APPENDIX C: 2013 Minor Architecture Update

The purpose of this appendix is to inform the MVRPC member jurisdictions about the addition of two new system types to the Miami Valley Regional ITS Architecture, as well as an ODOT-led effort to streamline ITS project planning and development.

The Ohio Department of Transportation contacted MVRPC staff (and staff of other metropolitan planning organizations in Ohio) in summer 2013 requesting participation in a development process for streamlined approval of certain "off-the-shelf" systems that are deployed as ITS elements of projects across the state. The seven types of projects selected for this new approval process are all common systems that typically use commercially-available software that is designed to meet the federal standards for functionality established in the national ITS architecture. Given the nature of these systems, ODOT has determined that individual systems engineering reviews of these projects is unnecessary, provided the project intends to use the systems as designed without additional programing or functionality. In essence, since these systems are designed to meet all the specifications from the national ITS architecture, there is no need for an additional review of the system engineering for these elements.

The seven project types (with ITS market package numbers) are:

1. Closed Loop Signal System (ATMS03)
2. Central Signal System (ATMS03)
3. Highway Rail/Signal Preemption (ATMS14)
4. Signal Systems with Emergency Preemption (APTS09)
5. Signal Systems with Transit Priority (APTS09)
6. Ramp Meters (ATMS04)
7. Adaptive Traffic Signal Control (ATMS03)

ODOT completed stakeholder meetings about the streamlined approval process in September 2013 and asked each of the metropolitan planning organizations with regional ITS architectures to update the regional architecture to reflect each of these transportation systems. It was determined that the Miami Valley Regional ITS Architecture needed two additional systems added: Advanced Railroad Grade Crossing (ATMS14) and Transit Signal Priority (APTS09). The other systems subject to the streamlined review process were already included in the Miami Valley Regional ITS Architecture.

Staff determined after a review of the Regional ITS Architecture that the addition of these two additional system types constituted a minor update to the ITS architecture, and did not warrant an extensive process.

The attached documents include:

1. Updated cover and table of contents for the Miami Valley Regional ITS Architecture reflecting the two new systems and updated page numbers.
2. Section 5.85 Transit Signal Priority system description and functional flow diagram.
3. Section 5.193 Advanced Railroad Grade Crossing system description and functional flow diagram.

4. Example form for the streamlined review process as provided by ODOT.

With the inclusion of these systems in the regional ITS architecture, projects within the MVRPC planning area may include these ITS elements and utilize the streamlined review and approval process developed by ODOT.

5.85 APTS09: Transit Signal Priority

This service package determines the need for transit priority on routes and at certain intersections and requests transit vehicle priority at these locations. The signal priority may result from limited local coordination between the transit vehicle and the individual intersection for signal priority or may result from coordination between transit management and traffic management centers. Coordination between traffic and transit management is intended to improve on-time performance of the transit system to the extent that this can be accommodated without degrading overall performance of the traffic network.

When applied to the Regional ITS Architecture, the following functional flow diagram is produced:

