F I N A L   R E P O R T

Indiana Department of Transportation

Traffic Management

Strategic Deployment Plan

Version 2.4

Driving Indiana's Economic Growth

December 2008

FINAL REPORT

Indiana Department of Transportation
Traffic Management
Strategic Deployment Plan
Version 2.4

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TABLE OF CONTENTS

CHAPTER 7 – ITS DEPLOYMENT RECOMMENDATIONS - BY DEPLOYMENT TYPE

CHAPTER 8 – ITS DEPLOYMENT RECOMMENDATIONS SUMMARY - CHRONOLOGICAL

APPENDIX

EXECUTIVE SUMMARY

0.1. INTRODUCTION (Chapter 1)

The Indiana Department of Transportation (INDOT) Traffic Management Strategic Deployment Plan documents the intentions of INDOT to deploy Intelligent Transportation Systems (ITS) technologies and devices throughout the Hoosier State. This plan assesses the needs of INDOT for ITS and develops strategies through Fiscal Year 2020 for addressing those needs. Furthermore, the INDOT Traffic Management Strategic Deployment Plan defines the direction INDOT will want to take, identifies ITS projects, and develops a strategy for integrating and mainstreaming ITS into the INDOT organization. Ultimately, this plan will establish the blueprint for a successful statewide ITS system, the technological component of the Traffic Management Business Unit. The Traffic Management Business Unit is comprised of four Divisions: ITS Technology Deployment, Traffic Management Centers, Traffic Control Systems, and Public Safety Operations.

The INDOT Traffic Management Strategic Deployment Plan meets the intent of Senate Enrolled Act (SEA) 315, enacted by the 115th Indiana General Assembly in 2007. This report satisfies the requirement for a Final Report before January 1, 2009; a December 2007 Intermediate Report (Version 2.3) preceded this report. The text of SEA 315 may be found in Chapter 1.

Put simply, Intelligent Transportation Systems (ITS) is the application of advanced communications technologies to improve transportation safety and mobility and enhancing productivity, saving lives, time, and money. The technology is used by operators of the transportation system to better manage the utilization of the existing infrastructure and by users (motorists and transit riders) to assist them in making better travel decisions. INDOT's ITS initiative is known as TrafficWise.

Today, the Interstate Highway System is complete across the country (except for 1.5 miles for a new interchange at Interstate 95 and the Pennsylvania Turnpike which will reroute I-95), but the need to repair and improve the existing highway network exceeds existing funds available. Congress recognized that over a decade ago, creating a national Intelligent Vehicle / Highway Systems (IVHS) program, now known as ITS, in 1991, as part of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. Since then, many states and metropolitan areas have recognized that ITS can be a cost-effective way to reduce congestion and improve safety. While INDOT still intends to construct new highways and add capacity to many roadways, ITS offers the means to reduce congestion and increase the safety of an existing roadway, enhancing Indiana's role as a logistics and transportation hub for not only the Midwest, but the United States as whole.

In January 2005, INDOT adopted a new Vision to reflect our agency's vital function in State Government's role in economic development and job creation in the Hoosier State: **Driving Indiana's Economic Growth.** INDOT has a new Mission (what needs to be done in order to realize the Vision), new Values (principles or standards by which we operate by), new Goals (specific quality targets to achieve and establish the level of desired outcome), and new Strategic Initiatives (skillfully planned steps designed and created to support the overall effort of achieving the Vision and Mission), all quantified by Performance Measures that support the Mission. ITS deployments and the INDOT Traffic Management Strategic Deployment Plan will support this Vision, the Mission, the Values, the Goals, and the Strategic Initiatives.

The Vision: Driving Indiana's Economic Growth.

The Mission: INDOT will plan, build, operate, and maintain a superior transportation system enhancing safety, mobility, and economic growth.

The Values: Customer Focus, People, Continuous Improvement, Integrity, Agility, and Safety.

The Goals: Safety, Mobility, Economic Development, Customer Service, Resource Management, and Training.

Performance Measures: INDOT will establish performance measures which will be the basis for evaluating how well the agency is doing in meeting its Mission, Goals, and Strategic Initiatives. Approximately 100 performance measures will be identified and established for INDOT, including performance measures for the Traffic Management Business Unit.

As such, INDOT has secured the professional services of Cambridge Systematics to assist the four Traffic Management Business Unit Divisions in implementing an automated reporting system to measure the effectiveness and efficiency of ITS / Freeway Management Systems and Traffic Signal Systems. Performance measures will be calculated based on outputs from INDOT's data collection architecture and expressed in terms of tangible benefits and operational efficiencies such as reduced travel time, money saved, delay saved, travel time reliability, air quality improvements, etc. The intent is to generate a meaningful series of reports that are readable by the public as well as INDOT management. Ultimately this effort will lead towards the implementation of an automated system for producing reports to evaluate the ongoing efficiency and effectiveness of the Traffic Management Business Unit operations and investments.

In 2006, the U.S. Department of Transportation (USDOT) completed a Strategic Plan for Fiscal Years 2006-2011, comprised of a Mission and Strategic Goals for all modes of the Nation's transportation system. The USDOT's Strategic Goals are Safety, Reduced Congestion, Global Connectivity, Environmental Stewardship, and Security, Preparedness and Response. In 1998, the Federal Highway Administration (FHWA) completed a 10 year Strategic Plan, comprised of a Vision, Mission, Values, Guiding Principles, Strategic Goals and Objectives, and Corporate Management Strategies. Furthermore, FHWA outlines the agency's near-term strategy to achieve the goals and performance objectives in the FHWA and USDOT Strategic Plans with an annual *Strategic Implementation Plan*. The August 2007 FHWA Fiscal Year 2008 *Strategic Implementation Plan* identifies a Vision, a Mission, and Strategic Goals that are consistent with the USDOT Strategic Goals. As INDOT is a partner with the USDOT, especially the FHWA, the INDOT Traffic Management Strategic Deployment Plan will support these elements of the USDOT and FHWA Strategic Plans and the annual FHWA *Strategic Implementation Plans.*

In a general sense, ITS can be separated into two distinct but certainly related program areas: intelligent infrastructure and intelligent vehicles. Intelligent infrastructure is generally the responsibility of public agencies that own, operate, and maintain transportation assets and is oriented to serving the transportation infrastructure needs of motorists, commercial vehicles, and transit passengers. Intelligent vehicles are generally under the auspices of private industry (most notably, vehicle manufacturers) and complement the ITS infrastructure by focusing on safety and information systems for cars, trucks, buses, and trains. The focus of this document will be on the former, not the latter.

The USDOT has stated that the six goals of the National ITS Program are as follows: Increase Transportation System Efficiency and Capacity, Enhance Mobility, Improve Safety, Reduce Energy Consumption and Environmental Costs, Increase Economic Productivity, and Create an Environment for an ITS Market. As INDOT is a partner with the USDOT, especially the FHWA, the INDOT Traffic Management Strategic Deployment Plan will support these goals established by the USDOT.

ITS deployments across the Nation have yielded notable improvements in safety and traffic flow. In Indiana, a Purdue University Joint Transportation Research Program (JTRP) study of the Hoosier Helper Freeway Service Patrol program on the Borman Expressway (I-80/94) and I-65 in Northwest Indiana measured a Benefit/Cost ratio of 13 to 1. This illustrates the vital importance of effective and efficient incident detection and management, which results in quicker restoration of the freeway's capacity and the associated benefits to motorists, the economy, and society: improved safety, traveler mobility, and system efficiency, increased productivity, and conserved fuel / reduced environmental impact.

0.2. SYSTEM INVENTORY / TRANSPORTATION ASSESSMENT (Chapter 2)

The State Highway System that is built, owned, and operated by INDOT is comprised of 11,182 miles of Interstates, US Routes, and State Roads. The system has grown, matured, and been systematically upgraded over the years. One of the most significant, perhaps the most significant addition to the system is the Interstate System.

The Interstate System is the highest classification of all roads in the Nation, providing the highest level of mobility at high speeds for long uninterrupted distances. The lack of at-grade access and the subsequent delay with signals significantly increases the capacity of the roadway, making the Interstate System extremely attractive for travel purposes. In fact, the FHWA indicates in its *Highway Statistics 2005* document that the Interstate System carries a phenomenal 24 percent of the Nation's traffic while comprising only 1.2 percent (46,871 miles) of the Nation's 4,011,631 mile road network. Similarly, the Interstate System in Indiana carries 23 percent of all traffic statewide (National average is 24 percent), while comprising only 1.2 percent of the statewide total of 95,575 miles of roadway.

As for Indiana's three largest Urbanized Areas, the FHWA reports that in the Indianapolis Urbanized Area, the 116 miles of Interstates comprise only 2.4 percent of the area's 4,755 miles of roadway but the Interstates carry 34 percent of all Daily Vehicle Miles Traveled (VMT). Similarly, in the Indiana portion of the Chicago Urbanized Area, the 66 miles of Interstates comprise only 2.6 percent of the area's 2,497 miles of roadway but the Interstates carry 31 percent of all Daily VMT. Likewise, in the Indiana portion of the Louisville Urbanized Area, the 19 miles of Interstates comprise only 3.9 percent of the area's 484 miles of roadway but the Interstates carry 38 percent of all Daily VMT.

By nature of its full access control, the Interstate System moves high volumes of traffic but provides limited opportunities to exit the System in case of delays caused by incidents. ITS can play a key role in detecting incidents and notifying the motoring public of the incident. While some roads in INDOT's system carry more traffic than some portions of the Interstate System, their lower degree of access control enables motorists to more easily divert in case of an incident. The same can not be said about the Interstate System and other full access control facilities (freeways). Thus, the focus of INDOT's ITS field device investment will be on the Interstate System and other freeways due to the significant proportion and composition of traffic on the System coupled with the limited ability to divert in case of incidents on an Interstate or any other freeway. Furthermore, the Interstate System and freeways in Indiana provide the main "trunk line" of ITS field devices statewide while serving the major population centers of the state, with the option of expansion, if needed in the future, of additional ITS deployments statewide.

The geometric design criteria for a new or completely reconstructed freeway in Chapter 53 of the *Indiana Design Manual* calls for Desirable Level of Service (LOS) B / Minimum LOS C for Rural Freeways and Desirable LOS B / Minimum LOS C for Urban Freeways (Minimum LOS D is allowed for urban reconstruction projects only). LOS C is sometimes referred to as “Desirable Minimum” and LOS D is sometimes referred to as “Absolute Minimum.” While Traffic Management / ITS is obviously not building new freeways or reconstructing existing ones, these policies from the *Indiana Design Manual* illustrate what is considered desirable and minimum Levels of Service on Indiana freeways. These LOS policies will serve as a basis for possible investment in ITS devices on Indiana’s Interstates and freeways.

Interstates 65, 69, and 70 have the highest rural AADT and corresponding lower LOS compared with other Rural Interstates in Indiana. Please refer to Chapter 2 for details.

While investment in ITS devices will be focused on the Interstate System and other freeways, there are arterials that approach and feed the Interstate System with significant volumes of traffic. When incidents occur on a downstream Interstate, motorists on the arterial would benefit from receiving information regarding the incident (as would motorists on the affected Interstate), as some arterial motorists would choose an alternate route and not enter the affected Interstate. Candidate arterials should generally meet the following criteria: an INDOT facility with a current two-way AADT of 40,000 or greater for at least two miles approaching an Interstate that is currently fully deployed with Traffic Management / ITS devices (vehicle detection every ½ - 1 mile and CCTV cameras) or is currently proposed for full deployment of Traffic Management / ITS devices (vehicle detection every ½ - 1 mile and CCTV cameras). A two-way AADT of 40,000 generally corresponds to LOS C for a six lane divided arterial and LOS E for a four lane divided arterial. Seven different arterials meet these criteria

0.3. PROPOSED INDOT MAJOR CAPITAL IMPROVEMENTS (Chapter 3)

Major Capital Improvements or Expansion Projects provide a unique opportunity to implement Traffic Management / ITS devices in a coordinated fashion with a larger project, further minimizing disruptions to the motoring public. Other noteworthy projects that do not add any significant capacity, such as Pavement Replacement, 3R (Resurface, Restore, and Rehabilitate), or 4R (Resurface, Restore, Rehabilitate, and Reconstruct) projects present a similar opportunity to incorporate Traffic Management / ITS devices on a roadway as part of a larger project. As the focus of ITS investments on the INDOT network will be the Interstate System and other freeways, detailed information is provided in Chapter 3 regarding the proposed timing of these projects on the Interstate System and other freeways.

INDOT applied for two proposed “Corridors of the Future” which could feature dedicated Truck Only Lanes: I-70 across Missouri, Illinois, Indiana, and Ohio and the Illiana Expressway and Freight Corridor from I-57 to I-65 in Will County, Illinois and Lake County, Indiana. In September 2007, the four-state I-70 corridor was one of six Interstate corridors nationwide selected by FHWA as a “Corridor of the Future”. INDOT will coordinate with the four-state Corridor Coalition and participate financially in the corridor-wide planning, research, design, and financial feasibility analyses needed to advance the concept of dedicated Truck Only Lanes. This study should be complete by mid-2009. While the Illiana Expressway and Freight Corridor was not selected by FHWA as a “Corridor of the Future”, INDOT is proceeding with an independent study of the feasibility of this corridor, as required by Senate Enrolled Act 105 (2007), including the feasibility of Truck Only Lanes. A consulting team was selected by INDOT in August 2007 to conduct this feasibility study, which will be completed by July 1, 2009. ITS applications will be analyzed for appropriate inclusion in these two corridors.

Additional ITS applications may be included in various mass transit initiatives in Indiana if the service is found to be feasible in their respective studies as required by Senate Enrolled Act 105 (2007). Six studies concerning mass transit in six regions of the state shall be conducted and completed by January 1, 2009. A consulting team was selected by INDOT in July 2007 to conduct these six studies, as well as a required study of the feasibility of a commuter rail system from Muncie to Indianapolis and from Indianapolis to Bloomington; this latter study was completed in August 2008. The Midwest Regional Rail Initiative, an ongoing effort to develop high-speed (80-110 mph) rail service in the Midwest, also provides opportunities for possible ITS applications.

Detailed information is also provided in Chapter 3 regarding the proposed timing of Major Capital Improvements on INDOT arterials with a current two-way AADT of 40,000 or greater for at least two miles approaching an Interstate that is currently fully deployed with Traffic Management / ITS devices (vehicle detection every ½ - 1 mile and CCTV cameras) or is currently proposed for full deployment of Traffic Management / ITS devices (vehicle detection every ½ - 1 mile and CCTV cameras).

A key component of INDOT's program to address safety and mobility needs is the construction of new facilities, including Interstates and freeways. Details are provided in Chapter 3 regarding projected design year AADT and projected design year LOS. Since these are new freeways, data is oriented more to the design year of the facility, not the opening year. As such, projected LOS C in 2025, 2030, or 2035 (or some other design year beyond the planning horizon of this document) does not necessarily signal the need for some Traffic Management / ITS investment at the current time or even the near future.

