consultant Teams (See table on page 20) to design the six construction projects within BRI/BSR. All projects are in or just beginning the final design phase.

The Design Consultant Teams were selected and procured through an advertisement in the Pennsylvania Bulletin. The BSR advertisement is below:

Philadelphia County

Project Reference No. 08430AG2438

The Department will retain an engineering firm to perform preliminary engineering, environmental documentation, final design and services during construction for S. R. 0095, Section BSR, Delaware Expressway (I-95) in the City of Philadelphia from Orthodox Street to Levick Street, a distance of approximately 2.91 km (1.81 miles). The estimated construction cost of this project is $60.0 million. The expressway reconstruction will include interchange improvements, roadway reconstruction and bridge widening, rehabilitation and replacement.

Philadelphia County

Project Reference No. 08430AG2460

The Department will retain an engineering firm to perform preliminary engineering, environmental documentation, final design and services during construction for S.R. 0095, Section BR1, Delaware Expressway (I-95) in the City of Philadelphia, from Wheatsheaf Lane to Orthodox Street, a distance of approximately 1.294 km (0.804 miles). The estimated construction cost of this project is $60 million. The expressway reconstruction will include structure replacement, structure rehabilitation and modification, roadway reconstruction, roadway improvements (signs, lighting and drainage) and landscaping.

Typical requirements include the following:

- A letter of Interest
- SF 255
- SF 254

The full advertisements can be found in the Appendix C.

6.2. Construction Phase

This subsection of the PMP will be developed to document how procurement decisions will be made including selection of contractors and the types of contracts to be utilized. Consideration will be given to the size and length of contracts as they relate to bonding capacity, the number of likely bids, and other market conditions.

Currently all projects with the BRI/BSR sections will be traditional Design Bid Build. PennDOT is considering alternate methods of delivery such as Design Build and is exploring potential pre-qualification approaches. PennDOT Publication 448, *Innovative Bidding Toolkit*, defines options and requirements for alternative delivery options, such as design-build, and other alternative delivery tools.

PennDOT Publication 408, Specifications, Section 100 describes the Bidding requirements and conditions, award and execution of construction contracts as well as other subjects pertinent to the Bidding process.

7. Cost Budget and Schedule

At the FHWA Cost Estimate Review held October 19-21, 2011, FHWA approved an estimate for the project of $954 million Year of Expenditure (YOE) dollars. The proposed anticipated date for completion of all projects with the BRI/BSR sections is January 2023.

The approved project estimate of $954 million is broken down as follows:

- Base Estimate - $655 million
- Inflation - $185 million
- Risks and Management Reserve - $114 million

The base estimate includes all engineering, construction, right of way, third party, construction management, and public involvement costs estimated for the project.

The major risks were identified and quantified in the Cost Estimate Review and are incorporated into the project risk plan.

Detailed Cost and schedule data will be included in the project's Finance Plan and Annual Updates. The initial Financial Plan will be prepared and approved prior to the first federal authorization for construction funds. This will occur prior to February 2014, which is the first planned construction let (bid) date for BRI/BSR construction projects. The Financial Plan will be prepared in accordance with the *FHWA Financial Plan Guidance*, dated January 2007 and as stated as such is a:

> "comprehensive document that reflects the Project's cost estimate and revenue structure and provides a reasonable assurance that there will be sufficient financial resources available to implement and complete the project as planned. A Financial Plan provides a description of how a project will be implemented over time by identifying project costs and the financial resources to be utilized in meeting those costs. The plan should clearly explain the assumptions about both cost and revenue upon which the plan is based. In addition, the annual updates to the plan will enable decision makers to track the financial progress of the project over time by highlighting significant deviations from the Initial Financial Plan and the subsequent annual updates and explaining the mitigating actions taken to adjust for those deviations. In essence, the financial plan process is a subset of the overall Project Management Plan that is required for every Major Project."

The Finance Plan and Annual Updates are an integral part of the PMP and as such will include the process of how cost estimates and schedules are validated and their frequency. The annual updates will be the responsibility of the Consultant Program team in conjunction with the Executive Leadership Team identified in Section 4 of this report.

Detailed project estimates for each construction project will be prepared as part of the final design and submitted for PennDOT approval as part of the final PS&E (Plans, Specification and Estimate). Construction cost estimates are also prepared at the Design Field View (DFV) stage that completes Preliminary Engineering and may be prepared at subsequent design stages prior to PS&E for each project.

Estimated construction schedules will be prepared by PennDOT's design consultant and reviewed by PennDOT prior to construction. These will be used to establish the construction duration and completion date for the construction contract.

A second FHWA Cost Estimate Review (CER) will be performed prior to the start of construction. The results from the second review at the 70% confidence level is the minimum amount of funding that must be shown for the approval of the initial Financial Plan. This second CER will include a schedule risk analysis.

Independent validations of the cost and schedule at significant milestones will be conducted to avoid sudden and unexpected cost overruns and schedule delays. Independent validations will be performed by an unbiased team, which does not have a stake in the outcome of the validation.

8. Project Reporting and Tracking

The project reporting and tracking system for this project is outlined below. Its purpose is to do the following:

- Provide a means of accurately evaluating current project budget and required budget to complete each task at any time during the project
- Provide a means of accurately evaluating the level of completeness of each task and accurately projecting when the overall project will be completed
- Provide a means of accurately evaluating the quality of each project deliverable in terms of complying with all applicable regulations and accepted engineering practices
- Through the above, eliminate project "surprises"

The project team will produce monthly cost, schedule, and status reports and hold monthly status meetings. Project costs, schedule, quality issues, compliance with Federal requirements, and other status items will be discussed in sufficient detail to allow all involved parties to be fully aware of the significant status issues and actions planned to mitigate any adverse impacts. In addition, the project team will be directed to immediately communicate any significant issues that occur between status meetings to the Project Manager and the Executive Leadership Team.