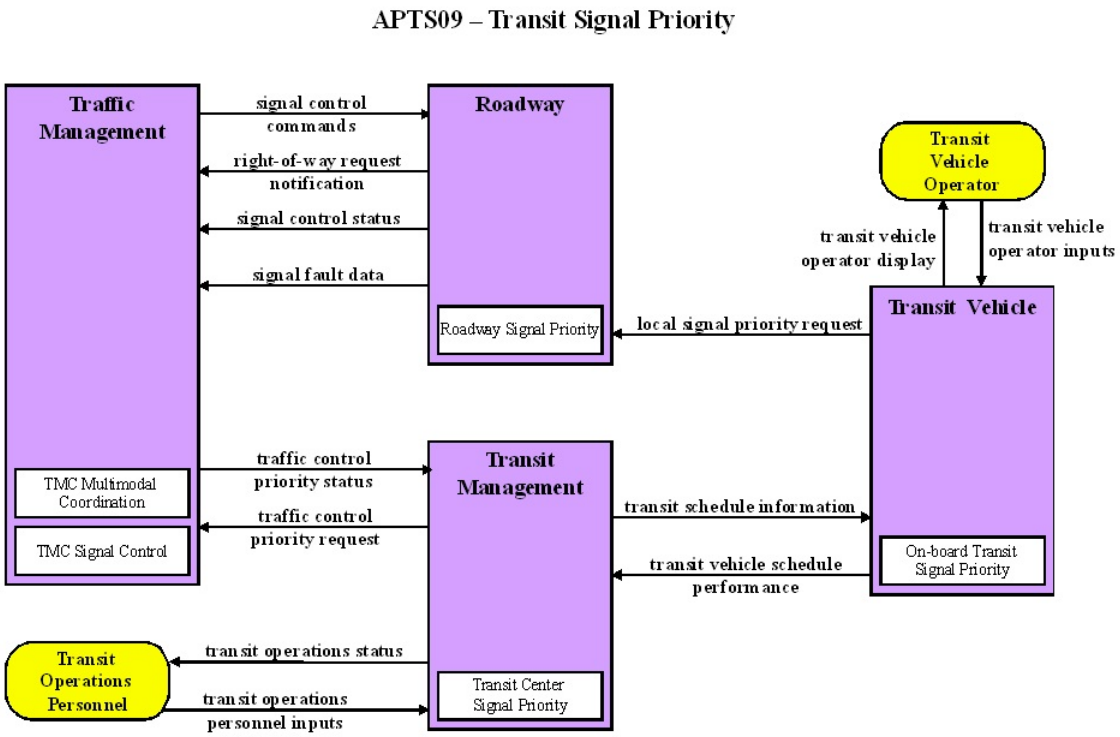

Figure 5.85: Transit Signal Priority Functional Flow Diagram

5.193 ATMS14: Advanced Railroad Grade Crossing

This service package manages highway traffic at highway-rail intersections (HRIs) where operational requirements demand advanced features (e.g., where rail operational speeds are greater than 80 miles per hour). This service package includes all capabilities from the Standard Railroad Grade Crossing service package and augments these with additional safety features to mitigate the risks associated with higher rail speeds. The active warning systems supported by this service package include positive barrier systems that preclude entrance into the intersection when the barriers are activated. Like the Standard package, the HRI equipment is activated on notification by wayside interface equipment which detects, or communicates with the approaching train. In this service package, the wayside equipment provides additional information about the arriving train so that the train's direction of travel, estimated time of arrival, and estimated duration of closure may be derived. This enhanced information may be conveyed to the driver prior to, or in context with, warning system activation. This service package also includes additional detection capabilities that enable it to detect an entrapped or otherwise immobilized vehicle within the HRI and provide an immediate notification to highway and railroad officials.

When applied to the Regional ITS Architecture, the following functional flow diagram is produced:

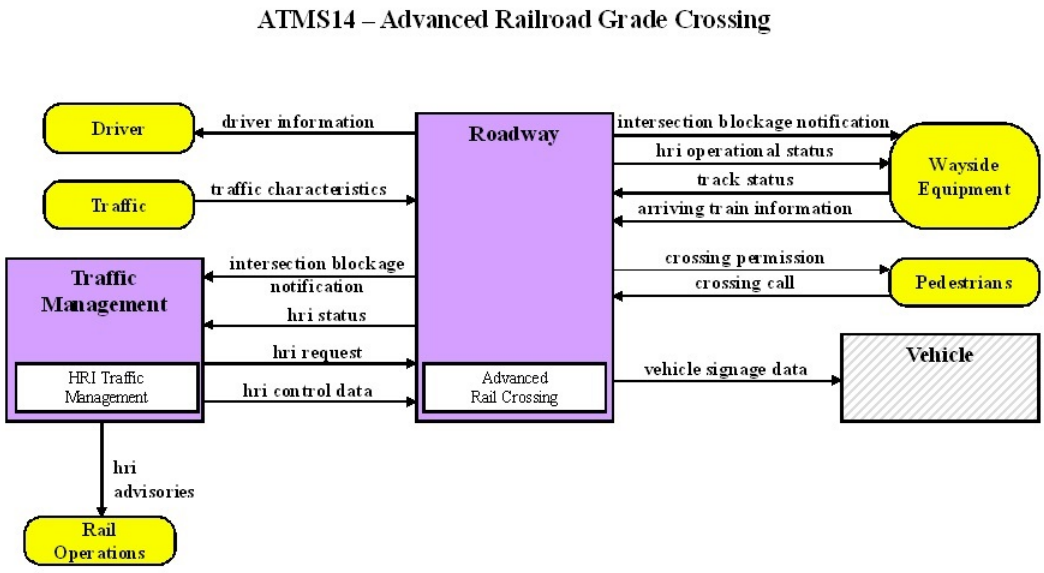

Figure 5.193: Advanced Railroad Grade Crossing Functional Flow Diagram

Systems Engineering Review Form (SERF)

This document is to be used to determine if a candidate project can be considered low risk and therefore be covered under a previously approved program-wide Systems Engineering Analysis documentation that satisfies the requirements of 23 CFR 940. This document is to be completed during the Planning phase of the ODOT PDP process. Please provide the following project information; in most cases, 1-3 sentences will be sufficient for each item, but you may include as much information as necessary:

A. **Project Category-**

	Check project category for submission
	A. Closed Loop Signal System
	B. Central Signal system
	C. Highway Rail/Signal Preemption
	D. Signal systems with Emergency Preemption
	E. Signal Systems with Transit Priority
	F. Ramp Meter System
	G. Adaptive Traffic Signal Control System

If the project is not one of the above categories this Programmatic Approval will not be granted and the Systems Engineering Analysis report will need to be completed in accordance with the ODOT Traffic Engineering Manual (TEM).

B. **Project Sponsor Contact** – Name, position, phone, email

C. **Project Location**- County, Route, Termini and which Regional Architecture

D. **Project Objective** – What is the purpose of the project? What need (deficiency) is being addressed?

E. **Project Description-**

F. **Which Market Package does the project correspond with in the Regional ITS Architecture?**

	Market Package
	Surface Street Control - ATMS03
	Freeway Control - ATMS04
	Standard Railroad Grade Crossing – ATMS13
	Advanced Railroad Grade Crossing – ATMS14
	Transit Signal Priority – APTS09

The proposed project conforms to the data flows shown on that diagram? YES-NO

If No, the MPO shall be notified to update the Regional ITS Architecture.

G. **List the project Stakeholders**-

H. **Risk Assessment Guidance** – Any "No" responses to the below will require full project-specific CFR940 Systems Engineering Analysis documentation. If all answers are "Yes" the project is considered low risk and the completed SERF will serve as meeting all the CFR940 documentation requirements.

Question:	Yes	No
1. Are the project stakeholders for this project type included in the Regional ITS Architecture?		
2. Are the portions of the Regional ITS Architecture being implemented consistent with the Regional ITS Architecture for this project type?		
3. Does this project implement a Commercial off the Shelf System?		
4. Is this project in compliance with the ODOT Functional Requirements identified for this Project Type?		
5. Where there other options considered for this project to complete the objective?		
6. Will the procurement options for this project follow the Ohio Department of Transportation's procurement process?		
7. Will the project use only interfaces as defined in the Regional ITS Architecture for this project type?		
8. Will the project use only operating procedures that are defined in the Regional ITS Architecture for this project type?		
9. Have you considered the Operations and Maintenance of the proposed project to include: a. Is there a plan for the operations and maintenance of the project?		
b. Have you identified project scenarios and how they will be addressed in the event of power outages, failures, and incidents?		

If all above questions are answered “Yes” the project is considered low risk. Cite the applicable programmatic CFR940 approval.

FHWA Programmatic Approval # _____

This completed document shall be submitted for approval in the Planning Phase. Copies shall be retained as part of the project files.