0.4. EXISTING PLUS COMMITTED ITS DEPLOYMENTS (Chapter 4)

The Interstate Highway System is the backbone of the Indiana surface transportation network and a critical element in the state and national economy. Logically, traffic volumes are highest in the larger urbanized areas and, as such, INDOT has concentrated the initial deployment of ITS devices in these areas, mainly on the Interstate System. This approach is consistent with the FHWA's 1996 goal to implement ITS infrastructure in the Nation's 75 largest metropolitan areas. This investment philosophy will continue with the planned Indianapolis area Advanced Traffic Management System (ATMS) deployment, currently scheduled through 2010.

INDOT has deployed an ATMS in Lake County in Northwest Indiana along Interstate 80/94 (the Borman Expressway) from the Indiana / Illinois State Line to Interstate 90 (the Indiana Toll Road) and along Interstate 65 from US 30 to I-80/94 (the Borman Expressway). This ATMS consists of vehicle detection generally every ½ mile, Closed Circuit Television (CCTV) Cameras, Dynamic Message Signs (DMS), Highway Advisory Radio (HAR) Stations (with flasher notification in case of an incident), a communications system, a Traffic Management Center (TMC), 2/10 Mile Reference Markers (1/10 Mile Reference Markers on I-80/94), and the deployment of the Hoosier Helper Freeway Service Patrol (FSP), which began on a limited basis in 1991. A similar system is currently in the latter phases of project development in the Indianapolis area, with many devices deployed and operational, many more under construction, and others still under design. A similar system in the Louisville area (including portions of Clark and Floyd Counties in Southern Indiana) known as TRIMARC (Traffic Response and Incident Management Assisting the River Cities) is in varying stages of development and deployment and historically has been controlled by the Kentucky Transportation Cabinet (with Northrop Grumman Corporation operating the system) with the cooperation of INDOT. DMSs are also located in Evansville and Kokomo (generally controlled by the INDOT Indianapolis TMC) and in Fort Wayne (generally controlled by the INDOT Gary TMC). The latter three locations do not have any ATMS detection or verification capabilities; activation of these DMSs only occurs when human notification takes place with the appropriate TMC.

Details regarding existing, planned, and committed ITS deployments may be found in Chapter 4. Committed is defined as either a part of the ongoing Indianapolis Advanced Traffic Management System (ATMS) deployment, the Transportation Technology Innovation & Demonstration Program (TTID) vehicle detection in conjunction with Traffic.com, as part of the TRIMARC Strategic Plan, or the 511 traveler information system on all INDOT-maintained roadways. Information regarding the deployment of seven key ITS components is provided: 2/10 Mile Reference Markers, Highway Advisory Radio (HAR) (specifically, the segments of a route within the Area of Influence (A of I) of a HAR), Permanent Overhead Dynamic Message Signs (DMS) (specifically, the segments of a route within the Area of Influence (A of I) of an existing DMS), Hoosier Helper Freeway Service Patrol (FSP), Closed Circuit Television (CCTV), Vehicle Detection, and 511.

0.5. ITS ARCHITECTURE / MARKET PACKAGES (Chapter 5)

The National ITS Architecture is a framework within which an ITS system can be built. The Architecture functionally defines what the pieces of the system are and the information that is exchanged between them. The Architecture is functionally oriented and not technology-specific which allows the architecture to remain effective over time. It defines what needs to be done, not how it will be done. More specifically, the National ITS Architecture provides the framework for planning, defining, and integrating ITS. The architecture defines the ITS functions (i.e., gather traffic information), the physical entities (components) or subsystems where these functions reside (i.e., the field, center, or vehicle), and the information and data flows (communications) that must be exchanged to connect these functions and physical subsystems together into an integrated system.

The National ITS Architecture essentially implements the ITS User Services. The User Services represent what the system will do from a broad scale user's perspective, be it the public or a system operator. The 33 User Services are grouped into eight Bundles for convenience. The User Services allows the process of system or project definition to begin by thinking about what high level services will be provided to address identified problems and needs. Some of the ITS User Services are too broad in nature to be convenient in planning actual deployments. In order to address these concerns and providing a more meaningful evaluation, a more detailed set of deployment-oriented ITS service building blocks were defined from the original User Services: the Market Packages.

The Market Packages provide a deployment-oriented perspective to the National ITS Architecture. Basically, they identify the pieces of the National ITS Architecture required to implement a transportation service. The National ITS Architecture development effort identified a total of 85 Market Packages that reflect the current definition of ITS and the evolving technology market. Chapter 5 contains a complete listing of these, grouped according to their respective major application areas. Market Packages that have been identified as an early deployment candidate from a national perspective due to a promising combination of low-risk implementation characteristics, developing public or private markets for the package, and tangible system or user benefits are indicated as such. This does not necessarily mean that it would be an early deployment candidate in Indiana on the INDOT system.

Please note that the *Indiana Statewide ITS Architecture* was completed in 2005 and should be referenced for details regarding ITS Architecture.

0.6. MARKET PACKAGE RECOMMENDATIONS (Chapter 6)

Evaluating the ITS Market Packages is not the main focus of this document. Nevertheless, comparing the Market Packages and their applicability to INDOT is still relevant to provide general direction to future Traffic Management / ITS deployments in Indiana. This analysis takes place in terms of the Market Package's ability to support the six ITS goals as identified by the USDOT, its potential to be an early deployment, its applicability to urban or rural areas, its ability to address congestion and crash problems, and its overall benefits.

It should be noted that just because a Market Package appears to score well in terms of meeting ITS goals, is an early deployment candidate, can address congestion or safety needs, or has many benefits, it does not necessarily mean that it would be deployed by INDOT. Every state has its own unique transportation characteristics and challenges; one size does not fit all. Furthermore, the reality of organizational constraints (funding and staffing) simply does not allow ITS to be all things to all people and result in a large-scale deployment of the 85 Market Packages, nor is that approach desirable from a resource allocation perspective. The philosophy of concentrating on the key Market Packages will prevail.

Many of the 85 Market Packages are in varying stages of deployment in Indiana by a variety of jurisdictions. Some are deployed, others are scheduled for deployment. Some are deployed by the Traffic Management Business Unit at INDOT, others are deployed by other functions at INDOT or other public agencies, while some are more a function of the private sector. Market Package recommendations are grouped based on three deployment time frames (Current or Near Term, Medium Term, Long Term or Future) and then by implementer.

0.7. ITS DEPLOYMENT RECOMMENDATIONS - BY DEPLOYMENT TYPE (Chapter 7)

The data and analysis in the first six chapters of the INDOT Traffic Management Strategic Deployment Plan lay the foundation for the recommendations made in Chapter 7. Several key fundamentals guide and are the crux of these recommendations: ITS deployments will support INDOT's Vision, Mission, Values, and Goals, USDOT's Strategic Plan, FHWA's Strategic Plan, and USDOT's six goals for ITS (Chapter 1); the focus of INDOT's ITS investment will be on the Interstate System and other freeways due to the significant proportion and composition of traffic on the System coupled with the limited ability to divert in case of incidents on an Interstate or any other freeway (Chapter 2); the geometric design criteria from the *Indiana Design Manual's* desirable and minimum Levels of Service on Indiana freeways will serve as a basis for investment in ITS devices on Indiana's Interstates and freeways (Chapters 2 and 3); Major Capital Improvements (Expansion Projects and major 3R / 4R Pavement Projects) on INDOT Interstates and freeways and select high volume arterials intersecting the Interstate System provide an opportunity to implement ITS field devices in a coordinated fashion with a larger project (Chapter 3); the ongoing ATMS deployment of ITS field devices on the Interstate System in Marion and portions of surrounding counties in the Indianapolis area is a main focus of the INDOT ITS deployment through 2010 (Chapter 4); the ITS Market Packages analysis provide general direction to future ITS deployments in Indiana (Chapters 5 and 6); and the philosophy of concentrating on the key Market Packages will prevail (Chapter 6).

It is important to note that the recommendations in Chapter 7 are grouped by individual deployment type. Chapter 8 summarizes all deployments chronologically. As such, the Executive Summary will provide more project-specific detail in the chronological listing from Chapter 8.

It should be noted that the recommendations in this Version 2.4 Final Report are significantly different that what was presented in the Version 2.3 Intermediate Report dated December 2007, primarily as a result of high fuel prices and the deterioration of national economic conditions over the past year. Revenues to INDOT by way of gasoline and diesel fuel taxes declined as a result of fuel prices exceeding $4 per gallon in 2008 and the associated reduction in vehicle miles traveled. Although fuel prices have declined markedly, the national recession has continued the trend of fewer vehicle miles being traveled, thus the reduction in motor fuel taxes continues. INDOT has proactively adjusted its construction budget over the next biennium (Fiscal Years 2010 and 2011) and some projects have been delayed. This fact, coupled with uncertainty of future traditional fuel tax revenues, especially on the federal level with the federal Highway Trust Fund and the 2009 reauthorization of the federal transportation program, has had a ripple effect on many projects in future years. As such, most the "rural" Traffic Management / ITS deployments that were recommended in the Version 2.3 Intermediate Report are not recommended at this time.

Please note that deployments associated with Major Capital Improvements (Road Projects) are shown in italics; ITS Standalone projects are not italicized.

0.7.1. Full Advanced Traffic Management Systems (ATMS)

The key to providing real-time, accurate information is the ability to detect and verify incidents. While it is not practical to fully instrument the entire Interstate System and freeways in Indiana with a full ATMS, it is logical and possible to expand the ATMS in and adjacent to the three metropolitan areas that have a Traffic Management Center and have deployed or are currently deploying an ATMS: Northwest Indiana (Chicago), Indianapolis, and Louisville. These areas are Indiana's most populated and have the highest freeway AADT and congestion.

Upon completion of the following full ATMS projects, a total of 254 miles of Interstates and freeways will be instrumented with a full ATMS, defined as vehicle detection every ½ - 1 mile, CCTV Cameras, and communications.

- ATMS Priority 1 (Completion of Initial Indianapolis ATMS): $5,700,000
- ATMS Priority 2 (ATMS Deployment in Southern Indiana): $6,700,000
- ATMS Priority 3 (Expansion of the Northwest Indiana ATMS): $8,700,000
- *ATMS Replacement / Additions with Major Capital Improvements: $22,500,000*
- *ATMS on New Interstates / Freeways: $11,150,000*

ATMS Estimated Cost (ITS Standalone Projects)	**=**	**$21,100,000**
ATMS Estimated Cost (ITS with Road Projects)	**=**	***$33,650,000***
Total ATMS Estimated Cost	**=**	**$54,750,000**

0.7.2. Closed Circuit Television (CCTV) Cameras & Vehicle Detection

The key to providing real-time, accurate information is the ability to detect and verify incidents. While it is not practical to fully instrument the entire Interstate System and freeways in Indiana with a full ATMS, it is logical and possible to deploy Closed Circuit Television (CCTV) cameras and side-fire radar vehicle detection at strategic locations on the higher volume Interstates and freeways (rural and urban) to serve this function, as well as provide surveillance to support INDOT winter operations (snow and ice removal) and overall security surveillance. These CCTV camera and vehicle detection sites would also be beneficial for traffic management purposes in case an evacuation of an area is ever required. En-route traveler information provided by Dynamic Messages Signs (DMSs) and Highway Advisory Radio (HAR) can provide motorists with real-time information regarding traffic conditions, including closures. Motorists can utilize this information to divert, delay, or even cancel their trip and avoid the closure.

Recommended CCTV camera / vehicle detection spacing is approximately every one mile in segments that are currently LOS D or worse (the TTID deployment area near Indianapolis), and approximately every two miles in segments that are currently LOS C. Camera spacing in full ATMS deployment areas is approximately every mile.

A total of 30 CCTV camera / vehicle detection sites are recommended on 54 miles of Interstates, plus 33 cameras on 40 miles in the Transportation Technology Innovation & Demonstration Program (TTID) deployment area near Indianapolis. These 63 cameras are in addition to the multitude of cameras deployed as part of a full ATMS (approximately 250 cameras on 254 miles). Thus, the deployment of these cameras, in conjunction with cameras in full ATMS areas, will result in approximately 315 CCTV cameras statewide on 348 miles of Interstates and freeways.

- CCTV Priority 1 (Transportation Technology Innovation & Demonstration Program (TTID) Deployment Area): 33 cameras, no detection, $2,725,000
- CCTV Priority 2 (CCTV Cameras and Vehicle Detection to support proposed DMSs approaching TTID areas and I-65 ATMS from I-865 to US 52): 14 camera / detection sites, $1,925,000
- CCTV Priority 3 (I-65 Lowell to Crown Point; I-94 Chesterton to Michigan): 16 camera / detection sites, $2,200,000

CCTV Cameras / Detection (ITS Standalone Projects)	**=**	**$ 6,850,000**
CCTV Cameras / Detection (ITS with Road Projects)	**=**	***$ 0***
Total CCTV Cameras / Detection Estimated Cost	**=**	**$ 6,850,000**

0.7.3. Permanent Overhead Dynamic Message Signs (DMS)

Dynamic Message Signs (DMS) are electronic roadway devices that provide real-time, dynamic (changing, not static) motorist information, such as incident, traffic, and road condition information, emergency alerts, and other driver advisories at strategic locations on the road network, ideally in advance of a major decision point or suitable alternate routes. Motorists can utilize this information to divert, delay, or even cancel their trip and avoid the delays. Forty-five Permanent Overhead DMSs are located in Indianapolis, Northwest Indiana, Evansville, Fort Wayne, Kokomo, and Southern Indiana near Louisville, as well as three additional DMSs in the latter area as part of the TRIMARC deployment. Furthermore, approximately 20 Portable DMSs are deployed statewide. Twenty-three Highway Advisory Radio (HAR) stations (plus the TRIMARC HAR) are located statewide to supplement the DMSs, especially in rural areas.

Recommended urban DMS spacing is in advance of major decision points (intersecting Interstates and freeways). Recommended "rural" or suburban fringe DMS placement is in advance of a CCTV / Vehicle Detection deployment area, generally spaced every 15 - 20 miles, ideally placed in advance of a suitable INDOT System roadway for diversion purposes. "Outbound" DMSs oriented to traffic leaving a metropolitan area and entering a CCTV / Vehicle deployment area are also recommended, as these support the instrumented area as well as downstream, non-instrumented locations.

A total of 47 new Permanent Overhead DMSs are recommended, as well as the replacement of 26 existing DMSs and the removal of 10 DMSs. Once the recommended DMS deployment is complete, INDOT will operate 85 Overhead DMSs, providing extensive coverage in and adjacent to the three ATMS deployment areas (Indianapolis, Northwest Indiana, and Southern Indiana near Louisville).