The monthly status reports will be formatted as follows:

8.1. Executive Summary

The executive summary will present a concise narrative of the current status of the project and will contain a bulleted list of all issues considered to pose a potential threat to the project's scope, budget, schedule, quality, or safety. As a minimum, the following items will be listed on each status report:

- Current total project cost expenditure to date
- Approved contract value
- Estimated cost to complete project
- Reasons for any anticipated cost overruns
- Current overall project completion percentage
- Actual completion dates and scheduled completion dates of all milestone and critical path tasks
- Reasons for any anticipated or actual missed dates/deadlines
- Scope of work changes
- Quality concerns
- Safety concerns

- Potential or actual concerns of any regulatory agencies
- Change in key team members

8.2. Project Activities and Deliverables

At a minimum, the following items will be included:

- Listing of all project activities and deliverables that occurred since the previous month (reporting period)
- Listing of the activities and deliverables scheduled for the next two reporting periods. As a minimum this will include the following:
  - Meetings
  - Audits and other reviews
  - Formal submissions
  - Media or Congressional inquiries

8.3. Action Items/Outstanding Issues

This section will outline issues that could negatively impact project budget, schedule, quality, safety, or agency compliance. Any public or political concerns or statements will be included as well. The status, responsible person(s), and due dates will be tabulated for each action item/outstanding issue. The status, responsible person(s), and completion date will be tabulated for each action item/outstanding issue reported on the previous status report.

8.4. Project Schedule

The updated master project schedule reflecting the current status of the program activities will be included in this section. A Gantt (bar) type chart created in OpenPlan will be used for monthly reporting purposes. The baseline program schedule as well as all updates will be developed in accordance with standard PennDOT scheduling guidelines and will reflect the PennDOT project development protocol.

Narratives, tables, and/or graphs are developed on a monthly basis to accompany the updated baseline schedule to detail current schedule status, delays and potential exposures, and recovery efforts. Internally PennDOT monitors the percent complete and the monthly progress made through the use of WelcomHome scheduling software.

8.5. Project Cost

An updated cost spreadsheet reflecting the current forecasted cost vs. the latest approved budget vs. the baseline budget will be included in this section.

- Project costs will be tracked by graphing the following:

- Baseline Budget
- Latest Approved Budget
- Current Forecasted Cost Estimate
- Expenditures or Commitments to Date
- Variance between Current Forecasted Cost and Latest Approved Budget

All project elements that influence overall project costs and budgets, such as right-of-way, structure costs, SWM components, roadway materials, utilities, and retaining walls will be developed in greater detail as the project progresses and the existing Design Field View (DFV) cost proposals will be updated.

Narratives, tables, and/or graphs will accompany the updated cost spreadsheet, to detail the current cost status, reasons for cost deviations, impacts of cost overruns, and efforts to mitigate cost overruns. The following information will be included:

- Reasons for each line item deviation from the most recent estimate, impacts resulting from the deviations, and initiatives being analyzed or implemented in order to recover any cost overruns
- Transfer of costs to and from contingency line items, and reasons supporting the transfers
- Speculative cost changes that are anticipated to develop in the future, a quantified dollar range for each potential cost change, and the current status of the speculative change
- A comparison analysis to the assumed contingency amounts will be included, showing that reasonable and sufficient amounts of contingency remain to keep the project within 10% of the latest approved estimates
- Detailed cost breakdown of the assumed not-yet-contracted engineering consultant services.
- TIP allocated funds in comparison to the current estimated costs

8.6. Project Quality

The purpose of this section is to summarize the QA/QC activities performed during the previous month (reporting period), to highlight any items identified as being deficient in quality, and detail a recovery plan.

Deficient items noted will be accompanied by reasons and specifics concerning the deficiencies, and corrective actions taken or planned. In addition, the individual or team responsible for the corrective action will be documented. Planned corrective actions will then be included as Action Items/Outstanding Issues.

8.7. Other Status Reports

The Department and FHWA may agree that other reports may be beneficial in ensuring that project status issues are fully and openly communicated. If so, such reports will be added to the PMP.

Such reports may include contractor safety performance (as compared to the National average or other benchmark), wrap-up insurance payments and reserves, and/or actual DBE utilization versus DBE goals. Other reports may be more appropriate to include on a semi-annual or annual basis, such as the public relations plan, value engineering and constructability review plan, environmental compliance report, and/or compliance with the Buy America requirements.

9. Internal and Stakeholder Communications

In addition to the formal reporting and tracking of the project discussed above, internal communications and stakeholder communications are integral to a successful major project. The following is an overview of the protocol for communications between project team members and stakeholders that outline how informal and formal communications will be conducted and managed.

Effective and timely communication between all parties will be an essential key to the success of this project. Communication failures and shortcomings can translate into time delays and difficult issues to resolve in the final hours of the project. This can cause an increase in project costs and general frustration on the part of all involved.

