Narrative Application Form – Service Development Program Part II Statement of Work

High-Speed Intercity Passenger Rail (HSIPR) Program

Statement of Work

The quality and completeness of this document will be measured as a Project Readiness evaluation criterion, as outlined in Section 5.2.1 of the NOFA. The applicant must provide a sufficient level of detail regarding scope, schedule, and budget that demonstrates the project is ready to immediately advance to award. Tables have been provided as illustrative examples for capturing data however, applicants can delete or adjust the tables as necessary. This form must be listed in Section H.2 of the Narrative Application Form Part I.

(1) Background

The Keystone Corridor was originally built by the Pennsylvania Railroad as a freight rail operation. It represented the pinnacle of rail transportation infrastructure in the early 1900's. Unfortunately, many components have been left in a bygone era and are far past their designed useful life. Over the last 50 years, the Keystone Corridor has changed to primarily a passenger rail service and is now owned and operated by The National Passenger Railroad Corporation (Amtrak), a federally controlled corporation. Amtrak's ownership makes the Keystone Corridor a critical federal asset that is in need of long-term investment. The outdated components cost significantly more to maintain than modern counterparts, and are one of the primary limiting factors in travel time, speed, and reliability. To meet the goal of the Keystone Corridor to provide critical mobility to Pennsylvanians in a fast, efficient, convenient, and reliable way; Keystone Corridor East High Speed Phase II is critical.

In 2010, the Pennsylvania Department of Transportation (PennDOT) undertook a comprehensive, inclusive and publicly driven-planning process to develop the Pennsylvania Intercity Passenger and Freight Rail Plan. To engage all stakeholders, public hearings were held throughout the Commonwealth, an interactive website was established, and significant coordination was encouraged with regional transportation officials and organizations (MPOs/RPOs, DOTs, etc) At the conclusion of the process, several priority corridors were identified for investment and public support, most notable of which was the Keystone Corridor. The completed plan identified several objectives for the passenger rail network in general, and the Keystone Corridor specifically:

- Achieve 125 mph.
- Develop a sealed corridor.
- Reduce travel time to 1 hour 15 minutes on express trains.

With FRA funding assistance, the Keystone Corridor will be a publicly sealed corridor by the summer of 2013. The purpose of the Keystone Corridor East High Speed Phase II service development program is to accomplish the two remaining stated objectives for the corridor. Upon project completion, travel time will be reduced to 1 hour 15 minutes on express trains (reduced from 1 hour 35 minutes) and to1 hour 25 minutes on regular trains (reduced from 1 hour 45 minutes), train speeds will be increased to 125 mph, and the Keystone Corridor will have made significant progress in returning to a state of good repair.

(2) Scope of Activities.

(2a) General Objectives.

The components of the service development program, as funded through the FRA's High Speed and Intercity Passenger Rail (HSIPR) program, consist of final design and construction of five interlockings that, when completed, combine to reach an overall time savings of 20 minutes. The component projects are (listed in priority order):

- Zoo to Wynnefield Interlocking MP 5.7 to MP 1.8
- State Interlocking MP 105.2 to MP 101.4
- Paoli Interlocking MP 20.4 to MP 19.1
- Potts Interlocking MP 28.4 to MP 27.3
- Thorn (downs) Interlocking MP 35.2 to 31.8

Preliminary engineering is being conducted for the above interlockings under a previous HSIPR grant received by PennDOT. Each project has an individual Categorical Exclusion Evaluation (CEE) document completed that has been transmitted to the FRA as part of the Keystone Corridor East High Speed Phase II application for funding. Through in-depth evaluation of the site, it has been concluded that the proposed project will not involve any significant negative environmental impacts to socio-economic, natural, or cultural resources. It will not induce significant alterations in land use or affect planned growth and will not significantly negatively impact air quality, noise levels, or travel patterns.

The Keystone Corridor East High Speed Phase II program will not affect current rolling stock or operations of Amtrak's Keystone Service, with the exception of schedule changes due to decreased travel time. In conjunction with the five (5) HSIPR funded interlocking projects, PennDOT will be completing three (3) station reconstruction projects at Middletown, Mount Joy, and Coatesville to construct full-length high-level platforms and other improvements for full ADA compliance with a total project cost of $63.3 million.