- DMS Priority 1 (DMS Replacements / Additional Indianapolis DMSs): 21 replaced and 10 new DMSs, $6,200,000
- DMS Priority 2 (Southern Indiana ATMS near Louisville): 5 new DMSs, $2,050,000
- DMS Priority 3 (DMSs approaching TTID areas and I-65 ATMS from I-865 to US 52): 13 new DMSs, $5,375,000
- DMS Priority 4 (I-65 Lowell to Merrillville; I-94 Porter to Michigan; SR 912 approaching I-80/94; US 30 approaching I-65: 9 new DMSs, $3,700,000
- *DMS Additions with Major Capital Improvements: 5 replaced and 10 new DMSs, $4,950,000*
- Evansville DMSs: CCTV / vehicle detection deployment is not recommended for the Evansville area, which also precludes the installation of any additional DMSs in the Evansville area; the existing DMSs should be removed once they have reached the end of their functional life and should not be replaced.
- Kokomo DMSs: When US 31 is relocated, the DMSs will no longer be of great value to INDOT and should be removed at that time

DMS Estimated Cost (ITS Standalone Projects)	**=**	**$17,325,000**
DMS Estimated Cost (ITS with Road Projects)	**=**	***$ 4,950,000***
Total DMS (26 Replaced / 47 New) Estimated Cost	**=**	**$22,275,000**

0.7.4. Travel Time Signs (TTS)

Upon the completion of the ATMS in Northwest Indiana (currently being upgraded) and in Indianapolis, algorithms can be developed using the vehicle detection to automatically estimate travel times to specific locations, such as major downstream interchanges or a State Line, and provide this information to the public by way of Dynamic Message Signs (DMS).

Nationally, most jurisdictions have used standard DMSs to convey travel time information; INDOT provided travel time information on I-80/94 and I-65 in Northwest Indiana in this fashion until the limitations with the communications system rendered unreliable travel times (the communications system is currently being upgraded). New York State has proposed using a static panel sign that has a small electronic, dynamic insert component for travel times along the Northern State Parkway on Long Island, and implemented such signage on the Staten Island Expressway (I-278) in July 2007. In Indiana, the Travel Time Signs will complement the deployment of DMSs and will be especially valuable during incidents, as information regarding the incident will be displayed on the DMSs.

The Travel Time Signs will provide the motorist with static shield or text referring to a downstream interchange or specific location, accompanied by static distance to that interchange or specific location to assist unfamiliar, non-commuter motorists, and a dynamic insert that changes according to the automated travel time data. A total of 41 new Travel Time Signs are recommended.

- TTS Priority 1 (Northwest Indiana ATMS): 1 new TTSs, (cost included in Northwest Indiana ATMS Communications System Upgrade)
- TTS Priority 2 (Indianapolis ATMS - Phases 2, 3, & 4 and I-70 East Pavement Replacement): 18 new TTSs, $2,000,000
- TTS Priority 3 (Northwest Indiana ATMS): 5 new TTSs, $550,000
- TTS Priority 4 (Indianapolis ATMS - Phase 5): 7 new TTSs, $775,000
- TTS Priority 5 (Indianapolis ATMS - I-465 West Leg and I-465 Northeast): 8 new TTSs, $900,000
- *TTS Additions with Major Capital Improvements: 2 new TTSs, $225,000*

TTS Estimated Cost (ITS Standalone Projects)	**=**	**$ 4,225,000**
TTS Estimated Cost (ITS with Road Projects)	**=**	***$ 225,000***
Total TTS (41 New) Estimated Cost	**=**	**$ 4,450,000**

0.7.5. Hoosier Helper Freeway Service Patrol (FSP)

The Hoosier Helper Freeway Service Patrol (FSP) serves 157 miles of Indiana's busiest freeways, helping stranded motorists, removing debris from the road, or summoning help quickly in case of a crash, vehicle fire, or other emergency. The Hoosier Helpers do more than provide an extra measure of security and safety for motorists. They also keep traffic moving, and that makes them a key element in an ATMS deployment. INDOT operates three Hoosier Helper programs statewide in Northwest Indiana, Indianapolis, and Southern Indiana near Louisville

- Proposed Expansions of the Hoosier Helper FSP

  The Hoosier Helper Freeway Service Patrol is a function of the Traffic Management Centers Division and as such is more operations-oriented versus the capital improvement / fixed device-orientation of the majority of this document. Routes and hours of the day in service are based upon need, and more significantly, availability of personnel and funding to fill the need, a variable that is difficult to predict. Therefore, no specific implementation years are identified, no cost estimates are developed, and no maps are prepared. Nevertheless, guidance is provided to assure a reasonably uniform Hoosier Helper FSP deployment on a statewide basis. Please refer to Chapter 7 for details.

No cost provided as this is an operations-oriented expense, not a capital improvement fixed device-oriented expense, the focus of this document

0.7.6. Reference Markers (1/10, 2/10, and 1/2 Mile Reference Markers)

Intermediate Enhanced Reference Location Signs, initially installed in 1998 in Indianapolis, Northwest Indiana, Southern Indiana near Louisville, Evansville, Fort Wayne, and Kokomo, are located every 2/10 of a mile in the median of Interstates (every 1/10 of a mile along I-80/94 and I-94 in Northwest Indiana). The 2/10 Mile Reference Markers are also placed on US 41 and some State Roads in the Evansville area and on US 31 in the Kokomo area.

The existing signs display the cardinal direction of travel, a route shield indicating the highway the motorist is traveling, and the Mile Marker location on the highway (to 2/10 or 1/10 of a mile). At interchanges, Ramp Reference Markers are positioned along the ramps indicating which ramp a motorist is traveling within an interchange. These signs provide motorists with better location information and improved roadside assistance. Incident response teams are able to more quickly arrive on the scene of crashes, clearing debris and improving traffic flow. In an emergency, these signs serve the same purpose as the "street address" on other roads, aiding motorists and emergency response vehicles in identifying their location or destination on the highway system.

- Reference Marker Priority 1 (Intermediate Enhanced Reference Location Sign (1/10 and 2/10 Mile Reference Marker) Additions to Full ATMS Areas, Including TTID / CCTV Camera Areas): $375,000
- Reference Marker (Intermediate Enhanced Reference Location Sign (1/10 and 2/10 Mile Reference Marker) Additions to New ATMS Deployments / ATMS Replacements): (Included in ATMS projects)
- *Intermediate Reference Location Signs ((½ Mile Reference Markers) on Rural Interstates): $525,000)*

Reference Markers Estimated Cost (ITS Standalone Projects)	**=**	**$**	**375,000**
Reference Markers Estimated Cost (ITS with Road Projects)	***=***	***$***	***525,000***
Total Reference Markers Estimated Cost	**=**	**$**	**900,000**

0.7.7. Recommendations Summary - by Deployment Type

	Standalone ITS	+	*ITS w/ Road Projects*	=	Total
ATMS	$21,100,000		*$33,650,000*		$54,750,000
CCTV Cameras/Detection	6,850,000		*0*		6,850,000
Dynamic Message Signs	17,325,000		*4,950,000*		22,275,000
Travel Time Signs	4,225,000		*225,000*		4,450,000
Reference Markers	375,000		*525,000*		900,000
TOTAL ESTIMATED COST:	**$49,875,000**	**+**	***$39,350,000***	**=**	**$89,225,000**

0.8. ITS DEPLOYMENT RECOMMENDATIONS - CHRONOLOGICAL (Chapter 8)

The data and analysis in the first six chapters of the INDOT Traffic Management Strategic Deployment Plan lay the foundation for the recommendations made by individual deployment type in Chapter 7. Chapter 8 presents a summary of the deployment information presented in Chapter 7 in chronological order by Fiscal Year. Note that a Fiscal Year covers the period from July 1 through June 30. For example, Fiscal Year 2010 covers the period from July 1, 2009 through June 30, 2010; Fiscal Year 2011 covers the period from July 1, 2010 through June 30, 2011, and so on.. The Executive Summary provides project-specific detail in this chronological listing to follow.

It should be noted that the recommendations in this Version 2.4 Final Report are significantly different that what was presented in the Version 2.3 Intermediate Report dated December 2007, primarily as a result of high fuel prices and the deterioration of national economic conditions over the past year. Revenues to INDOT by way of gasoline and diesel fuel taxes declined as a result of fuel prices exceeding $4 per gallon in 2008 and the associated reduction in vehicle miles traveled. Although fuel prices have declined markedly, the national recession has continued the trend of fewer vehicle miles being traveled, thus the reduction in motor fuel taxes continues. INDOT has proactively adjusted its construction budget over the next biennium (Fiscal Years 2010 and 2011) and some projects have been delayed. This fact, coupled with uncertainty of future traditional fuel tax revenues, especially on the federal level with the federal Highway Trust Fund and the 2009 reauthorization of the federal transportation program, has had a ripple effect on many projects in future years. As such, most the "rural" Traffic Management / ITS deployments that were recommended in the Version 2.3 Intermediate Report are not recommended at this time.

Please note that deployments associated with Major Capital Improvements (Road Projects) are shown in italics; ITS Standalone projects are not italicized.

0.8.1. Active Projects / Deployments Not Yet Completed

1. Phases 3 and 4 of the Indianapolis area ATMS are currently under construction and are nearly complete
2. Transportation Technology Innovation and Demonstration Program (TTID) in the Indianapolis area (no cost to INDOT). In 2007, Traffic.com constructed 57 above ground, side-fire radar vehicle detection sites on the following Interstates and US 31 in and near the Indianapolis area:

   I-65 from SR 44 at Franklin to Whiteland Road (Mile 90 to Mile 95): 4 sites
   I-65 from Cold Spring Road to I-465 (West Leg) (Mile 117 to 123): 5 sites *****
   I-69 from SR 238 to SR 9/109 at Anderson (Mile 10 to Mile 26): 13 sites
   I-70 from SR 39 to SR 267 at Plainfield (Mile 59 to Mile 66): 7 sites
   I-70 from Mt. Comfort Road to SR 9 at Greenfield (Mile 96 to Mile 104): 6 sites
   I-465 from I-65 (West Leg) to White River (North Leg) (Mile 20 to Mile 34): 12 sites *****
   US 31 from I-465 (North Leg) to SR 32 at Westfield: 10 sites

   ***** - *These sites will be supplemented or replaced by more closely spaced vehicle detection as part of the Phase 5 Indianapolis ATMS deployment in 2009 - 2010. The detection is being provided for now by Traffic.com to provide continuous vehicle detection on and inside I-465, albeit at a level of detection less than INDOT intentions during Phase 5 of the Indianapolis ATMS.*

   Furthermore, in 2010 near the conclusion of the Phase 5 Indianapolis ATMS deployment, Traffic.com will construct three additional above ground, side-fire radar vehicle detection sites on I-74 from SR 267 at Brownsburg to Raceway Road (Mile 66 to Mile 70).
3. Northwest Indiana ATMS Communications System Upgrade (Lake and Porter Counties)
4. *I-80/94 (Borman Expwy) from 0.2 mile east of Georgia Street (Mile 10.6) to 0.3 mile east of Clay Street (Mile 13.4): Replace ATMS*
5. *I-465 from SR 67 / Kentucky Ave (West Leg) (Exit 8) to north of 56th St (West Leg) (Exit 19): Replace ATMS; 1/10 Mile Reference Markers*
6. *EB I-80/94 (Borman Expwy), near Mile 12.7 (Central Ave) (Lake County): DMS*
7. *NB & SB I-465 (West Leg), near Mile 14.8 (south of 21st St), south of I-74 / US 136 (Marion County): Two DMSs*
8. WB I-80/94 (Borman Expwy), near Mile 8.1 (Chase St) (Lake County): TTS

No cost provided as these projects are already let or been completed

0.8.2. Fiscal Year 2009 Deployments

1. Statewide Dynamic Message Sign (DMS) Replacements / Additional Indianapolis DMSs:

Indianapolis Area DMS Replacements
NB I-65, Mile 104.7, south of I-465 (South Leg)
SB I-69, Mile 4.3, south of 116th St, relocate to 106th St (Mile 3.8)
EB & WB I-70, Mile 85.8 & 85.7, west of Emerson Ave

Northwest Indiana DMS Replacements
NB I-65, Mile 250.3, south of US 30
NB I-65, Mile 256.0, north of 61st Ave
SB I-65, Mile 260.7, north of I-80/94
SB I-65, Mile 256.8, north of 61st Ave
EB I-80/94 (Borman Expwy), Mile 1.3, east of US 41 (Calumet Ave)
EB I-80/94 (Borman Expwy), Mile 7.4, east of Burr St
WB I-80/94 (Borman Expwy), Mile 13.6 west of US 6 / SR 51 (Ripley St)
WB I-80/94 (Borman Expwy), Mile 7.0, east of Burr St
WB I-80/94 (Borman Expwy), Mile 3.9, east of Kennedy Ave
WB I-94, Mile 20.7, east of SR 249
WB US 30, Mile 13.0, east of I-65

Fort Wayne DMS Replacements
NB I-69, Mile 94.2, south of south jct with I-469
SB I-69, Mile 117.1, north of north jct with I-469

Southern Indiana near Louisville DMS Replacements
EB I-64, Mile 120.4, west of I-265
SB I-65, Mile 8.0, north of SR 60, replace existing TRIMARC DMS
SB I-65, Mile 3.2, north of Eastern Blvd, replace existing TRIMARC
EB Brown's Station Way (Old SR 62), west of I-65, replace existing TRIMARC DMS

Indianapolis Area New DMSs
SB I-465 (West Leg), near Mile 22.0 (south of 79th St), north of 71st St
NB I-465 (East Leg), near Mile 42.3, south of US 36 / SR 67 (Pendleton Pike)
SB I-465 (East Leg), near Mile 46.3 (north of English Ave), north of US 52
NB I-65, near Mile 108.6 (Southern Ave), south of Raymond St
EB & WB I-465 (North Leg), near Mile 28.7 (east of Township Line Rd), west of US 31
NB I-465 (West Leg), near Mile 22.3 (north of 79th St), south of 86th St
NB I-69, near Mile 3.7 (106th St), north of 96th St
SB I-65, near Mile 125.0, north of 71st St
EB I-74, near Mile 67.0 (CR 600N / 56th St), east of SR 267

Standalone ITS = $6,200,000
ITS with Road Projects = $ 0
Total Fiscal Year 2009 Deployments ESTIMATED COST = $6,200,000