Externally, public outreach and communication mechanisms have been created to keep the public informed during the Final Design and Construction phases and to perform traditional public relations roles. Internally, multiple forms of communication have been identified for use by the various working groups for the sharing of information. During Preliminary Engineering the following meetings have been held with the public:

- One Public Meetings and Two Consulting Party Meetings occurred during preliminary design.
- Three meetings with the Corridor Sustainable Action Committee (SAC), which includes FHWA, PennDOT (Central and District 6-0 reps), DVRPC, and some City agencies (City Planning, Parks & Recreation, Philadelphia Water Department, Philadelphia Department of Streets, MOTU).
- Two Multi Agency meetings, which includes all the possible City agencies in addition to the ones above, such as Commerce, RDA, and Public Property.
- Meetings, as needed with the Section SACs for adjacent projects: GIR and CPR. To date, only one with CPR has occurred; however, additional will be planned to identify how to use the open space, particularly in the vicinity of Cottman Avenue/State Street.
- February 28, 2012, the SAC outreach for Section BSR (specifically BS3) will hold its first meeting. The BRI/BSR SAC will be a continuous process throughout the life of the project.
- www.95revive.com is being used to advertise and promote the SAC initiatives and the overall I-95 corridor work.
- Newsletters are prepared and distributed throughout the project.

The purpose of the SACs is to ensure that the open space along and under the highway will be maintained and accounted for after construction has concluded – either by PennDOT, City agencies, and/or civic organizations with the capacity for stewardship (or a combination thereof) – so that the highway is no longer a barrier between the adjacent communities and the Delaware River. There are two types of SACs: 1) a corridor-wide SAC (the "Corridor SAC"), which is formed primarily by State and City agencies and major non-profits, such as the Pennsylvania Horticultural Society, and 2) a community-based SAC (the "Section SAC"), which is formed primarily by neighborhood civic organizations and other representatives.

The Corridor and Section SACs receive guidance from PennDOT and its design consultants about issues to consider when planning for the future use of open space. The Corridor SAC is concerned with addressing public space issues that apply to the five sections of the highway improvement project (GIR, AFC, BRI, BSR, and CPR), such as lighting and stormwater management, to ensure consistency and avoid redundancy of effort. It is also interested in some of the site-specific open space areas in each section, although its level of involvement may vary. The Section SACs address Section-specific local issues related to the open space.

Both external and internal communications are detailed below. All external media, website and public communications are approved by PennDOT District 6-0 Assistant District Engineer (ADE) for Public Relations.

A critical objective for this project is to maintain the trust, support, and confidence of the media and public throughout the life of the project. A critical component to successfully meet this objective is a Public Information and Outreach Plan that will provide proactive, effective, and responsive project communications. The external project communications protocol is outlined below:

- A corridor wide Public Information Team led by the PennDOT District 6-0 Assistant Press Secretary, Gene Blaum, will be responsible for all media and public information efforts for the project. All external information will be disseminated through the Public Information Team. The Public Information Team is preparing a Public Information and Outreach Plan which will set the precedence for speaking with "one voice". This plan is to be completed in 2012. The BRI/BSR Project Delivery Team will coordinate with the Public Information Team and conduct its own public involvement sessions following similar protocol, as described in this PMP.
- The BRI/BSR Project Delivery Team will convey project status information to the media and public at scheduled public information sessions and meetings.
- The BRI/BSR Project Delivery Team will provide the public updated commuter and traffic information, including traffic pattern changes, periods of lane closures, traffic delays, work zone

accidents, alternate routes available, and alternate forms of transportation available (including benefits and possible subsidies).

- The BRI/BSR Project Delivery Team will provide the public information regarding construction impacts and will work with the public to mitigate, to the greatest extent possible, construction impacts to the local residents and businesses.
- The BRI/BSR Project Delivery Team will proactively respond timely to media and public questions and requests for information.
- The BRI/BSR Project Delivery Team will proactively assist the community and other stakeholders in developing ownership and pride in the Major project, by building awareness and helping them understand the benefits of the project.

Underlying the media and public communications process is the need for all team members to be as accurate and forthright as possible, and to respond in a professional and timely manner. This will help to successfully maintain the media and public trust, support, and confidence.

A Public Information and outreach plan for BRI/BSR will identify all potential media and public stakeholders. These include businesses along the project corridor, communities along the corridor and others impacted by the project, local media, governmental agencies (elected/appointed officials and their staffs), civic associations, and citizen groups.

In addition to the Public Information and Outreach Plan, an internal communications strategy will be implemented to establish the communications protocol for the Project Delivery Team members. The internal communications network will provide for open lines of communication and support between all project and functional teams, and allow for all external communication to flow through the public information team or office. The major Project Team members and their function, responsibilities, and authorities are outlined in Section 5 above.

Internal communications on this project will include meetings, email, and phone calls. All phone calls where decisions or direction regarding project issues are discussed will be documented and filed in the form of telephone memoranda. Likewise, all email communication will be saved in .pdf form to the project's digital files. The monthly project status meetings will be attended by the group/task leaders, as well as FHWA and PennDOT Champions. The FHWA and PennDOT Champions will provide assistance to the PennDOT Project Managers and Project Delivery Team.

10.PennDOT Management Team

The PennDOT Management Team will assist the PennDOT Project Manager for this project with his or her main goals: delivering the project within budget, on schedule, in high-quality form, and safely. Members of the PennDOT Management Team will be responsible for delivering specific tasks in

accordance with the above listed project requirements and for producing task/phase reports, scopes of work, schedules, budgets, and quality reviews. The PennDOT Project Managers will ultimately be accountable for overall project performance.