In addition to Amtrak operations, the Southeastern Pennsylvania Transportation Authority (SEPTA) operates regional rail service over 35 route-miles of the Keystone Corridor. SEPTA has committed more than $158 million in infrastructure improvements on the corridor and an additional $62 million in planned funding from Fiscal Year 2005 to Fiscal Year 2011. SEPTA has shown significant commitment to being an equal infrastructure funding partner in the Keystone Corridor and is committed to continuing efforts in the future.

This service development program will proceed under two main tasks, each with subtasks per project. Tasks are:

Task 1 – Final Design

Task 2 – Construction

(2b) Description of Work.

The Keystone Corridor East High Speed Phase II service development program will advance five interlockings projects through final design and construction. Interlockings to be taken through Final Design and Construction are:

Zoo to Wynnefield Interlocking MP 5.7 to 1.8

Replace outdated components, including track structure, overhead catenary, and communications and signal system components:

- Construct 36th Street Connection Track 4 to New Track 4 (Existing 2 Thru Freight)
- Install New 38th Street Interlocking
- Reconfigure JO Interlocking
- Construct Track 4 – 38th Street INRL to Stiles INRL
- Reconfigure Paxon and Jeff Interlockings for connection
- Remove Track 4 Valley Bridge and associated track
- Install New Wynnefield Interlocking
- Retire Overbrook Interlocking

Replacing and upgrading components will facilitate high speed intercity train movements and return the section to a state-of-good repair. Each project is interdependent and must be completed as a unit to realize benefits. Estimated time savings is at least 10 minutes.

State Interlocking MP 105.2 to 101.4

Replace outdated components, including track structure, overhead catenary, and communications and signal system components to facilitate high speed train movements and return to a state-of-good repair. Upgrading State Interlocking will remove slow orders currently in place and save a minimum of 5 minutes in travel time.

Paoli Interlocking MP 20.4 to 19.1

Replace outdated components, including track structure, overhead catenary, and communications and signal system components to facilitate high speed train movements and return to a state-of-good repair. Components of Paoli interlocking will be removed from the immediate station area to increase Amtrak operational capacity.

Potts Interlocking MP 28.4 to 27.3

The new Potts interlocking will include modern components, such as track structure, overhead catenary, and communications and signal system components to facilitate high speed intercity train movements and also increase the operational capacity of Amtrak trains serving the Exton Station.

Thorn (Downs) Interlocking MP 35.2 to 31.8

Replace outdated track structure and associated overhead catenary and communications and signal systems to facilitate high speed intercity train movements and return track 2 to service. Downs interlocking is being relocated. Completing the project will allow operational flexibility for Amtrak trains as well as facilitate track outages for other projects in this service development program.

The following major tasks will be used to complete work. Upon grant selection, a detailed task and schedule will be completed jointly by Amtrak, PennDOT, and the FRA.

Task 1: Final Design

The Grantee shall complete Final Design (FD) documents for interlockings identified above. Specific FD design documents shall include an Amtrak approved track schematic, scale track plans, civil design plans, signal design plans, electric traction plans, and a final staging plan for the construction of the redesigned interlockings. The following guidelines will be used in developing Final Design plans:

1. The design drawings shall be prepared at a scale of no less than 40 feet to the inch for complex urban projects.
2. The track design shall include design speeds, track centers, spiral and curve data, super-elevation and under balance, switch numbers and location, and track profiles.
3. The signal design shall include route and aspect charts, block design, and signal locations.

The Grantee shall complete selected final engineering of interlocking and signaling improvements between MP 0.2 to 104.6, final for Amtrak's Keystone Corridor between Harrisburg, PA and Philadelphia, PA with the following characteristics:

- Approximately 52,800 feet of track
- Upgrade signal system to reverse signaling per rule 261.
- Upgrade signal system to operate under NORAC rule 562.
- Upgrade interlocking configurations to allow high speed moves (in excess of 80 mph) on mainlines per Amtrak Engineering's Track Design Specification No. 63
- Track design conforming to the standards of FRA track Classification "Class-5".
- Upgrade catenary per Amtrak AED-1 and AED-2.

Subtask 1.1 Final Engineering – Track Design

The Grantee shall perform track design for track alignment to support the design changes to interlockings listed above along the Keystone Corridor. All work shall be completed in accordance with Amtrak standards 63 (Track Design) and 150 (Stormwater). All drawings shall be completed in Microstation CAD format.