0.8.3. Fiscal Year 2010 Deployments

1. The Fifth and final phase of the Indianapolis area ATMS
2. *I-65 from I-865 (Exit 129) to 0.5 mile north of SR 267 (Exit 133): Replace temporary ATMS devices with new full ATMS; 2/10 Mile Reference Markers.*
3. *EB & WB I-465 (North Leg) Mile 32.2, west of Keystone Ave: Replace two DMSs and relocate east of Keystone Avenue*
4. *SB I-65, Mile 131.9, north of SR 334: Replace DMS*
5. SB I-69, near Mile 6.0 (Cumberland Rd): TTS
6. NB I-69, near Mile 1.0 (just north of 82nd St): TTS
7. SB I-465 (East Leg), near Mile 38.5 (north of Fall Creek Rd): TTS
8. SB I-465 (East Leg), near Mile 45.0 (10th St): TTS
9. NB I-465 (East Leg), near Mile 47.4 (US 52 / Brookville Rd): TTS
10. WB I-465 (South Leg), near Mile 50.2 (CSX RR): TTS
11. EB I-465 (South Leg), near Mile 52.6 (west of 9th Ave): TTS
12. WB I-465 (South Leg), near Mile 0.7 (Keystone Ave): TTS
13. EB I-465 (South Leg), near Mile 3.2 (east of Bluff Rd): TTS
14. EB I-465 (South Leg), near Mile 7.4 (Mann Rd): TTS
15. NB I-65, near Mile 100.0 (south of County Line Rd): TTS
16. SB I-65, near Mile 105.4 (Thompson Rd): TTS
17. SB I-65, near Mile 109.9 (south of the I-70 South Split): TTS
18. SB I-65, near Mile 116.6 (Pedestrian Overpass): TTS
19. WB I-70, near Mile 88.2 (CSX RR): TTS
20. EB I-70, near Mile 83.6 (Commerce Ave): TTS
21. WB I-70, near Mile 78.9 (west of the White River bridge): TTS
22. EB I-70, near Mile 73.6 (west of Lynhurst Dr): TTS
23. I-65 from SR 44 (Mile 89) to Main St (Greenwood Rd) (Mile 99): 2/10 Mile Reference Markers

    I-65 from Main St (Greenwood Rd) (Mile 99) to south of Southport Rd (Mile 102): 1/10 Mile Reference Markers

    I-65 from south of Southport Rd (Mile 102) to 38th St / Kessler Blvd (Mile 118): 1/10 Mile Reference Markers to supplement existing 2/10 Mile Reference Markers

    I-69 from I-465 (Mile 0) to just north of SR 37 /116th St (Mile 6): 1/10 Mile Reference Markers

    I-69 from just north of SR 37 / 116th St (Mile 6) to SR 9/109 (Mile 27): 2/10 Mile Reference Markers

    I-70 from SR 39 (Mile 59) to west of SR 267 (Mile 65): 2/10 Mile Reference Markers

    I-70 from I-465 (West Leg) (Mile 73) to I-65 (South Split) (Mile 81): 1/10 Mile Reference Markers (supplementing existing 2/10 Mile Reference Markers from Mile 73 to 78)

    I-70 from I-465 (East Leg) (Mile 90) to Post Rd (Mile 91): 1/10 Mile Reference Markers to supplement existing 2/10 Mile Reference Markers

    I-70 from east of Post Rd (Mile 93) to SR 9 (Mile 104): 2/10 Mile Reference Markers

I-74 from SR 267 (Mile 65) to I-465 (West Leg) (Mile 73): 2/10 Mile Reference Markers
I-465 from I-65 (South Leg) (Mile 0) to SR 67 / Kentucky Ave (West Leg) (Exit 8: 1/10 Mile Reference Markers
I-465 from 56th St (West Leg) (Mile 19) to US 31 (North Leg) (Mile 31): 1/10 Mile Reference Markers
I-465 from north of 56th St (East Leg) (Mile 39) to I-65 (South Leg) (Mile 53): 1/10 Mile Reference Markers

Standalone ITS = $8,075,000
ITS with Road Projects = $2,900,000
Total Fiscal Year 2010 Deployments ESTIMATED COST = $10,975,000

0.8.4. Fiscal Year 2011 Deployments

1. I-65 from the Ohio River (Mile 0) to SR 311 (Exit 9): Full ATMS; 1/10 Mile Reference Markers from the Kentucky State Line (Mile 0) to I-265 (Mile 6)
2. I-265 from I-64 (Exit 0) to I-65 (Exit 7): Full ATMS
3. I-64 from SR 62/64 (Exit 118) to the Ohio River (Mile 124): Full ATMS
4. SR 265 (future I-265) from I-65 (Exit 7) to SR 62 (Exit 9): Full ATMS
5. *I-65 from 0.5 mile north of SR 267 (Exit 133) to 0.5 mile south of CR 100E (Lebanon Interchange) (Exit 138): Full ATMS; 2/10 Mile Reference Markers*
6. *I-465 from 0.35 mile east of US 31 / Meridian St (Exit 31) (North Leg) to 0.5 mile west of Allisonville Rd (Exit 35) (North Leg): Replace full ATMS with new full ATMS; 1/10 Mile Reference Markers*
7. *I-465 from 0.5 mile west of Allisonville Rd (North Leg) (Exit 35) to 0.5 mile west of I-69 (North Leg) (Exit 37): Replace full ATMS with new full ATMS; 1/10 Mile Reference Markers*
8. *I-465 from 75th St (North Leg) (Mile 37) to the south end of bridge over Fall Creek) (East Leg) (Mile 39): Replace full ATMS with new full ATMS; 1/10 Mile Reference Markers*
9. *US 31 Added Travel Lanes (Freeway Upgrade) from 203rd St (Mile 135) to 216th St (Mile 136): Full ATMS; 1/10 Mile Reference Markers*
10. I-69 from SR 238 (Exit 10) to SR 9/109 (Exit 26): Cameras
11. I-65 from SR 44 (Exit 90) to Whiteland Rd (CR 500N) (Exit 95): Cameras
12. I-70 from Mt. Comfort Rd (Exit 96) to SR 9 (Exit 104): Cameras
13. I-70 from SR 39 (Exit 59) to SR 267 (Exit 66): Cameras
14. I-74 from SR 267 (Exit 66) to Raceway Rd (Mile 70): Cameras
15. *SB I-465 (East Leg), Mile 38.2, south of I-69: Replace DMS*

Standalone ITS = $9,425,000
ITS with Road Projects = $5,350,000
Total Fiscal Year 2011 Deployments ESTIMATED COST = $14,775,000

0.8.5. Fiscal Year 2012 Deployments

1. *I-465 from 0.5 mile west of I-69 (North Leg) (Exit 37) to 75th St (North Leg) (Mile 37), including Interchange Modification at I-69: Replace full ATMS with new full ATMS; 1/10 Mile Reference Markers*
2. *I-65 from 0.5 mile south of CR 100E (Lebanon Interchange) (Exit 138) to US 52 (Exit 141): Full ATMS; 2/10 Mile Reference Markers*
3. *I-265 from SR 62 (Exit 9) to the New Ohio River Bridge: Full ATMS; 2/10 Mile Reference Markers*
4. *US 31 Added Travel Lanes (Freeway Upgrade) from 0.2 mile south of I-465 (North Leg) (Mile 123) to 111th St (Mile 125): Replace TTID devices with full ATMS; 1/10 Mile Reference Markers*
5. I-69 approaching SR 9/109 at Anderson (Exit 26): Cameras and vehicle detection
6. I-65 approaching SR 44 at Franklin (Exit 90): Cameras and vehicle detection
7. I-65 approaching US 52 & SR 47 at Lebanon (Exits 141 & 146): Cameras and vehicle detection
8. I-70 approaching SR 9 at Greenfield (Exit 104): Cameras and vehicle detection
9. I-70 approaching SR 39 at Monrovia (Exit 59): Cameras and vehicle detection
10. NB I-65, near Mile 3.3, south of US 31 / Lewis & Clark Pkwy: DMS
11. WB I-265, near Mile 1.9, (Green Valley Rd), east of State St: DMS
12. EB I-265, near Mile 5.1, (Jacobs Creek), west of I-65: DMS
13. WB SR 265 (future I-265), near Mile 7.5, (east of Lick Run Creek), east of I-65: DMS
14. WB I-64, near Mile 122.6, (Cherry St), south of I-265: DMS
15. *EB US 36, west of I-465 (West Leg) between Girls School Rd and High School Rd: DMS*
16. EB I-80/94 (Borman Expwy), near Mile 0.4 (west of US 41 / Calumet Ave): TTS
17. EB I-80/94 (Borman Expwy), near Mile 5.9 (Colfax Ave): TTS
18. WB I-80/94 (Borman Expwy), near Mile 13.1 (Clay St): TTS
19. WB I-94, near Mile 17.0 (east of US 20 / CSX RR): TTS
20. NB I-65, near Mile 257.3 (north of 49th Ave): TTS
21. NB I-65, near Mile 107.2 (Keystone Ave): TTS
22. NB I-465 (West Leg), near Mile 16.6 (34th St): TTS
23. NB I-465 (West Leg), near Mile 20.2 (north of Lafayette Rd): TTS
24. EB I-465 (North Leg), near Mile 25.5 (west of 96th St): TTS
25. WB I-465 (North Leg), near Mile 30.0 (west of Spring Mill Rd): TTS
26. NB I-65, near Mile 114.6 (north of Fall Creek Pkwy): TTS
27. SB I-65, near Mile 122.4 (north of 56th St): TTS

Standalone ITS	**= $5,300,000**
ITS with Road Projects	***= $5,375,000***
Total Fiscal Year 2012 Deployments ESTIMATED COST =	**$10,675,000**

0.8.6. Fiscal Year 2013 Deployments

1. *I-70 from 0.6 mile east of Post Rd (Exit 91) to 0.5 mile east of Mt. Comfort Rd (Exit 96): Replace full ATMS with new full ATMS*
2. *I-69 from 0.5 mile south of I-465 (Exit 0) (75th St) to 0.5 mile south of 96th St (Exit 3): Replace full ATMS with new full ATMS*
3. *US 31 Added Travel Lanes (Freeway Upgrade) from Blackburn Ave (Mile 133) to 203rd St (Mile 135): Full ATMS; 1/10 Mile Reference Markers*
4. SB I-69, near Mile 16.9 (CR 650W), north of SR 13: DMS
5. SB I-69, near Mile 28.3 (CR 300E), north of SR 9/109: DMS
6. NB I-69, near Mile 12.4 (Cyntheanne Rd), south of SR 13: DMS
7. NB I-65, near Mile 86.4 (CR 250S), south of SR 44: DMS
8. SB I-65, near Mile 104.4 (Edgewood Ave), south of I-465 (South Leg): DMS
9. NB I-65, near Mile 131.9, south of SR 267: DMS
10. SB I-65, near Mile 148.8 (north of CR 850N), north of SR 47: DMS
11. EB I-70, near Mile 92.1, east of Post Rd: DMS
12. WB I-70, near Mile 106.1 (east of CR 400E), east of SR 9: DMS
13. EB I-70, near Mile 55.2 (east of former CR 675W), west of SR 39: DMS
14. WB I-70, near Mile 67.3, east of SR 267: DMS
15. SB SR 37, north of I-69 between 131st St and 141st St: DMS
16. EB I-70 C/D, near Mile 70.6 (east of Indianapolis International Airport interchange), west of I-465 (West Leg): DMS
17. *WB I-70, Mile 92.1, east of Post Rd: Replace DMS*

Standalone ITS	**= $5,375,000**
ITS with Road Projects	***= $4,125,000***
Total Fiscal Year 2013 Deployments ESTIMATED COST =	**$9,500,000**

0.8.7. Fiscal Year 2014 Deployments

1. I-94 from I-90 (Indiana Toll Road) (Exit 16) to SR 49 (Exit 26): Full ATMS; 2/10 Mile Reference Markers
2. I-65 from US 231 (Exit 247) to US 30 (Exit 253): Full ATMS; 1/10 Mile Reference Markers (from US 30 to I-80/94)
3. I-65 from I-80/94 (Borman Expwy) (Mile 260) to I-90 (Indiana Toll Road (Exit 262): Full ATMS
4. SR 912 (Cline Ave) from I-90 (W jct) (Exit 0) to I-80/94 (Borman Expwy) (Exit 10): Full ATMS; 2/10 Mile Reference Markers
5. *I-70 from 0.5 mile east of Mt. Comfort Rd (Exit 96) to 0.8 mile east of SR 9 (Exit 104): Replace TTID devices with new full ATMS*
6. *I-64 from I-265 (Exit 121) to SR 111 / Spring St (Exit 123): Replace full ATMS with new full ATMS*
7. *US 31 Added Travel Lanes (Freeway Upgrade) from 111th St (Mile 125) to 0.75 mile north of 131st St (Mile 127): Replace TTID devices with new full ATMS; 1/10 Mile Reference Markers*
8. *I-65 Ohio River Bridge (Mile 0) and Indiana approach: Replace full ATMS deployment with new full ATMS*
9. *NB US 31, south of I-465 (South Leg) between Banta Rd and Edgewood Ave: DMS*
10. *SB US 31(Freeway), north of I-465 (North Leg), between 106th St and 116th St: DMS*

Standalone ITS	**= $8,700,000**
ITS with Road Projects	***= $6,050,000***
Total Fiscal Year 2014 Deployments ESTIMATED COST =	**$14,750,000**

0.8.8. Fiscal Year 2015 Deployments

1. *I-65 from 0.5 mile south of Southport Rd (Exit 103) to 0.25 mile south of I-465 (South Leg) (Exit 106): Replace full ATMS with new full ATMS*
2. *US 31 Added Travel Lanes (Freeway Upgrade) from 0.75 mile north of 131st St (Mile 127) to 156th St (Mile 130): Replace TTID devices with new full ATMS; 1/10 Mile Reference Markers*
3. I-65 from south of SR 2 (Exit 240) to US 231 (Exit 247): Cameras and vehicle detection
4. I-94 from SR 49 (Exit 26) to Michigan State Line: Cameras and vehicle detection
5. NB I-65, near Mile 236.0 (½ mile north of 217th Ave), south of SR 2: DMS
6. SB I-65, near Mile 250.3 (101st Ave), north of US 231 (Exit 247) and future 109th Ave (future Exit 249): DMS
7. EB I-94, near Mile 20.9 (east of former Salt Creek Rd), west of US 20: DMS
8. WB I-94, near Mile 28.1 (Brummitt Rd (CR 300E)), east of SR 49: DMS
9. WB I-94, near Mile 44.4 (½ mile west of CR 1000N), east of US 20/35: DMS
10. EB I-94, near Mile 31.8 (east of the former crossing of Porter CR 600E), west of US 421: DMS
11. SB SR 912 (Cline Ave), near Mile 5.9 (US 12 (Columbus Dr / Industrial Hwy), north of I-80/94 (Borman Expwy) and I-90 (Indiana Toll Road): DMS
12. NB SR 912 (Cline Ave), near Mile 11.3, (north of Highway Ave / 35th Ave), south of I-80/94 (Borman Expwy): DMS
13. EB US 30, near Mile 9.3 (0.7 mile east of SR 55), west of I-65: DMS
14. WB I-465 (South Leg), near Mile 6.2 (White River): TTS
15. NB I-465 (West Leg), near Mile 11.4 (south of US 40 / Washington St): TTS
16. SB I-465 (West Leg), near Mile 12.3 (north of US 40 / Washington St): TTS
17. SB I-465 (West Leg), near Mile 18.2 (46th St): TTS
18. SB I-465 (West Leg), near Mile 23.2 (86th St): TTS
19. WB I-465 (North Leg), near Mile 35.4 (Allisonville Rd): TTS
20. NB I-465 (East Leg), near Mile 40.8 (46th St): TTS
21. EB I-465 (North Leg), near Mile 32.4 (Westfield Blvd): TTS