At a minimum, the PennDOT Management Team will use the following tools:

Risk Management Plan

The purpose of the Risk Management Plan is to define the process by which the project team identifies, assesses, plans mitigation strategies for, and manages project risks throughout the project life. Effective risk management results in successful accomplishment of project objectives. The compiled risk register will present risks to PennDOT in the delivery of the projects within the Program and the overall Program itself.

The STV/CDM Smith Teams will prepare a Risk Management Plan for the the BRI and BSR projects. These plans will be completed by mid 2012 after the start of Final Design. It will describe the process and requirements for identifying, evaluating and quantifying risks; managing and updating risks through the risk register; and implementing mitigation actions when risks arise.

A risk register for the BRI/BSR project has been prepared from the Cost Estimate Review conducted in October 2011 (see Appendix E). This register will be incorporated into the BRI/BSR risk management plan to be completed in 2012 after the Corridor Risk Management Plan. The Risk Register is comprised of four parts:

- Part 1 – Risk Identification
- Part 2 – Qualitative Risk Analysis
- Part 3 – Response Planning
- Part 4 – Quantitative Risk Analysis Data Collection.

The focus of this process is to identify risks to the projects and program, compile the information that will allow for a qualitative risk analysis, and to perform the required risk mitigation and response planning. The Executive Leadership Team, the Program team and the Project delivery team have all provided input into the Risk Register. A systematic process to identify, analyze, and respond to project risk throughout all phases of the project will be documented in the Project Risk Management Plan. This plan will identify any potential issues that may negatively impact the project and present avoidance measures. The project risk register will be part of the monthly project review and reporting process and will continue throughout the project's life cycle. At a minimum, the following issues will be evaluated.

- Potential budget issues
- Potential schedule issues

- Potential political issues
- Potential community issues
- Potential quality issues
- Potential safety issues
- Potential media issues

The Project Risk Management Plan will be a "living process", with the risks evolving as the project matures and the project focus moves through design and construction. Amendments to this document will include the updated Risk Register. The Project Risk Management Plan will be submitted to the PennDOT Management Team for review and approval. Once approved the Project Risk management Plan will be appended to this Project Management Plan.

Scope Management Plan

The purpose of the Scope Management Plan will be to outline the procedure for identifying whether scope creep is occurring and, if so, how to best develop a supplemental agreement or avoid the changes. The PennDOT Management Team will develop an I-95 Corridor Scope Management Plan. This plan will be completed in 2012.

At a minimum, the following outline will be followed and reported as part of the monthly project review and reporting process:

- Design Consultant Section Managers will review the scope of work of the existing design contract and report any deviations or potential deviations.
- PennDOT Project Manager and Section Managers will review findings of potential scope deviations and bring the matter to the attention of PennDOT through the ADE for Design.
- Project Delivery Team will develop the appropriate technical and price proposals to use to negotiate and finalize any design scope changes.

Scheduling Software

The project will be scheduled using WelcomHome Open Plan software. The PennDOT Management Team will help with the schedule effort and review each task for relationships, durations, and appropriateness. PennDOT District 6-0 templates will be used as the starting point for the baseline schedule. The schedule will be reviewed in detail monthly and the Design Consultant will report upon the schedule status of tasks. The Project Manager will be responsible for the overall project schedule.

Cost Tracking Software

Micosoft Excel worksheets will be used to report the financial status of the project. CDM Smith and STV will use its corporate accounting software (BST or Oracle) to track all tasks and sub-consultant progress.

Information for the corporate accounting software will be rolled up to Excel worksheets for ease of presentation. Cost status will be included in the monthly project review and reporting process.

Project Metrics

Project metrics will be in accordance with Chapter 3 and reviewed and reported monthly. The purpose of the metrics is to ensure that appropriate analyses are conducted to identify trends and forecast project performance. The metrics will be used to identify and address challenges to eliminate potential problems/issues. Reports on project metrics will be incorporated into the Project Reporting and Tracking procedures outlined above. In addition, project status meetings are held monthly to review project status, discuss potential issues, scheduling and scope concerns. The project status are held throughout the design process and will continue into construction.

Value Engineering, Value Analyses, and Constructability Reviews

Individual Value Engineering Reviews will be conducted in accordance with PennDOT Publication 10A, Design Manual Part 1A early in the final design phase of each project within BRI/BSR. Procedures for documenting the acceptance or rejection of the individual proposals, documenting potential cost savings, and approvals for the actions taken will be identified during the evaluation.

Constructability Reviews will be conducted periodically throughout the final design phase for each project within the BRI/BSR section. The reviews will be performed to identify potential construction problem areas, possible cost savings, means to expedite construction, and alternate methodologies. PennDOT has advertised for a Construction Management Team to conduct a Value Engineering conference. The VE Conference is expected to be held during the final design phase.

Contractor Outreach Meetings

Contractor Outreach Meetings are not yet included in the Design contract, but are anticipated to be added during Final Design. If contractors are to be consulted during the design process, protocol will be developed and included in the Project Management Plan. The level of involvement by contractors will be determined and discussed along with any procurement restrictions on contractors involved in the outreach meetings.

Partnering

Partnering is not currently in the Design contract SOW. Successful projects usually depend on the development of mutual confidence and respect between the project delivery team and the contractors. Therefore, the Project Delivery Team anticipates developing a documented process to enhance working relationships in its contract administration activities with the contractors during the Construction Consultation phase of the project. This will likely be done through a formalized partnering process. The PMP will be updated to document the level of organizational involvement and the professional

facilitation for the key partnering processes, including any partnership development and team-building workshops.