After preliminary engineering track design submissions have been approved by Amtrak and the FRA, final engineering track plans shall be completed by the Grantee for submission to Amtrak and the FRA for comment. The final engineering track plans shall:

- Incorporate preliminary engineering track design comments
- Add details and associated additional sheets
- Revise construction cost estimate (includes Force Account estimate with backup calculations).

Subtask 1.2 Final Engineering - Signal Design

The Grantee shall prepare final engineering signal plans for the new, retired and improved interlockings listed above. All work will be completed in accordance with Amtrak standards 63 (Track Design) and 150 (Stormwater). All drawings will be completed in Microstation CAD, based on advanced preliminary engineering signal design plans.

The Grantee shall prepare final engineering signal design plans that will further the interlocking design based on Amtrak and FRA comments. Plans will consist of vital and non-vital microprocessor input and output requirements, track circuit, cab control, and switch control typical sections.

Subtask 1.3 Final Engineering – Civil Design

The Grantee shall perform final engineering plans for civil design in direct support of track modifications and for any signal house relocations needed as result of the redesigned Keystone Corridor interlockings. All work shall be completed in accordance with Amtrak standards 63 (Track Design) and 150 (Stormwater). All drawings shall be completed in Microstation CAD. Prior to design initiation, a number of core borings, to be determined after Amtrak consultation, shall be taken along the right-of-way to determine the condition of the ballast.

The Grantee shall prepare final engineering civil design plans based on comments received from Amtrak and the FRA. The civil design plans shall:

- Incorporate preliminary engineering civil design comments
- Expand level of details and associated additional sheets
- Add site details to the cross sections drawings from track
- Provide erosion and sediment control.

Final Engineering civil design plans will be submitted by the Grantee to Amtrak and the FRA for approval.

Subtask 1.4 Final Engineering – Electric Traction Design

The Grantee shall prepare final electric traction plans for the new, retired and improved interlockings. All work shall be completed in conformance with Amtrak's AED-1 and AED-2, and all drawings shall be in Microstation CAD format.

The Grantee shall perform final engineering for electric traction design based on comments received on preliminary electric traction design plans from Amtrak and the FRA. The electric traction design plans shall:

- Incorporate preliminary electric traction design comments
- Add details and associated additional sheets
- Update the detailed material list which shall itemize all materials to be purchased, listing the items, quantities and other required information
- Revise the construction cost estimate (including Force Account estimate with backup calculations)
- Include calculations for catenary structures and foundations.

Upon completion, the Grantee shall submit the final engineering electric traction plans to Amtrak and FRA for approval.

Subtask 1.5 – Construction Staging Plan

The Grantee shall prepare a Construction Staging Plan that identifies the sequence in which the redesigned interlockings will be constructed. In addition, any temporary modifications to the railroad and/or rail operations necessary to complete the construction of the interlockings shall be identified in the Construction Staging Plan and agreed to by all stakeholders.

Task 2: Construction

Upon completion of Final Design, the Grantee, in coordination with Amtrak, will construct the five interlocking projects identified above. It is anticipated that the majority of construction work will be completed using Amtrak forces, however, should demands occur that preclude prompt construction by Amtrak forces, contracts

may be used. A construction work plan will be completed jointly by PennDOT, Amtrak, and the FRA prior to the beginning of this task.

Project management functions will be completed for each interlocking construction project. In addition, a program manager will be assigned to coordinate with PennDOT, Amtrak, and FRA to ensure proper communication and staging occurs to complete on-schedule and within budget.

Subtask 2.1 – Early Procurement

Based on industry standard procurement periods, many items will need to be procured at an early date to allow proper fabrication time. These items include (but are not limited to):

- Catenary Steel
- Special Trackwork Turnouts
- Overhead Catenary System
- Signal Wayside Equipment
- Blockpoint Cases
- Switch Machines
- Communications & Signaling (C&S) Cable
- Signal Relays
- Signal Bungalows
- Snow Melter Bungalows.

Long Lead items will be procured under the Buy America provision, and all FRA and PennDOT procurement policies will be strictly adhered to.

Subtask 2.2 – Zoo to Wynnefield Interlocking Construction

Zoo to Wynnefield interlocking will be constructed in five stages, as outlined in the attached preliminary schedule and phasing documents. Zoo to Wynnefield interlocking is the largest construction component project in the Keystone Corridor East High Speed Phase II service development program, and is anticipated to be completed within 29 months.