Standalone ITS	**= $6,800,000**
ITS with Road Projects	***= $2,475,000***
Total Fiscal Year 2015 Deployments ESTIMATED COST =	**$9,275,000**

0.8.9. Fiscal Year 2016 Deployments

1. *I-65 from 0.5 mile south of County Line Rd (Exit 101) to 0.5 mile south of Southport Rd (Exit 103): Replace full ATMS with new full ATMS*
2. *I-65 from 0.5 mile south of Greenwood Rd (Main St) (Exit 99) to 0.5 mile south of County Line Rd (Exit 101): Replace full ATMS with new full ATMS*
3. *US 31 Added Travel Lanes (Freeway Upgrade) from 156th St (Mile 130) to 0.2 mile north of 169th St (Mile 132): Replace TTID devices with new full ATMS; 1/10 Mile Reference Markers*
4. *SB US 31(Freeway), north of I-465 (North Leg), between 161st St and SR 32: DMS*

Standalone ITS	**= $ 0**	
ITS with Road Projects	***= $2,900,000***	
Total Fiscal Year 2016 Deployments ESTIMATED COST =		**$2,900,000**

0.8.10. Fiscal Year 2017 Deployments

1. *I-70 from I-65 (North Split) (Exit 83) to I-465 (East Leg) (Exit 90): Add to and replace devices as needed in the full ATMS*
2. *US 31 Added Travel Lanes (Freeway Upgrade) from 0.2 mile north of 169th St (Mile 132) to Blackburn Ave (Mile 133): Replace TTID devices with new full ATMS; 1/10 Mile Reference Markers*

Standalone ITS	**= $ 0**	
ITS with Road Projects	***= $1,175,000***	
Total Fiscal Year 2017 Deployments ESTIMATED COST =		**$1,175,000**

0.8.11. Fiscal Year 2018 Deployments

Road Project Budget

1. *I-465 from 0.5 mile east of US 421 / Michigan Rd (North Leg) (Mile 27) to 0.65 mile west of US 31 / Meridian St (North Leg) (Exit 31): Replace full ATMS with new full ATMS*
2. *SB US 31 (Freeway), near Mile 135.0 (south of SR 38): TTS*

Standalone ITS	**= $ 0**	
ITS with Road Projects	***= $1,350,000***	
Total Fiscal Year 2018 Deployments ESTIMATED COST =		**$1,350,000**

0.8.12. Fiscal Year 2019 Deployments

1. *I-465 from 0.65 mile north of 86th St (West Leg) (Exit 23) to 0.5 mile east of US 421 / Michigan Rd (North Leg) (Exit 27): Replace full ATMS with new full ATMS*
2. *I-69 from 9.0 miles south of I-465 (South Leg) (north of SR 144) (Mile 136 (SR 37)) to I-465 (South Leg) (Mile 145 (SR 37)): Full ATMS; 1/10 or 2/10 Mile (as appropriate) Reference Markers*

Standalone ITS	**= $ 0**
ITS with Road Projects	***= $5,775,000***

Total Fiscal Year 2019 Deployments ESTIMATED COST = $5,775,000

0.8.13. Fiscal Year 2020 Deployments

1. *NB I-69, south of I-465 (South Leg), between County Line Rd and Southport Rd: DMS*
2. *SB I-69, south of I-465 (South Leg), between I-465 and Southport Rd: DMS*
3. *NB I-69 approaching SR 144 at Waverly: DMS*
4. *NB I-69, south of Smith Valley Rd: TTS*

Standalone ITS	**= $ 0**
ITS with Road Projects	***= $1,350,000***

Total Fiscal Year 2020 Deployments ESTIMATED COST = $1,350,000

0.8.14. Non Year-Specific Deployments (Intermediate Reference Location Signs (½ Mile Reference Markers) on Rural Interstates)

The deployment of Intermediate Reference Location Signs at ½ mile intervals (with a ".0" at the whole number mile locations and ".5" placed at ½ mile locations, per the MUTCD) on all Interstates outside of urban areas with Intermediate Enhanced Reference Location Signs should occur as part of sign replacement projects or during reconstruction projects and thus is not prioritized by year. The estimated cost for deployment of Intermediate Reference Location Signs at ½ mile intervals includes the cost of replacing the existing one mile signs.

Standalone ITS	**= $ 0**
ITS with Road Projects	***= $ 525,000***

Total Non Year-Specific Deployments ESTIMATED COST = $525,000

0.8.15. Deployments Without Designated Costs

0.8.15.1. Proposed Expansions of the Hoosier Helper FSP

The Hoosier Helper Freeway Service Patrol is a function of the Traffic Management Centers Division and as such is more operations-oriented versus the capital improvement / fixed device-orientation of the majority of this document. Routes and hours of the day in service are based upon need, and more significantly, availability of personnel and funding to fill the need, a variable that is difficult to predict. Therefore, no specific implementation years are identified nor are cost estimates developed. Nevertheless, guidance is provided to assure a reasonably uniform Hoosier Helper FSP deployment on a statewide basis.

No cost provided as this is an operations-oriented expense, not a capital improvement fixed device-oriented expense, the focus of this document

0.8.16. Recommendations Summary – Chronological

	Standalone ITS	+	*ITS w/ Road Projects*	=	Total
Fiscal Year 2009 Deployments	$6,200,000	+	*$ 0*	=	$ 6,200,000
Fiscal Year 2010 Deployments	8,075,000	+	*2,900,000*	=	10,975,000
Fiscal Year 2011 Deployments	9,425,000	+	*5,350,000*	=	14,775,000
Fiscal Year 2012 Deployments	5,300,000	+	*5,375,000*	=	10,675,000
Fiscal Year 2013 Deployments	5,375,000	+	*4,125,000*	=	9,500,000
Fiscal Year 2014 Deployments	8,700,000	+	*6,050,000*	=	14,750,000
Fiscal Year 2015 Deployments	6,800,000	+	*2,475,000*	=	9,275,000
Fiscal Year 2016 Deployments	0	+	*2,900,000*	=	2,900,000
Fiscal Year 2017 Deployments	0	+	*1,175,000*	=	1,175,000
Fiscal Year 2018 Deployments	0	+	*1,350,000*	=	1,350,000
Fiscal Year 2019 Deployments	0	+	*5,775,000*	=	5,775,000
Fiscal Year 2020 Deployments	0	+	*1,350,000*	=	1,350,000
Non Year-Specific Deployments	0	+	*525,000*	=	525,000
TOTAL ESTIMATED COST:	**$49,875,000**	**+**	***$39,350,000***	**=**	**$89,225,000**

CHAPTER 1 – INTRODUCTION

1.1. THE INDOT TRAFFIC MANAGEMENT STRATEGIC DEPLOYMENT PLAN

The Indiana Department of Transportation (INDOT) Traffic Management Strategic Deployment Plan documents the intentions of INDOT to deploy Intelligent Transportation Systems (ITS) technologies and devices throughout the Hoosier State. Currently, INDOT has several ITS initiatives at various stages of planning and deployment. The need exists to develop a coordinated strategic plan to integrate ITS devices into the INDOT highway system to avoid duplication of efforts and to use existing and future infrastructure wisely. This plan assesses the needs of INDOT for ITS and develops strategies through Fiscal Year 2020 for addressing those needs. Furthermore, the INDOT Traffic Management Strategic Deployment Plan defines the direction INDOT will want to take, identifies ITS projects, and develops a strategy for integrating and mainstreaming ITS into the INDOT organization. Ultimately, this plan will establish the blueprint for a successful statewide ITS system, the technological component of the Traffic Management Business Unit.

The Traffic Management Business Unit is comprised of four Divisions: ITS Technology Deployment, Traffic Management Centers, Traffic Control Systems, and Public Safety Operations. The ITS Technology Deployment Division is responsible for the design, construction, maintenance, and successful operation of ITS field devices. The Traffic Management Centers Division is responsible for all activities associated with INDOT's two Traffic Management Centers in Gary and Indianapolis, utilizing the devices deployed by the ITS Technology Deployment Division and operating the Hoosier Helper Freeway Service Patrol. The Traffic Control Systems Division is responsible for coordinating with INDOT's Districts to maximize the efficiency of traffic signal systems on INDOT arterials, i.e., non-freeway facilities. The Public Safety Operations Division is responsible for incident management as it relates to public safety agencies outside of INDOT, most notably law enforcement, fire departments, emergency medical services, and the Indiana Department of Homeland Security, as well as partnering with law enforcement to ensure that commercial vehicle weight laws are enforced, thus protecting INDOT's investment in infrastructure.

The INDOT Traffic Management Strategic Deployment Plan meets the intent of Senate Enrolled Act (SEA) 315, enacted by the 115th Indiana General Assembly in 2007. This report satisfies the requirement for a Final Report before January 1, 2009; a December 2007 Intermediate Report (Version 2.3) preceded this report. The text of SEA 315 may be found on the next page and reads as follows:

SENATE ENROLLED ACT No. 315

AN ACT concerning utilities and transportation.

Be it enacted by the General Assembly of the State of Indiana:

SECTION 1. [EFFECTIVE JULY 1, 2007] **(a) As used in this SECTION, "department" refers to the Indiana department of transportation established by IC 8-23-2-1.**

(b) As used in this SECTION, "intelligent transportation system" means a combination of information, control, and electronic technologies used to enhance the safety, maintenance, fuel efficiency, traffic flow, and ease of use of highways. The term includes the following:
(1) Advanced traveler information systems.
(2) Advance traffic management systems.
(3) Incident management systems.

(c) The department shall study the feasibility of integrating intelligent transportation systems into Indiana's interstate and state highway systems, including reserving rights-of-way for the following:
(1) Power, communications, and fiber cables.
(2) Dedicated highway lanes for commercial and passenger vehicles.
(3) Parallel rail lines.

(d) The department shall obtain input from the following:
(1) The Purdue University College of Engineering.
(2) The Indiana University School of Informatics.
(3) The National Cooperative Highway Research Program.
(4) The United States Department of Transportation.
(5) The National Science Foundation.
(6) The Intelligent Transportation Society of America.
(7) The National Academy of Sciences' Transportation Research Board.
(8) Any other state agency that has a transportation related function.

(e) The department shall report the results of the study required by subsection (c) to the public and, in an electronic format under IC 5-14-6, to the general assembly:
(1) in an intermediate report due before January 1, 2008; and
(2) in a final report due before January 1, 2009.

(f) Upon approval by the governor, the budget agency may authorize the payment of expenses incurred by the department in conducting the study required by subsection (c) from the state general fund.

(g) This SECTION expires January 1, 2009.

1.2. WHAT IS ITS?

Throughout history, technological advancements have served to improve surface transportation. Steamboats, railroads, electrified streetcars and railways, and the automobile all represented quantum leaps in technology and personal mobility and freedom. Roads have also seen similar improvements in the past 100 years: an unconnected network of unpaved rural paths evolving into the Dwight D. Eisenhower National System of Interstate and Defense Highways, traffic signals, retroreflective signage, impact attenuators, etc., coupled with continual improvements in vehicle safety and convenience. ITS is the next step in the evolution of the nation's transportation system. Advances in information technology, electronics, and communications continue to revolutionize all aspects of our modern-day world…our homes, offices, schools, and our transportation network and the vehicles of conveyance that use them.

Put simply, Intelligent Transportation Systems (ITS) is the application of advanced communications technologies to improve transportation safety and mobility and enhancing productivity, saving lives, time, and money. The technology is used by operators of the transportation system to better manage the utilization of the existing infrastructure and by users (motorists and transit riders) to assist them in making better travel decisions. INDOT's ITS initiative is known as TrafficWise.

In a sense, ITS can be traced back to the first traffic signal in the 1920s. The precursor to the modern era began in the 1960s with the deployment of cameras along the John C. Lodge Freeway in Detroit that fed images into a control center to manage traffic. Today, the Interstate Highway System is complete across the country (except for 1.5 miles for a new interchange at Interstate 95 and the Pennsylvania Turnpike which will reroute I-95), but the need to repair and improve the existing highway network exceeds existing funds available. To use simple economics, demand exceeds supply at many locations on our Nation's urban highway network and, to a lesser extent, portions of the rural highway system. Congress recognized that over a decade ago, creating a national Intelligent Vehicle / Highway Systems (IVHS) program, now known as ITS, in 1991, as part of the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991. Since then, many states and metropolitan areas have recognized that ITS can be a cost-effective way to reduce congestion and improve safety. While INDOT still intends to construct new highways and add capacity to many roadways, ITS offers the means to reduce congestion and increase the safety of an existing roadway, enhancing Indiana's role as a logistics and transportation hub for not only the Midwest, but the United States as whole.

1.3. INDOT VISION, MISSION, VALUES, GOALS, & PERFORMANCE MEASURES

In January 2005, INDOT adopted a new Vision to reflect our agency's vital function in State Government's role in economic development and job creation in the Hoosier State: **Driving Indiana's Economic Growth.** Likewise, INDOT has a new Mission (what needs to be done in order to realize the Vision), new Values (principles or standards by which we operate by), new Goals (specific quality targets to achieve and establish the level of desired outcome), and new Strategic Initiatives (skillfully planned steps designed and created to support the overall effort of achieving the Vision and Mission), all quantified by Performance Measures that support the Mission. ITS deployments and the INDOT Traffic Management Strategic Deployment Plan will support this Vision, the Mission, the Values, the Goals, and the Strategic Initiatives.

The Vision: Driving Indiana's Economic Growth.

The Mission: INDOT will plan, build, operate, and maintain a superior transportation system enhancing safety, mobility, and economic growth.

The Values: Customer Focus, People, Continuous Improvement, Integrity, Agility, and Safety.

- CUSTOMER FOCUS: We will understand and meet the needs of our customers in our policy, program development, and decision-making processes.
- PEOPLE: We commit to developing and supporting a flexible, technically skilled work force with individual teams that work toward our shared mission and goals.
- CONTINUOUS IMPROVEMENT: We will continually improve our business processes through better products, practices, procedures, and information-based decision making.
- INTEGRITY: We will maintain the highest ethical standards in our dealings with each other, our customers, business partners, and the environment.
- AGILITY: We will have the knowledge and ability to rapidly adapt to the opportunities and challenges offered by changing technology and business practices.
- SAFETY: We will create, maintain, and promote a safe work environment for our employees and continually strive to reduce incidents and severity of traffic related accidents and injuries.