Change Order and Extra Work Order Procedures

The procedure for addressing change orders and extra work orders during the project design is summarized as follows:

- The Project Management Team will develop a schedule for developing the contract modification.
- The Project Management team will review all details of each contract modification and develop a detailed Scope of Work that meets all the project objectives.
- The Scope of Work will be reviewed by PennDOT.
- Upon Department approval, the PennDOT Management Team will develop a detailed price proposal with sufficient backup to justify the price and hours for each task.

The key elements of managing change orders and supplemental contracts are as follows:

- The full scope will be identified and agreed upon as soon as possible, including assessing whether a change exists by comparing the contract documents and language to the alleged change.
- Various alternatives will be fully considered and evaluated, including how each alternative impacts the project scope, budget, schedule, and coordination requirements. The goal is to minimize the impact of the change to the overall project.
- Independent cost estimate reviews will be performed by the Project Delivery Team to verify the reasonableness of the price proposal. CDM Smith and STV will submit detailed cost and pricing data for each element of our cost estimate. Negotiations of quantities, unit prices, and other direct charges are expected to be undertaken such that the best interests of the Government and State are considered in order to obtain a fair and reasonable price.
- A schedule for developing and gaining approval for all supplements will be compiled for all supplemental contracts.
- Detailed records, correspondence, photographs, etc. of all pertinent aspects of the change order will be maintained.
- Significant change order and extra work order reports will be incorporated into the Project Reporting and Tracking procedures outlined above.

The procedure for addressing change orders and extra work orders during construction is summarized in PennDOT Publication 408, *Specifications*, Section 110, Payment.

Claims Management Procedure

The PMP will also define the claims review and management process that will be followed in cases of contractor claims during construction. This section of the PMP will be developed during the Construction Consultation phase of the contract. The roles and responsibilities of those who will be responsible for reviewing and approving the claims, including legal reviews will be established and documented. A graphical flowchart (and where necessary, a narrative) showing the claims review and management procedure, parties involved, and approval authorities will be included in the PMP. Status of significant claims will be incorporated into the Project Reporting and Tracking procedures outlined above.

Other Programs

Should the need arise, the PMP will be expanded to include the management of other unique programs that develop during the project's lifespan are to be managed. Such other programs may include the following:

- Owner Controlled Insurance Programs (OCIPs)
- Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program

11.Design Quality Assurance/Quality Control

The following is an overview of the Design Quality Assurance/Quality Control (QA/QC) plan that will be used during the design phase. The design consultants QA/QC documents are included in Appendix D

Quality Assurance (QA) describes the planned and systematic actions necessary to provide confidence that a product or service meets the needs and expectations of the client, reducing both errors and omissions, and meeting schedule and budget targets. Included in the processes are assignments of quality coordinators at various levels of operation, project audit procedures, project review procedures, and quality improvement committees.

Quality Control (QC) is a core component of quality assurance referring to the operational activities put in place to monitor and control the quality of a service or deliverable product. Timely reviews are required of completed activities for accuracy and completeness, with accurate documentation of all decisions, assumptions, and recommendations.

The purpose of the QA/QC plan is to ensure the Design Team provides high quality consulting services at the project level under the Project Manager's leadership. This is accomplished by requiring and identifying a comprehensive, well defined, written set of operations procedures and activities aimed at delivering consulting service deliverables that meet and/or exceed a client's expectations. Client quality

assurance and quality control requirements will always take precedence if they exceed our own internal standards in providing high quality work.

The design consultants QA/QC documents included in Appendix D are intended for their internal use. While they demonstrate the team's commitment to quality and, as such, is a guideline, the team's responsibilities to the client are defined through negotiations with the actual client and bound by the design contract.

The QA/QC manual is focused on setting quality assurance standards for project execution as well as requirements for project specific quality control plans addressing quality control issues for a variety of client project needs.

This quality program will be strictly followed. Significant deviations from this plan will be approved by the group or regional manager prior to implementation, with a copy forwarded to the director of quality and project controls.

Applicable Federal and State guideline and design manuals will be adhered to for this project. PennDOT Design Manual Part 1 *Transportation Program Development and Project Delivery Process,* Chapter 4 defines Quality Control and Assurance procedures for delivery of PennDOT projects, including the BRI/BSR project. Chapter 4 incorporates PennDOT's Quality Management Manual as defined in PennDOT Publication 10X will provide guidance for the BRI/BSR project quality plan.

12.Construction Quality Assurance/Quality Control

At the appropriate time, the PMP will be revised to set up the general requirements for Quality Assurance/Quality Control (QA/QC) to be used during the construction phase. At a minimum, the construction QA/QC procedures will include the following:

- An overall Construction QA/QC Plan.
- Construction standards to be adhered to for performing construction inspection. Documents to be used that will define materials to be certified, materials to be tested, sampling procedures, testing procedures, record keeping and reporting procedures, and nonconformance plan.
- Agency or party responsible for QA and QC, i.e., responsibilities of the contractor versus the STA for sampling, testing, monitoring, and reporting test results.
- Frequency of agency involvement for construction coordination (progress) and/or attendance at partnering meetings.

- Procedures for coordinating with permitting agencies, utility companies, and railroad companies during construction to ensure that all requirements are incorporated into the project such that the overall project schedule is not delayed.
- Level and frequency of inspections to identify and correct any deficiencies in the project construction that do not meet the requirements of the plans, specifications, and other binding documents.
- Level and frequency of audit and oversight construction reviews (concerning QA/QC and validity of contractor payments) to be performed by the STA, FHWA, independent consultants, and/or other agencies.
- Qualifications for all key construction personnel.
- Documentation and submission procedures to ensure that the established construction QA/QC procedures have been followed.