Subtask 2.3 – State Interlocking Construction

State interlocking will be constructed in four stages, as outlined in the attached preliminary schedule and phasing documents. Construction is anticipated to be completed within 10 months.

Subtask 2.4 – Potts Interlocking Construction

Potts interlocking will be constructed in two stages, as outlined in the attached preliminary schedule and phasing documents. Construction is anticipated to be completed within 10 months.

Subtask 2.5 – Paoli Interlocking Construction

Paoli interlocking will be constructed in three stages, as outlined in the attached preliminary schedule and phasing documents. Construction is anticipated to be completed within 17 months.

Subtask 2.6 – Thorn (downs) Interlocking Construction

Thorn Interlocking will be constructed in two stages, as outlined in the attached preliminary schedule and phasing documents. Construction is anticipated to be completed within 12 months.

Subtask 2.7 – Completion and Closeout

Construction of the five interlocking projects associated with the Keystone Corridor East Phase II will be completed within 54 months. At the completion of construction, final documents will be assembled and submitted to the FRA. These documents include:

- Final Record Documents
- As-Builts, Operating &Maintenance Plans, Warranties
- Contracts Closeout

All documents will be completed and finalized by the end of March, 2017.

(2c) Deliverables.

Task	Deliverable
Subtask 1.1 Final Engineering – Track Design	90% Track Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
	100% Track Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
Subtask 1.2 Final Engineering - Signal Design	90% Signal Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
	100% Signal Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
Subtask 1.3 Final Engineering – Civil Design	90% Civil Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
	100% Civil Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
Subtask 1.4 Final Engineering – Electric Traction Design	90% ET Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
	100% ET Plans for Zoo to Wynnefield, State, Potts, Paoli, and Thorn
Subtask 1.5 – Construction Staging Plans	Final Construction Staging Plans
Subtask 2.1 – Early Procurement	Procurement Bid Documents
Subtask 2.2 – Zoo to Wynnefield Interlocking Construction	Final Construction Inspection Report
Subtask 2.3 – State Interlocking Construction	Final Construction Inspection Report
Subtask 2.4 – Potts Interlocking Construction	Final Construction Inspection Report
Subtask 2.5 – Paoli Interlocking Construction	Final Construction Inspection Report
Subtask 2.6 – Thorn (downs) Interlocking Construction	Final Construction Inspection Report
Subtask 2.7 – Completion and Closeout	Final Record Documents, As-Builts, O&Ms, Warranties, Contracts Closeout Documents

(3) Project Schedule.

A detailed schedule for the project elements shall be submitted to FRA once the Cooperative Agreement is signed by FRA and PennDOT. FRA must give its written approval of the schedule before PennDOT may proceed with the Project. Amendments to the approved project schedule must be approved by FRA in writing before any such amendment shall take effect. Final Design and Construction will be completed by **October 2016,** for a project work schedule of 54 months**.** Project completion and closeout documents will be completed by **March 2017,** for a total schedule of 59 months**.**

	Phase or Component Project	Duration		
		Start Month	to	End Month
1	Final Design	April 2012	**to**	October 2013
2	Construction (including project completion and closeout)	May 2012	**to**	March 2017
	Total Duration	*59 Months*		

(4) Project Cost Estimate/Budget.

Service Development Program Overall Cost Summary		
#	**Phase**	**Cost in FY11 Dollars**
1	Keystone Corridor East High Speed Phase II	$ 321,256,040
	Total program cost	$ 321,256,040

Federal/Non-Federal Funding			
		Cost in FY11 Dollars	**Percentage of Total Program Cost**
	HSIPR Federal funding request	$ 247,956,040	77 %
	Non-Federal* match amount	$ 73,300,000	23%
	Total program cost	$ 321,256,040	100 %

***Note: Non-federal match for Keystone Corridor East High Speed Phase II consists of the following sources:**

Non-Federal Funding			
		Cost in FY11 Dollars	**Percentage of Total Program Cost**
	FTA Funding (80%)**	$50,640,000	16%
	PennDOT FTA Match (20%)**	$12,660,000	4%
	PennDOT HSIPR Program Match	$10,000,000	3%
	Non-Federal* match amount	**$ 73,300,000**	**23%**

****Middletown, Mount Joy, and Coatesville Station Projects**