The Goals: Safety, Mobility, Economic Development, Customer Service, Resource Management, and Training.

- SAFETY: INDOT will continually reduce incidents and the severity of traffic and employee related accidents and injuries.
- MOBILITY: INDOT will build, operate, and maintain a transportation system that will reduce traffic congestion and improve travel reliability.
- ECONOMIC DEVELOPMENT: INDOT will support transportation improvement opportunities which foster economic development, raise the income of all Hoosiers, and improve the quality of life.
- CUSTOMER SERVICE: INDOT will promote an environment that is responsive to customers' needs and produce measurable customer service improvements.
- RESOURCE MANAGEMENT: INDOT will effectively develop and manage resources to accomplish its Mission while maintaining the highest possible levels of quality and productivity.
- TRAINING: INDOT will create an environment where employee training is a continuous and mission-critical process.

Performance Measures: INDOT will establish performance measures which will be the basis for evaluating how well the agency is doing in meeting its Mission, Goals, and Strategic Initiatives. These performance measures will gauge our progress, hold us accountable, and provide a good basis for making business decisions. Approximately 100 performance measures will be identified and established for INDOT, including performance measures for the Traffic Management Business Unit.

As such, INDOT has secured the professional services of Cambridge Systematics to assist the four Traffic Management Business Unit Divisions in implementing an automated reporting system to measure the effectiveness and efficiency of ITS / Freeway Management Systems and Traffic Signal Systems. Performance measures will be calculated based on outputs from INDOT's data collection architecture and expressed in terms of tangible benefits and operational efficiencies such as reduced travel time, money saved, delay saved, travel time reliability, air quality improvements, etc. The intent is to generate a meaningful series of reports that are readable by the public as well as INDOT management. Ultimately this effort will lead towards the implementation of an automated system for producing reports to evaluate the ongoing efficiency and effectiveness of the Traffic Management Business Unit operations and investments.

Specific tasks include conducting a project kick-off (define and interview stakeholders and overall project plan finalization), provide a national overview of state DOT performance measures, develop performance measures and determine data availability (define how measures will be used, define functions (businesses processes), define current and future data availability, and define desired measures), develop data archive concept and architecture (develop concept of operations, implementation plan, architecture for operations data archive, and prototype reporting systems), develop benefits calculation process, and conduct a customer satisfaction survey.

1.4. UNITED STATES DEPARTMENT OF TRANSPORTATION (USDOT) STRATEGIC PLAN

In September 2006, the United States Department of Transportation (USDOT) completed a Strategic Plan for Fiscal Years 2006-2011 (*"New Ideas for a Nation on the Move"*), comprised of a Mission and Strategic Goals for all modes of the Nation's transportation system. As INDOT is a partner with the USDOT, especially the Federal Highway Administration (FHWA), the INDOT Traffic Management Strategic Deployment Plan will support these elements of the USDOT Strategic Plan.

The Mission: The national objectives of general welfare, economic growth and stability, and the security of the United States require the development of transportation policies and programs that contribute to providing fast, safe, efficient, and convenient transportation at the lowest cost consistent with those and other national objectives, including the efficient use and conservation of the resources of the United States.

The Strategic Goals: Safety, Reduced Congestion, Global Connectivity, Environmental Stewardship, and Security, Preparedness and Response.

- SAFETY (top priority): Enhance public health and safety by working toward the elimination of transportation-related deaths and injuries.
- REDUCED CONGESTION: Reduce congestion and other impediments to using the Nation's transportation system. One of the outcomes of this Strategic Goal is the increased use of integrated Intelligent Transportation System (ITS) networks and new incident management approaches.
- GLOBAL CONNECTIVITY: Facilitate an international transportation system that promotes economic growth and development.
- ENVIRONMENTAL STEWARDSHIP: Promote transportation solutions that enhance communities and protect the natural and built environment.
- SECURITY, PREPAREDNESS AND RESPONSE: Balance transportation security requirements with the safety, mobility, and economic needs of the Nation and be prepared to respond to emergencies that affect the viability of the transportation sector.

1.5. FEDERAL HIGHWAY ADMINISTRATION (FHWA) STRATEGIC PLAN

In 1998, the Federal Highway Administration (FHWA) completed a 10 year Strategic Plan, comprised of a Vision, Mission, Values, Guiding Principles, Strategic Goals and Objectives, and Corporate Management Strategies. While the USDOT Strategic Plan lays out the broad goals for all modes of the Nation's transportation system, the FHWA Strategic Plan sets the goals and strategies for FHWA's role within the larger USDOT. Furthermore, FHWA outlines the agency's near-term strategy to achieve the goals and performance objectives in the FHWA and USDOT Strategic Plans with an annual *Strategic Implementation Plan*. Information from the August 2007 FHWA Fiscal Year 2008 *Strategic Implementation Plan* is provided below. As INDOT is a partner with the FHWA, the INDOT Traffic Management Strategic Deployment Plan will support the elements of the FHWA Strategic Plan and the annual *Strategic Implementation Plans*.

The Vision: Our Agency and Our Transportation System are the Best in the World.

The Mission: Improve Mobility on our Nation's Highways through National Leadership, Innovation, and Program Delivery.

The Strategic Goals: Safety, Reduced Congestion, System Enhancement and Preservation, Global Connectivity, Environment, Security and Emergency Management, Program Delivery and Stewardship, and Organizational Excellence.

- SAFETY (top priority): Enhance public health and safety by working toward the elimination of transportation-related deaths and injuries.
- REDUCED CONGESTION: Reduce congestion and other impediments to using the Nation's transportation system.
- SYSTEM ENHANCEMENT AND PRESERVATION: Preserve, improve, and expand the Nation's highway transportation system.
- GLOBAL CONNECTIVITY: Facilitate an international transportation system that promotes economic growth and development.
- ENVIRONMENT: Promote transportation solutions that enhance communities and protect the natural and built environment.
- SECURITY AND EMERGENCY MANAGEMENT: Balance transportation security requirements with the safety, mobility and economic needs of the Nation and be prepared to respond to emergencies that affect the viability of the transportation sector.
- PROGRAM DELIVERY AND STEWARDSHIP: Continuously improve the delivery of Federal Highway Programs by adding value to our Nation's transportation system and insuring integrity in the public investment.
- ORGANIZATIONAL EXCELLENCE: Advance the FHWA's ability to manage for results and innovation.

1.6. KEY COMPONENTS OF ITS

In a general sense, ITS can be separated into two distinct but certainly related program areas: intelligent infrastructure and intelligent vehicles. Intelligent infrastructure is generally the responsibility of public agencies that own, operate, and maintain transportation assets (roads, bridges, rail public transit Rights-of Way and rolling stock) and is oriented to serving the transportation infrastructure needs of motorists, commercial vehicles, and transit passengers. Intelligent vehicles are generally under the auspices of private industry (most notably, vehicle manufacturers) and complement the ITS infrastructure by focusing on safety and information systems for cars, trucks, buses, and trains. The focus of this document will be on the former, not the latter.

Some of the key elements of ITS in urban areas include freeway management, incident management, emergency response, traveler information, traffic signal control / arterial management, electronic toll collection, transit management, and electronic fare payment. Many of the ITS solutions in rural areas are similar to urban applications but on a smaller, more isolated scale, especially in states with reasonably high rural traffic volumes due to geographical location and population density. As *The Crossroads of America*, Indiana fits in this category. Other, more remotely populated states with lighter traffic volumes generally focus on safety and, in northern climates, weather-related rural ITS applications.

The commercial vehicle aspect of ITS is somewhat of a hybrid between intelligent infrastructure and intelligent vehicles, with the goal of making the commercial vehicle safety and regulatory system more efficient and effective, for both the truck operators and state regulatory and enforcement agencies. Some examples of commercial vehicle ITS applications include electronic clearance at weigh stations, “virtual scales” and portable scales at remote locations away from permanent weigh stations, automated administrative processes, and on-board safety monitoring systems.

The FHWA’s Vehicle Infrastructure Integration (VII) initiative seeks to accelerate the development and availability of advanced safety and information systems applied to vehicles, with the goal of integrating driver assistance and motorist information functions to improve safety and efficiency. It covers applications for passenger vehicles, commercial vehicles, and buses, as well as emergency response and law enforcement vehicles, highway maintenance vehicles, and snowplows. Research continues on crash avoidance, in-vehicle safety, and even automated highway systems, all with active participation of the motor vehicle industry and associated component suppliers. The VII initiative will work toward deployment of advanced vehicle to vehicle and vehicle to infrastructure communications that could keep vehicles from leaving the road and enhance their safe movement through intersections, ultimately resulting in a nationwide deployment of communications devices on roadways and all production vehicles to help prevent crashes and relieve congestion.

1.7. GOALS OF ITS

The United States Department of Transportation (USDOT) has stated that the six goals of the National ITS Program are as follows:

- Increase Transportation System Efficiency and Capacity
- Enhance Mobility
- Improve Safety
- Reduce Energy Consumption and Environmental Costs
- Increase Economic Productivity
- Create an Environment for an ITS Market

As INDOT is a partner with the USDOT, especially the FHWA, the INDOT Traffic Management Strategic Deployment Plan will support these goals established by the USDOT.

Increase Transportation System Efficiency and Capacity

Many ITS components help optimize the efficiency of existing facilities so that mobility needs can be better met while reducing the need to construct or expand facilities, especially beyond existing Right-of-Way. The *Highway Capacity Manual* defines the capacity of a roadway as the maximum hourly rate at which vehicles can reasonably be expected to traverse a point or a uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions. Capacity is generally measured under ideal conditions for the facility, including no incidents affecting the system. An incident can range from a crash, disabled vehicle, and debris in the roadway to the less obvious, such as unscheduled (emergency) maintenance, and inclement weather. Effective incident management expedites the restoration of the ideal capacity of a facility. Likewise, traveler information assists in diverting trips away from an incident, reducing the number of vehicles attempting to pass through a restricted roadway. Both actions reduce delay to motorists. As it is estimated that more than 50% of freeway congestion is the result of incidents, ITS strategies are key components in eliminating this non-recurring congestion and restoring capacity as quickly as possible.

Enhance Mobility

Improving mobility by reducing delay and travel time is a major goal of many ITS elements. Some measures of effectiveness commonly used to evaluate mobility include the amount of delay time and the variability in travel time. Delay can be measured in several different ways, such as amount of delay per vehicle, by person-hours, or by lateness of arrival of a shipment. Reducing the variability of travel time improves the reliability of estimated arrival times that travelers or companies use to make planning and scheduling decisions that are so critical in just-in-time delivery. The unpredictability of travel time can be reduced by improving operations, expediting incident response, and providing information on delays, with the latter utilized in trip planning to help re-route motorists and commercial drivers around congested areas.

Improve Safety
The top priority of INDOT or any transportation system provider is safety. While great strides have been made over time in terms of safety improvements, it is an unfortunate reality that crashes, injuries, and fatalities are inevitable. Many ITS services aim to minimize the risk of crash occurrence. This goal focuses on reducing the number and severity of crashes, thus lessening the probability of injuries and fatalities. Typical measures of effectiveness used to quantify safety performance include the overall crash rate, fatality crash rate, and injury crash rate.

Reduce Energy Consumption and Environmental Costs
Air quality and energy impacts of ITS services are important considerations, particularly for ozone non-attainment areas. Positive impacts on the environment result from reducing delay and offering more efficient traffic flow on the highway system. Decreases in emission levels and energy consumption are measures of effectiveness for this goal area.

Increase Economic Productivity
Virtually every item produced or consumed at one point relied on an efficient transportation system along the way, be it raw materials or the finished product. ITS deployments can reduce operating costs and allow productivity improvements for commercial vehicles and others who move goods from point to point. Some applications may save time, for example using traveler information to avoid congestion or in completing regulatory processes at Weigh Stations, enabling businesses to increase their economic efficiency. For public agencies such as INDOT, ITS alternatives for transportation improvements have lower implementation costs when compared to traditional capacity enhancing improvements, as well as another source of traffic-related data. The primary measure of effectiveness for this goal area is cost savings as a result of implementing ITS.

Create an Environment for an ITS Market
Certain ITS deployments represent new goods and services that are more likely to encourage growth in the ITS and automotive industries. The success of new and/or expanded industries supporting ITS depends on an open ITS Architecture and a nonrestrictive deployment strategy to encourage participation and innovation from the private sector.

1.8. BENEFITS OF ITS

ITS deployments across the Nation have yielded notable improvements in safety and traffic flow. Here in Indiana, a Purdue University Joint Transportation Research Program (JTRP) study of the Hoosier Helper Freeway Service Patrol program on the Borman Expressway (I-80/94) and I-65 in Northwest Indiana, where Hoosier Helpers aid approximately 15,000 motorists a year, reported a measurable payoff. The study found that Hoosier Helpers make driving more efficient and safer by clearing incidents quickly and therefore reducing the associated traffic congestion delay and vehicle operating costs, as well as by reducing the number of secondary crashes (those that occur in traffic backups created by incidents). Specifically, the benefits (non-recurring congestion delay savings, secondary crash reduction, and vehicle operating cost savings) outweighed the cost of the 24 hour program by 13 to 1. In other words, this B/C ratio of 13:1 means motorists reap $13 of benefits for every $1 spent on the Hoosier Helper Freeway Service Patrol program. Calculation of ITS benefits will also be a key component of the active Performance Measures study described in Section 1.3.

On a related note, the *2000 Highway Capacity Manual* clearly shows the capacity reduction effects of incidents on freeways. Logically, the effect of an incident on capacity depends on the proportion of the roadway that is blocked by the incident compared with the number of lanes on the freeway. The following table shows the percentage (proportion) of capacity available on a freeway per direction during different types (magnitudes) of incidents.

PERCENTAGE OF FREEWAY CAPACITY AVAILABLE DURING AN INCIDENT

# OF LANES PER DIRECTION	SHOULDER DISABLEMENT	SHOULDER CRASH	1 LANE BLOCKED	2 LANES BLOCKED	3 LANES BLOCKED
2	95%	81%	35%	0%	Not Applicable
3	99%	83%	49%	17%	0%
4	99%	85%	58%	25%	13%
5	99%	87%	65%	40%	20%

Clearly, the effect of incidents on capacity is great, ranging from a disabled vehicle on the shoulder to a complete blockage (closure). It is critical to note that the number of lanes closed is not directly proportional to the number of lanes per direction. For example, one lane blocked on a two lane per direction freeway reduces capacity by 65% (not by 50%), leaving only 35% of capacity. Likewise, two lanes blocked on a four lane per direction freeway reduces capacity by 75% (not by 50%), leaving only 25% of capacity. Furthermore, the “rubbernecking” factor reduces capacity in the opposite direction of travel depending on the magnitude of the incident (and number of emergency vehicles present), with a capacity reduction ranging from 5% for a single vehicle crash with one emergency vehicle present to a 25% reduction in capacity for a multi-vehicle crash with several emergency vehicles present. This data illustrates the vital importance of effective and efficient incident detection and management, which results in quicker restoration of the freeway’s capacity and the associated benefits to motorists, the economy, and society: improved safety, traveler mobility, and system efficiency, increased productivity, and conserved fuel / reduced environmental impact.