PennDOT Specifications, Publication 408, discusses construction QC/QA in various sections. PennDOT Publication 2, *Project Office Manual*, also addresses contractor QC/QA throughout. PennDOT Publication 8 includes requirements for the construction personnel as to what is required and expected in order to achieve a quality finished product.

13.Environmental Monitoring

13.1. Environmental Commitments and Mitigation Tracking System (ECMTS)

ECMTS is a tracking system developed by PennDOT to track environmental commitments and mitigation through the design, construction, and maintenance & operations phases of transportation projects. The project ECMTS is attached to the CEE and is included in Section 2.7 of this document. As the project moves into Final Design and construction, the ECMTS will be reviewed, adhered to, and updated as needed.

It will be the responsibility of the Final Design Environmental Consultant and the District Environmental Unit to ensure that the commitments noted in ECMTS are followed.

When changes are made to the project in the form of additional impacts or a reduction of impacts, the project team will coordinate with the District Environmental Unit to determine whether the changes result in “significant” changes warranting a reevaluation under the National Environmental Policy Act (NEPA), or a change to the mitigation commitments, resulting from the NEPA process. As necessary, mitigation commitments identified in the ECMTS will be updated and evaluated by the Project Team to reflect impact changes for each construction section. During Final Design, the CEE will be reevaluated; one CEE reevaluation will be developed for each construction section.

13.2. Permitting

A variety of permits and approvals will be required for the construction of the project. The types of permits include, but are not limited to the following: US Army Corps of Engineers Section 404 Permit, PADEP's Section 401 Water Quality Certification, PADEP Chapter 105 Permits, and PADEP NPDES Permits. Pre-application meetings will be conducted with PADEP during final design. The strategy for managing these permitting activities is one of proactive compliance where the project team will develop methods to avoid, minimize, and mitigate the environmental impacts before they occur.

13.3. Historic Preservation

A Memorandum of Agreement (MOA) was prepared for this project and was approved in June 2010. The MOA Stipulations are included below. It is the responsibility of the Final Design Environmental Consultant and the District Environmental Unit to ensure these stipulations are completed.

1. An Addendum to the Philadelphia Schools Thematic Nomination will be prepared. The addendum will focus on the late 20th century, especially the 1960s-1980s, and will focus on, but not be limited to, redistricting, campus expansion and neighborhood school closings.

2. All of the schools within the Philadelphia Schools Thematic Nomination will be resurveyed. The survey will include color digital photographs of each school and a summary of the alterations and changes in use experienced by each school within the nomination. Any schools within the district that were not in the original nomination form will also be included in this survey. This survey will include color digital photographs of each new school and a brief description of each school. Drafts of the survey documents will be submitted to FHWA and the SHPO for review; PennDOT will consider their comments in the preparation of a final product.

13.4. Noise

The project area will require re-analysis of noise impacts and mitigation utilizing refined engineering, traffic, and other project data available during Final Design. It is the responsibility of the Final Design Environmental Consultant and the District Environmental Unit to ensure the re-analysis occurs.

13.5. Additional Environmental Monitoring Procedures

The following environmental procedures will be followed for each construction section during Final Design and Construction. It will be the responsibility of the Final Design Environmental Consultant and the District Environmental Unit to ensure compliance with the following:

- Update and involve the resource agencies of changes in scope of work and changes in resource impacts from preliminary design.
- Determine any post-construction monitoring that is necessary.

- Identify noncompliance and violations and procedures to remedy them.
- Ensure proper record keeping and reporting procedures are followed.
- During Final Design, the CEE will be reevaluated; one CEE reevaluation will be completed for each construction section.
- The completed ECMTS for each construction section will then be transmitted to PennDOT's Environmental Manager for use in the construction phase.
- Modify permits related to construction activities.
- Coordinate with the contractor's environmental monitoring staff's daily actives to monitor and observe critical contractor activities.

14.Right of Way

PennDOT acquires all required Rights-of-Way in accordance with their Publication 378 *Right of Way Manua*l July 2, 2007 Edition. The purpose of this manual is to describe the PennDOT's right-of-way organization and provide policies and procedures to guide PennDOT employees and others in acquiring and managing real property for the construction and maintenance of transportation projects.

The Right-of-Way Manual and the policies and procedures by which the Utilities and Right-of-Way Section of the Bureau of Design and the District Right-of-Way Units operate were developed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, the implementing regulation 49 CFR Part 24, 23 CFR Part 710, and the Eminent Domain Code of Pennsylvania.

15.Safety and Security

This section defines the requirements that will be incorporated into the project in order to complete the project in a safe and secure environment for all individuals working on the project. The prevention of accidents during execution of the project will be a primary concern of all participants, and will be the responsibility of all levels of management. Safety should never be sacrificed for production, but should be considered an integral part of an efficient and quality project. The safety and security procedures are outlined as follows:

- All applicable State and Federal safety and health standards will be adhered to.
- During construction, the contractors (meaning prime contractors and subcontractors combined) will be required through the contract special provisions to have a Safety Director assigned to the project and develop and gain approval for a safety manual which will be available to all employees.