CHAPTER 2 – SYSTEM INVENTORY / TRANSPORTATION ASSESSMENT

2.1. INTRODUCTION

The State Highway System that is built, owned, and operated by INDOT is comprised of 11,182 miles of Interstates, US Routes, and State Roads. The original intent of the system dating back to 1919 was to create a highway network that would connect every county seat and municipality with a population of over 5,000. The system has grown, matured, and been systematically upgraded over the years. One of the most significant, perhaps the most significant addition to the system is the Interstate System. The Interstate System is the highest classification of all roads in the Nation, providing the highest level of mobility at high speeds for long uninterrupted distances.

The Interstate System's roots date back to 1938, with the original designation of the System in 1947, followed by subsequent additions over time. The Interstates represented a new concept in travel: full access control, with access only at interchanges. The lack of at-grade access and the subsequent delay with signals significantly increases the capacity of the roadway, making the Interstate System extremely attractive for travel purposes. In fact, the FHWA indicates in its *Highway Statistics 2005* document that **the Interstate System carries a phenomenal 24 percent of the Nation's traffic while comprising only 1.2 percent (46,871 miles) of the Nation's 4,011,631 mile road network.**

The FHWA also reports that the Interstate System in Indiana comprises 1,169 miles of the 11,182 miles of highway in the State Highway System. Of the 1,169 miles of Interstate in Indiana, 852 miles are classified as Rural Interstate and 317 miles are classified as Urban Interstate. The Rural Interstates carry 24 percent of all Rural Vehicle Miles Traveled (VMT) in Indiana (National average is 25 percent). The Urban Interstates carry 21 percent of all Urban VMT in Indiana (National average is 24 percent). Collectively, **the Interstate System <u>in Indiana</u> carries 23 percent of all VMT statewide (National average is 24 percent), while comprising only 1.2 percent of the statewide total of 95,575 miles of roadway.** Thus, Indiana is reasonably close to the National averages shown in the previous paragraph.

As for Indiana's three largest Urbanized Areas, the FHWA reports that in the Indianapolis Urbanized Area, the 116 miles of Interstates comprise only 2.4 percent of the area's 4,755 miles of roadway but the Interstates carry 34 percent of all Daily Vehicle Miles Traveled (VMT). Similarly, in the Indiana portion of the Chicago Urbanized Area, the 66 miles of Interstates comprise only 2.6 percent of the area's 2,497 miles of roadway but the Interstates carry 31 percent of all Daily VMT. Likewise, in the Indiana portion of the Louisville Urbanized Area, the 19 miles of Interstates comprise only 3.9 percent of the area's 484 miles of roadway but the Interstates carry 38 percent of all Daily VMT. Nationally, the Interstates average only 1.7 percent of urban mileage but carry 25 percent of the Daily VMT in the largest 429 Urbanized Areas (those 50,000 or greater in population) in the Nation.

It should be noted that the percentage of Daily VMT that takes place on the Interstate System is much higher in Indiana's three largest Urbanized Areas compared with the remaining Urbanized Areas in Indiana over 50,000 in population. The following provides details:

URBANIZED AREA	% OF DAILY VMT ON THE INTERSTATE SYSTEM
Louisville (Indiana portion)	38%
Indianapolis	34%
Chicago (Indiana portion)	31%
Fort Wayne	16%
Anderson	16%
Terre Haute	14%
South Bend	9% (South Bend / Elkhart combined: 8%)
Elkhart	7% (South Bend / Elkhart combined: 8%)
Evansville	7%
Lafayette	5%
Muncie	0% (no Interstates)
Bloomington	0% (no Interstates)
Kokomo	0% (no Interstates)

Not only are volumes an important element of Interstate statistics, but the composition of traffic is also critical. **Nationally**, 43 percent of all rural truck VMT takes place on the Interstate System, 39 percent of all urban truck VMT takes place on the Interstate System; collectively, **41 percent of all truck VMT takes place on the Interstate System.**

By nature of its full access control, the Interstate System moves high volumes of traffic but provides limited opportunities to exit the System in case of delays caused by incidents. ITS can play a key role in detecting incidents and notifying the motoring public of the incident. While some roads in INDOT's system carry more traffic than some portions of the Interstate System, their lower degree of access control enables motorists to more easily divert in case of an incident. The same can not be said about the Interstate System and other full access control facilities (freeways). **Thus, the focus of INDOT's ITS field device investment will be on the Interstate System and other freeways due to the significant proportion and composition of traffic on the System coupled with the limited ability to divert in case of incidents on an Interstate or any other freeway. Furthermore, the Interstate System and freeways in Indiana provide the main "trunk line" of ITS field devices statewide while serving the major population centers of the state, with the option of expansion, if needed in the future, of additional ITS deployments statewide.**

2.2. INTERSTATE / FREEWAY ANNUAL AVERAGE DAILY TRAFFIC (AADT) / LEVEL OF SERVICE (LOS) / TRUCK PERCENTAGE / TRUCK AADT

Annual Average Daily Traffic (AADT) is a 48 hour traffic count that is averaged to a 24 hour traffic count and adjusted for excess axles and seasonal fluctuations in travel. The following tables represent the current (2005) AADT for the Interstate System in Indiana (plus select segments of freeways) that has been balanced to account for year to year fluctuations in traffic counts that invariably occur. The percentage of trucks in the daily traffic stream, along with the numerical value (Annual Average Daily Truck Traffic (AADTT), determined as a function of the truck percentage), is also provided in the following tables.

The *Highway Capacity Manual* defines Level of Service (LOS) as a quality measure describing operational conditions within a traffic stream (in this case an uninterrupted flow facility such as a freeway), generally in terms of speed, travel time, freedom to maneuver, and comfort and convenience. Six Levels of Service from A to F are defined, with LOS A representing the best operating conditions and LOS F the worst. The Levels of Service for freeways are generally described as:

LOS A: Free-flow operations, motorists are essentially unimpeded in their ability to maneuver in the traffic stream, and incidents are easily absorbed.

LOS B: Reasonably free-flow, the ability of motorists to maneuver is only slightly restricted, and minor incidents are still easily absorbed.

LOS C: Speeds are at or near the free-flow speed, but ability to maneuver in the traffic stream is more noticeably restricted, and while minor incidents may still be absorbed, queues may be expected to form behind any significant blockage.

LOS D: Speeds begin to decline with increasing flows, freedom to maneuver is noticeably limited, and minor incidents will create queuing since the traffic stream has little space to absorb disruptions.

LOS E: Speeds are volatile as there are very few gaps in the traffic stream, the ability to maneuver is extremely limited, and capacity is reached at the highest density value. Any incident will produce a serious breakdown in flow with extensive queues.

LOS F: Capacity is exceeded and breakdowns in flow exist. Any incident will add significantly to the existing congestion caused by normal operations.

The geometric design criteria for a **new or completely reconstructed freeway** in **Chapter 53** of the *Indiana Design Manual* calls for the following Levels of Service for Rural and Urban Freeways:

Rural Freeways: Desirable LOS B, Minimum LOS C
Urban Freeways: Desirable LOS B, Minimum LOS C (Minimum LOS D is allowed for urban reconstruction projects only). LOS C is sometimes referred to as "Desirable Minimum" and LOS D is sometimes referred to as "Absolute Minimum."

While Traffic Management / ITS is obviously not building new freeways or reconstructing existing ones, these policies from the *Indiana Design Manual* illustrate what is considered desirable and minimum Levels of Service on Indiana freeways. **These LOS policies will serve as a basis for possible investment in Traffic Management / ITS devices on Indiana's Interstates and freeways.**

Due to the extensive nature of data analysis required, detailed capacity analyses were not conducted for each segment of freeway on INDOT's system presented in this document. However, the Florida Department of Transportation's *2002 Quality / Level of Service Handbook* provides generalized Levels of Service based upon AADT for many facility types, including freeways, and was utilized for this analysis. This broad type of planning analysis is appropriate for use in a statewide analysis such as this. The documentation developed by Florida DOT is based upon the definitions and methodology of the *2000 Highway Capacity Manual*.

It should be noted that **the Levels of Service presented in the tables to follow take into consideration the number of lanes open to traffic at the end of 2008.** Capacity improvements in 2009 and beyond are not shown or factored for, as this document, while looking ahead, also reflects a snapshot in time to provide for statewide comparison.

As previously stated, **the minimum Level of Service policies for new or completely reconstructed freeways from the *Indiana Design Manual* will serve as a basis for possible investment in Traffic Management / ITS devices on Indiana's Interstates and freeways.** It should be noted that short segments of Urban Interstates near smaller Urban Areas that are surrounded by long segments of Rural Interstate (such as at Anderson, Columbus, Lafayette, Marion, Richmond, Terre Haute, etc.) will be treated as if they are Rural Interstates, as their operating characteristics are more akin to a Rural Interstate than as an Urban Interstate in Indianapolis or Northwest Indiana. I-469 at Fort Wayne will also be treated as a Rural Interstate, as the vast majority of the route is Rural Interstate and its operating characteristics are more rural in nature compared to I-69 in the Fort Wayne area. **Segments of freeway at or below Level of Service C will be highlighted in the tables below based upon their current (2005) Level of Service as follows:**

<u>Level of Service C (Desirable Minimum LOS)</u>

Interstates / Freeways at LOS C

<u>Level of Service D, E, or F (Below Desirable Minimum LOS)</u>

Interstates / Freeways at LOS D

Interstates / Freeways at LOS E

Interstates / Freeways at LOS F

Furthermore, ***segments of Interstate that are <u>currently fully deployed</u> with permanent Traffic Management / ITS devices*** (½ - 1 mile vehicle detection and Closed Circuit TV Cameras (CCTV Cameras)), ***are shown in bold and italics*** in the tables to follow.

Finally, *segments of Interstate that are currently <u>proposed for full deployment</u> of Traffic Management / ITS devices* (½ - 1 mile vehicle detection and CCTV Cameras), *are shown in italics* in the tables to follow. This includes the Indianapolis area and portions of Southern Indiana near Louisville as part of the TRIMARC deployment (Traffic Response and Incident Management Assisting the River Cities), a joint venture of the Kentucky Transportation Cabinet (KYTC) and INDOT, with KYTC the lead agency. In addition to the tables below, maps showing current (2005) Annual Average Daily Traffic (AADT) for Interstates and Freeways statewide (in increments of 10,000), as well as maps for the metropolitan areas of Indianapolis, Northwest Indiana, Evansville, Fort Wayne, Southern Indiana near Louisville, and South Bend / Mishawaka / Elkhart, may be found at the end of this chapter. Likewise, the same series of maps depicting current (2005) Level of Service (LOS) may be found at the end of this chapter after the AADT maps.

2.2.1. Interstate 64

FROM	TO	AADT	LOS	Truck %	AADTT
Illinois State Line	SR 69	12,030	A	47%	5,650
SR 69	SR 165	11,700	A	47%	5,500
SR 165	SR 65	11,630	A	47%	5,470
SR 65	US 41	12,290	A	45%	5,530
US 41	I-164 / SR 57	18,030	A	40%	7,210
I-164 / SR 57	SR 61	15,950	A	37%	5,900
SR 61	SR 161	14,690	A	39%	5,730
SR 161	US 231	14,000	A	41%	5,740
US 231	SR 162	14,120	A	42%	5,930
SR 162	SR 145	14,720	A	43%	6,330
SR 145	SR 37	14,380	A	44%	6,330
SR 37	SR 237	16,100	A	42%	6,760
SR 237	SR 66	16,320	A	42%	6,850
SR 66	SR 135	16,920	A	40%	6,770
SR 135	Lanesville Interchange	29,450	B	24%	7,070
Lanesville Interchange	SR 62/64	33,830	B	21%	7,100
SR 62/64 **	US 150 **	54,920	C	15%	8,240
US 150 *	I-265 *	73,350	D	13%	9,540
I-265 *	SR 111 / Spring St *	70,310	D	14%	9,850
SR 111 / Spring St *	Kentucky State Line *	85,840	D	12%	10,300

* - Note: I-64 from US 150 to the Kentucky State Line currently features CCTV Camera deployment with one mile spacing, but no vehicle detection, nor is it currently proposed for vehicle detection, per the TRIMARC Strategic Plan.

** - Note: I-64 from SR 62/64 to US 150 is proposed for CCTV deployment with one mile spacing, but no vehicle detection, per the TRIMARC Strategic Plan.