- The contractor will be required to hold periodic on-site safety meetings, conduct periodic on-site safety inspections, provide safety training for all new employees, and refresher training for all employees.
- The contractors will be required to conduct drug screening for all new hires, establish daily housekeeping and clean-up procedures, and share accident prevention information with all employees.
- The contractor will be required to have first-aid and medical kits readily available.
- The contractor will be required to have a site security plan, possibly including such items as restricted parking near vulnerable structures, physical barriers (fences, barricades, etc.), coordinated efforts with local law enforcement officials during heightened threat levels, video surveillance, alarm systems, emergency telephones, etc.
- The contractor will be required to have an emergency preparedness and incident management plan, including roles and responsibilities, emergency evacuations, communications, first responder awareness training, and field drills.
- The contractor will be required to establish an employee identification system
- The contractor will be required to report safety and security issues and resolutions monthly.

In addition, appropriate threat and vulnerability assessments will be made and taken into consideration throughout the project's life cycle. It is recognized that the transportation elements of this project could have a significant impact on regional safety and security plans.

16.Traffic Management

The Department has developed and updates regularly an I-95 Corridor Transportation Management Plan (TMP) to minimize the impacts to the flow of traffic through the I-95 Corridor during construction of planned roadway improvements. The projects extend from the Delaware State Line in the south to the Delaware River to the north, a distance of approximately 51 miles. A copy of the current I-95 TMP dated March 2011 is included in the Appendix F.

16.1. TMP Manager

The individual Design Consultants for the various projects along the I-95 Corridor are designated as the TMP Managers during the design phase of the project. The individual Design Consultants will create project specific TMP, incorporate elements of the project specific TMP into the PS&Es, and continue to update the TMP until all construction sections are underway. The individual Design Consultants will continue to provide support to PennDOT during the Construction Phase.

PennDOT's Inspector in Charge or his designee will be the Transportation Management Plan Manager for the project during construction. The TMP Manager will be trained in the fundamentals of the Work Zone Safety and Mobility Final Rule at the project level. This person has the primary responsibility and sufficient authority for implementing the TMP and other safety and mobility aspects of the project. The Contractor will have a Traffic Control Coordinator (TCC) who is trained in the fundamentals of Work Zone Safety and Mobility Final Rule at the project level who will manage the TMP activities.

The TMPs for BRI and BSR will be created during the final design phases for the individual projects. At which time the plans are created, they will be forwarded to PennDOT's Traffic Unit for review and approval. The TMP will require approvals in the following order:

- PennDOT District 6-0, Traffic Unit
- PennDOT Central Office, Bureau of Design
- PennDOT Central Office, Bureau of Highway Safety and Traffic Engineering
- Federal Highway Administration

The approved TMP is maintained and held at the PennDOT District 6-0, Traffic Unit's office.

16.2. TMP Stakeholders/Review Committee

The TMP Stakeholders and Review Committee represent the following organizations:

- Bucks County Transportation Management Agency
- Bucks County Planning Commission
- Bucks County 911 Communications Center
- Burlington County Bridge Commission (Tacony-Palmyra Bridge)
- City of Philadelphia, Department of Streets
- Delaware River Port Authority (Betsy Ross Bridge & Ben Franklin Bridge)
- Delaware County Transportation Management Agency
- Delaware Valley Regional Planning Commission
- Delaware River Joint Toll Bridge Commission (DRJTBC)
- Federal Highway Administration
- PennDOT District 6-0 Traffic Unit (Operations)
- Pennsylvania Emergency Management Agency (PEMA)
- New Jersey Emergency Management Agency (NJEMA)
- Southeastern Pennsylvania Transportation Authority (SEPTA)

Separate meetings are held with Emergency Responders that include:

- Bucks County Emergency Operations Center
- City of Philadelphia Emergency Operations Center
- City of Philadelphia Police Department
- City of Philadelphia Fire Department
- New Jersey State Police
- Pennsylvania State Police

All of the above groups were given an opportunity to provide input into the TMP.

17.Project Communications (Media and Public Information)

Disseminating timely and accurate project information to the media and public is a critical objective for this project for the purpose of maintaining the trust, support, and confidence throughout the life of the project. An outline of the Internal and Stakeholder communications protocol is presented in Section 10 of this document.

Externally, public outreach and communication mechanisms have been created to keep the public informed during the Final Design and Construction phases and to perform traditional public relations roles. Internally, multiple forms of communication have been identified for utilization by the various working groups for the sharing of information. Both external and internal communications will be detailed in the sections that follow.

17.1. Communications Program Overview

The Department has made a commitment to communication through existing programs and additional items as outlined in the approved (July 26, 2010) CE for the I-95 BRI/BSR Project. A listing of these communication commitments along with additional communication tools that could be employed is provided in the form of a Project Public Participation Plan (Section 18.2). These communication commitments and communication tools will be evaluated by the Project Management Team and the Sustainable Action Committee (SAC) throughout the Final Design Phase to determine which tools are appropriate and when they should be implemented.

Although it is impossible to define all roles and responsibilities and strictly define all communications paths, Section 5 this document summarizes the basic requirements and flow down.

17.2. Public Participation Plan

The information developed at the onset of Final Design is intended to show the Department's other communication commitments that either currently exist or are outlined in the I-95 Section BRI/BSR pending CE, and/or are required by the regulations. Additionally, a menu of Other Communication

Opportunities will be developed at the onset of Final Design. The Project Portfolio Manager, throughout Final Design, will evaluate the need for each of the Other Communication Opportunities identified. The Public Participation Plan will indicate the purpose, audience, frequency and the anticipated delivery phase for all of the communication tools identified.

Other Communication Commitments – As the projects move through the final design process, this document will be updated to include additional commitments.

17.3. External Communications

One of the most important objectives of the project is to maintain the trust, support and confidence of the public throughout the life of the project. External communications for the I-95 Section BRI/BSR Project will address this objective. The primary responsibility of External Communication belongs to the Public Outreach Group.

The Public Outreach Group will manage information dissemination to the public and others through project newsletters and brochures, coordination of public informational meetings, and press releases when necessary.

For the compilation of public comments, questions, issues etc, a database will be developed and maintained on the project website. This will serve the purpose of documenting public requests and issues received by the Department's District 6-0 Office, the Consultant Project Manager, the Design Manager, and the Section Designers. Public input that requires follow-up responses will immediately be forwarded to the appropriate entity to ensure a timely response. PennDOT, the Consultant Project Manager, the Design Manager, and the Section Designers will keep the database up to date by logging all requests for information and their respective responses in a timely manner. The responsibility of documentation will fall on the respective group receiving the request.

17.4. Internal Communications

Internal communications on this project will include, but not limited to, meetings, the various traditional land based delivery services, faxes, email, phone calls, ftp sites, and other web-based services. The FHWA and Department liaisons provide assistance to the Project Team on strategic decision-making and operational management issues.

The PMP and updates will be housed on the Department shared drive.

18.Project Closeout

The Closeout Plan consists of the requirements to provide a transition from design to construction to operations along with the roles and responsibilities of the various agencies and stakeholders.

18.1. Design Closeout

Design Closeout involves the necessary administrative activities to close out the I-95 BRI/BSR Project. The Section Designer will verify that the following have been accomplished:

- All items covered by the scope of work have been completed
- All reference documents obtained from the client, requiring return, have been returned
- All scope change requests have been processed
- The final invoice has been sent to the Department and payment has been received
- The technical discipline files have been integrated into the project files
- Record drawings, documents and backup electronic files have been completed and sent to the Department and to archive storage locations
- Notifies the Department that the project is complete
- Conducts a Lessons Learned review conference with the Department and other design personnel and distributes results to stakeholders, as appropriate

18.2. Construction Closeout

The Department utilizes several forms to develop a thorough project close out. Below is a listing of forms that the Department utilizes to ensure a thorough construction closeout:

- CS-4136 Punchlist form
- CS-4137 Final Inspection Form
- CS-4138 Acceptance Certificate
- CS-4347AA Final Summary
- FHWA-1446B Final Acceptance Report
- STD-21 Compliance Review

PennDOT Publication 2, *Project Office Manual* includes Part D (Project Finalization) which discusses project closeout. A "Close Out" menu for projects is included in PennDOT's ECMS system. This system tracks the different forms and actions that need to be completed.

19.Project Documentation

Michael Baker manages the project documentation for the BRI/BSR project. They are responsible for the following tasks:

19.1. Submissions

The procedure below will be followed for reviewing submissions and distributing review comments.

Submissions will be received by Baker Project Manager who, with the assistance of the Administrative Assistant, will log the submission and assign it a tracking number.
The submission will be scanned and stored as an Adobe (.pdf) file on the project drive.
The scanned file will then be placed in the appropriate project folder.
The submission will then be reviewed and review comments provided on a standard form. Comments made will also be placed directly on paper copies of the plans if requested. The comment form, and the red-lined prints if available, will then be scanned and stored as an Adobe file. If both comments and red-lined prints are available they will be stored in one "_Markups" file. Comments on the plans are to be made in red; scanned copies of the plans are to be made using a color scanner so that the comments are clearly visible.
Following the review, Baker Project Manager will distribute the comments to the Department via e-mail; the comment form (in .pdf format) will be attached to the e-mail.
Baker's comments, together with the District's comments, will be forwarded to the Design Consultant along with the electronic files of the red-lined prints, if available.
Depending on the size of the electronic files, they may be distributed either by e-mail or disk.

19.2. General Correspondence

The procedure for filing general correspondence is similar to the above.

19.3. File Naming Convention

Convention is set forth for both scanned submissions and general correspondence. The following is to be used for naming the files containing scanned submissions. Since the files will be located in directories containing the construction section designation, i.e. CP1, GR0, etc., the file name does not have to include the construction section. The date of the submission will be part of the file name to assist with locating the correct file.

YY/MM/DD_DESCRIPTION.pdf where:

YY/MM/DD is the year, month, and day (07/04/28) the submission was received. The same date shall be included in the name of the file containing any markups or comments.

DESCRIPTION will clearly identify the nature of the submission; abbreviations shall not be used to avoid confusion. Suggested titles include:

- Pavement Marking Plans (not PMP)
- Signing Plans
- Construction Plans
- Erosion and Sediment Control (not ESC)

The following is to be used for naming the files containing general correspondence.

YY/MM/DD_DESCRIPTION.pdf where:

YY/MM/DD is the year, month, and day (07/04/28) the correspondence was received or sent.

DESCRIPTION will clearly identify the nature of the submission.

20.Other Possible Sections (if appropriate)

This section is reserved for future use.

21.Appendices

A. Design Schedule Management Review Process

B. Quality Assurance Tracking Form;

C. Retention of Engineer Advertisements for SR 0095 Section BRI and SR 0095 Section BSR

D. STV Quality Assurance/Quality Control Plan, CDM Smith Quality Assurance/Quality Control Plan

E. BRI/BSR CER Risk Register

F. I-95 Corridor Transportation Management Plan