2.2.2. Interstate 65

FROM	TO	AADT	LOS	Truck %	AADTT
Kentucky State Line	***Court Ave***	***121,750***	***E***	***14%***	***17,050***
Court Ave	***10th St***	***108,010***	***E***	***16%***	***17,280***
10th St	*Brown's Station Way*	*114,500*	C	*15%*	*17,180*
Brown's Station Way	*Eastern Blvd*	*94,380*	C	*17%*	*16,040*
Eastern Blvd	*US 31/Lewis & Clark Pkwy*	*79,070*	C	*20%*	*15,810*
US 31/Lewis & Clark Pkwy	*Veterans Pkwy*	*64,030*	*B*	*24%*	*15,370*
Veterans Pkwy	*I-265*	*77,390*	C	*20%*	*15,480*
I-265	*SR 60*	*65,780*	C	*24%*	*15,790*
SR 60 *	SR 311 *	50,750	B	30%	15,230
SR 311	Memphis Rd	41,960	C	36%	15,110
Memphis Rd	SR 160	39,250	C	38%	14,920
SR 160	SR 56	36,380	C	41%	14,920
SR 56	SR 256	34,520	B	42%	14,500
SR 256	US 31 (Exit 36)	33,390	B	44%	14,690
US 31 (Exit 36)	SR 250	34,440	B	42%	14,460
SR 250	US 50	35,070	B	41%	14,380
US 50	SR 11	30,080	B	45%	13,540
SR 11	SR 58	36,200	C	38%	13,760
SR 58	SR 46	41,040	C	36%	14,770
SR 46	US 31 (Exit 76)	38,950	C	37%	14,410
US 31 (Exit 76)	SR 252	43,020	C	35%	15,060
SR 252	SR 44	44,520	C	34%	15,140
SR 44	Whiteland Rd (CR 500N)	55,210	D	29%	16,000
Whiteland Rd (CR 500N)	*Greenwood Rd (Main St)*	*64,000*	*E*	*25%*	*16,000*
Greenwood Rd (Main St)	*County Line Rd*	*79,250*	C	*22%*	*17,440*
County Line Rd	*Southport Rd*	*90,380*	*D*	*20%*	*18,080*
Southport Rd	*I-465 (South Leg)*	*114,170*	*E*	*16%*	*18,270*
I-465 (South Leg)	*Keystone Ave*	*80,600*	C	*9%*	*7,260*
Keystone Ave	*Raymond St*	*82,280*	*D*	*9%*	*7,400*
Raymond St	*I-70 (South Split)*	*100,270*	*D*	*8%*	*8,020*
Begin I-70 travel over I-65					
I-70 (South Split)	***Market St / Ohio St***	***160,760***	***D***	***13%***	***20,900***
Market St / Ohio St	***I-70 (North Split)***	***165,690***	***D***	***13%***	***21,540***
End I-70 travel over I-65					
I-70 (North Split)	***West St***	***128,450***	***D***	***9%***	***11,560***
West St	***21st St***	***113,120***	***D***	***10%***	***11,310***
21st St	***29th / 30th St***	***108,590***	***C***	***10%***	***10,860***
29th / 30th St	***Dr. Martin Luther King Jr. St***	***92,880***	***D***	***11%***	***10,220***
Dr. Martin Luther King Jr. St	***38th St / Kessler Blvd***	***88,930***	***D***	***11%***	***9,780***
38th St / Kessler Blvd	*Lafayette Rd*	*64,630*	C	*14%*	*9,050*
Lafayette Rd	*I-465 (West Leg)*	*53,270*	*B*	*16%*	*8,520*

FROM	TO	AADT	LOS	Truck %	AADTT
I-465 (West Leg)	*71st St*	*45,720*	*C*	*26%*	*11,890*
71st St	*I-865*	*39,860*	*C*	*31%*	*12,360*
I-865	*SR 334*	*65,820*	*E*	*27%*	*17,770*
SR 334	*SR 267*	*58,120*	*D*	*30%*	*17,440*
SR 267	Indianapolis Ave (Exit 138)	59,560	D	31%	18,460
Indianapolis Ave (Exit 138)	SR 39	53,060	D	34%	18,040
SR 39	SR 32	48,040	C	36%	17,290
SR 32	US 52	43,960	C	37%	16,270
US 52	SR 47	40,400	C	39%	15,760
SR 47	SR 28	40,170	C	39%	15,670
SR 28	SR 38 / SR 25 (South jct.)	41,380	C	37%	15,310
SR 38 / SR 25 (South jct.)	SR 26	43,140	C	37%	15,960
SR 26	SR 25 (North jct.)	48,080	C	33%	15,870
SR 25 (North jct.)	SR 43	41,070	C	37%	15,200
SR 43	SR 18	32,970	B	45%	14,840
SR 18	US 231 (Exit 193)	33,060	B	45%	14,880
US 231 (Exit 193)	US 24/231	32,810	B	45%	14,760
US 24/231	US 231 (Exit 205)	32,540	B	45%	14,640
US 231 (Exit 205)	SR 114	30,100	B	48%	14,450
SR 114	SR 14	31,610	B	49%	15,490
SR 14	SR 10	31,470	B	50%	15,730
SR 10	SR 2	34,850	B	39%	13,590
SR 2	US 231 (Exit 247)	37,930	C	36%	13,650
US 231 (Exit 247)	US 30	42,580	C	33%	14,050
US 30	***61st Ave***	***80,120***	***C***	***20%***	***16,020***
61st Ave	***Ridge Rd / 37th Ave***	***87,510***	***D***	***19%***	***16,630***
Ridge Rd / 37th Ave	***I-80/94 W Connector Ramp***	***86,320***	***C***	***19%***	***16,400***
I-80/94 W Connector Ramp	***I-80/94 (Borman Expwy)***	***38,760***	***C***	***10%***	***3,880***
I-80/94 (Borman Expwy)	15th Ave	33,770	B	10%	3,380
15th Ave	I-90 (Indiana Toll Road)	29,620	B	10%	2,960

* - Note: I-65 at SR 311 is proposed for CCTV deployment (one camera), but no vehicle detection, per the TRIMARC Strategic Plan.

2.2.3. Interstate 69

FROM	TO	AADT	LOS	Truck %	AADTT
I-465	*82nd St*	*167,000*	*F*	*12%*	*20,040*
82nd St	*96th St*	*154,210*	*F*	*12%*	*18,510*
96th St	*SR 37 / 116th St*	*131,120*	*F*	*13%*	*17,050*
SR 37 / 116th St	*SR 238*	*64,060*	*E*	*21%*	*13,450*
SR 238	SR 13	61,850	E	22%	13,610
SR 13	SR 38	57,110	D	23%	13,140
SR 38	SR 9/67	54,570	D	25%	13,640
SR 9/67	SR 9/109	49,290	C	27%	13,310
SR 9/109	SR 32/67	42,410	C	31%	13,150
SR 32/67	SR 332	34,890	B	34%	11,860
SR 332	US 35 / SR 28	31,970	B	38%	12,150
US 35 / SR 28	SR 26	31,670	B	38%	12,030
SR 26	US 35 / SR 22	30,930	B	38%	11,750
US 35 / SR 22	SR 18	31,110	B	39%	12,130
SR 18	SR 5/218	28,250	B	40%	11,300
SR 5/218	SR 5	28,280	B	40%	11,310
SR 5	US 224	26,850	B	40%	10,740
US 224	I-469 (South jct.)	28,200	B	39%	11,000
I-469 (South jct.)	Lower Huntington Rd/Airport Expy	32,150	B	26%	8,360
Lower Huntington Rd/Airport Expy	US 24 /Jefferson Blvd	36,720	C	23%	8,450
US 24 / Jefferson Blvd	SR 14 / Illinois Rd	52,300	B	20%	10,460
SR 14 / Illinois Rd	US 30/33 /SR 930/Goshen Rd	67,400	C	16%	10,780
US 30/33 /SR 930/Goshen Rd	US 27 / SR 3 / Lima Rd	68,740	C	18%	12,370
US 27 / SR 3 / Lima Rd	Coldwater Rd	62,640	C	19%	11,900
Coldwater Rd	I-469 (North jct.)	60,820	C	20%	12,160
I-469 (North jct.)	SR 1 / Dupont Rd	56,380	B	19%	10,710
SR 1 / Dupont Rd	CR 11-A	36,930	C	28%	10,340
CR 11-A	SR 8	35,880	C	28%	10,050
SR 8	US 6	33,470	B	31%	10,380
US 6	SR 4	30,770	B	34%	10,460
SR 4	US 20	28,890	B	35%	10,110
US 20	CR 200W	24,830	B	38%	9,440
CR 200W	SR 127	22,290	B	42%	9,360
SR 127	I-80/90 (Toll Rd) / SR 120	21,450	B	42%	9,010
I-80/90 (Toll Rd) / SR 120	Lake George Rd	24,260	B	40%	9,700
Lake George Rd	Michigan State Line	22,050	B	42%	9,260

2.2.4. Interstate 70

FROM	TO	AADT	LOS	Truck %	AADTT
Illinois State Line	US 40	25,510	B	52%	13,270
US 40	Darwin Rd	22,980	B	56%	12,870
Darwin Rd	US 41/150	26,170	B	50%	13,090
US 41/150	SR 46	35,710	C	43%	15,360
SR 46	SR 59	34,440	B	44%	15,150
SR 59	SR 243	32,860	B	47%	15,440
SR 243	US 231	34,000	B	46%	15,640
US 231	CR 1100W (Little Point Rd)	38,810	C	42%	16,300
CR 1100W (Little Point Rd)	SR 39	40,220	C	41%	16,490
SR 39	SR 267	44,830	C	37%	16,590
SR 267	***Reagan Pkwy / Ameriplex***	***61,890***	***C***	***28%***	***17,330***
Reagan Pkwy / Ameriplex	***I-465 (West Leg)***	***79,800***	***B***	***23%***	***18,350***
I-465 (West Leg)	***Sam Jones Expwy***	***50,050***	***B***	***26%***	***13,010***
Sam Jones Expwy	***Holt Rd***	***81,580***	***C***	***15%***	***12,240***
Holt Rd	***Harding St***	***98,500***	***D***	***17%***	***16,750***
Harding St	***West St / McCarty St***	***109,100***	***E***	***16%***	***17,460***
West St / McCarty St	***I-65 (South Split)***	***112,410***	***D***	***14%***	***15,740***
Begin I-70 travel over I-65					
I-65 (South Split)	***Market St / Ohio St***	***160,760***	***D***	***13%***	***20,900***
Market St / Ohio St	***I-65 (North Split)***	***165,690***	***D***	***13%***	***21,540***
End I-70 travel over I-65					
I-65 (North Split)	***Rural St / Keystone Ave***	***174,750***	***D***	***11%***	***19,220***
Rural St / Keystone Ave	***Emerson Ave***	***154,920***	***E***	***12%***	***18,590***
Emerson Ave	***Shadeland Ave***	***138,440***	***D***	***13%***	***18,000***
Shadeland Ave	***I-465 (East Leg)***	***130,890***	***C***	***13%***	***17,020***
I-465 (East Leg)	*Post Rd*	*109,150*	*C*	*17%*	*18,560*
Post Rd	*Mt Comfort Rd*	*68,550*	*E*	*26%*	*17,820*
Mt Comfort Rd	SR 9	53,830	D	33%	17,760
SR 9	SR 109	40,110	C	44%	17,650
SR 109	SR 3	37,530	C	47%	17,640
SR 3	Wilbur Wright Rd	33,020	B	50%	16,510
Wilbur Wright Rd	SR 1	33,190	B	50%	16,600
SR 1	Centerville Rd	33,220	B	50%	16,610
Centerville Rd	US 35	33,530	B	50%	16,770
US 35	US 27	36,250	C	47%	17,040
US 27	SR 227	37,690	C	45%	16,960
SR 227	US 40	35,720	C	47%	16,790
US 40	Ohio State Line	32,580	B	50%	16,290

2.2.5. Interstate 74

FROM	TO	AADT	LOS	Truck %	AADTT
Illinois State Line	SR 63	20,040	A	44%	8,820
SR 63	Covington Rd	16,710	A	45%	7,520
Covington Rd	US 41	16,640	A	45%	7,490
US 41	SR 25	15,730	A	47%	7,390
SR 25	US 231	16,470	A	45%	7,410
US 231	SR 32	16,260	A	48%	7,800
SR 32	SR 75	16,170	A	45%	7,280
SR 75	SR 39	18,380	A	40%	7,350
SR 39	CR 275E (Pittsboro)	21,960	B	34%	7,470
CR 275E (Pittsboro)	SR 267	25,380	B	29%	7,360
SR 267	Ronald Reagan Pkwy	35,850	C	21%	7,530
Ronald Reagan Pkwy *	I-465 (West Leg) *	38,540	C	21%	8,090
I-74 travels over I-465 for 20.2 miles					
I-465 (East Leg)	***Post Rd***	***39,970***	***C***	***22%***	***8,790***
Post Rd	***Acton Rd***	***36,270***	***C***	***24%***	***8,700***
Acton Rd	***Pleasant View Rd***	***34,530***	***B***	***25%***	***8,630***
Pleasant View Rd	London Rd	33,850	B	25%	8,460
London Rd	Fairland Rd	30,100	B	28%	8,430
Fairland Rd	SR 9	30,790	B	27%	8,360
SR 9	SR 44	29,190	B	29%	8,470
SR 44	SR 244	24,510	B	34%	8,330
SR 244	St Paul / Middletown	23,250	B	36%	8,370
St Paul / Middletown	US 421	22,620	B	37%	8,370
US 421	SR 3	19,000	A	40%	7,600
SR 3	New Point - Rossburg Rd	21,900	B	39%	8,540
New Point - Rossburg Rd	SR 229	22,200	B	39%	8,660
SR 229	SR 101	22,670	B	38%	8,610
SR 101	SR 1	24,280	B	37%	8,980
SR 1	US 52	25,310	B	28%	7,090
US 52	Ohio State Line	30,100	B	24%	7,220

* - Note: Only the three mile segment of I-74 from Raceway Road to I-465 is currently proposed for full ITS deployment. Thus, this entire five mile segment of I-74 from Ronald Reagan Parkway to I-465 is not depicted as proposed for full ITS deployment.

2.2.6. Interstate 80/94 (Borman Expressway)

FROM	TO	AADT	LOS	Truck %	AADTT
Illinois State Line	*US 41 / Calumet Ave*	*147,040*	*D*	*36%*	*52,930*
US 41 / Calumet Ave	*US 41 / SR 152 (Indpls Blvd)*	*150,240*	*D*	*35%*	*52,580*
US 41 / SR 152 (Indpls Blvd)	*Kennedy Ave*	*150,310*	*D*	*34%*	*51,110*
Kennedy Ave	*SR 912 (Cline Ave)*	*148,300*	*D*	*34%*	*50,420*
SR 912 (Cline Ave)	*Burr St*	*146,160*	*D*	*32%*	*46,770*
Burr St	*Grant St*	*139,330*	*C*	*33%*	*45,980*
Grant St	*SR 53 (Broadway)*	*134,480*	*C*	*34%*	*45,720*
SR 53 (Broadway)	*I-65 S Connector Ramp*	*130,580*	*D*	*35%*	*45,700*
I-65 S Connector Ramp	*I-65*	*83,020*	*D*	*39%*	*32,380*
I-65	*Central Ave*	*96,640*	*C*	*35%*	*33,820*
Central Ave	*US 6 / SR 51 / I-90 (Toll Rd)*	*90,660*	*D*	*37%*	*33,540*
End I-94 travel over I-80					

2.2.7. Interstate 90 (Indiana Toll Road) (Including I-80 east of I-94)

FROM	TO	AADT	LOS	Truck %	AADTT
Illinois State Line	US 12/20/41 (Indpls Blvd)	46,180	B	17%	7,850
US 12/20/41 (Indpls Blvd)	SR 912 (Cline Ave) (W jct.)	44,630	B	18%	8,030
SR 912 (Cline Ave) (W jct.)	US 41 (Calumet Ave)	34,140	B	19%	6,490
US 41 (Calumet Ave)	SR 912 (Cline Ave) (E jct.)	35,550	B	19%	6,750
SR 912 (Cline Ave) (E jct.)	Grant St	46,030	C	18%	8,290
Grant St	SR 53 (Broadway)	47,390	C	18%	8,530
SR 53 (Broadway)	I-65 / US 12/20	45,270	C	19%	8,600
I-65 / US 12/20	I-80/94 (Borman Expwy)	29,080	B	20%	5,820
Begin I-80 travel over I-90					
I-80/94 (Borman Expwy)	Willow Creek Rd	38,470	C	40%	15,390
Willow Creek Rd	SR 49	33,950	B	44%	14,940
SR 49	US 421	27,020	B	48%	12,970
US 421	SR 39	26,720	B	48%	12,830
SR 39	US 31	26,900	B	48%	12,910
US 31	SR 933	26,950	B	48%	12,940
SR 933	SR 23 / 331	26,850	B	48%	12,890
SR 23 / 331	SR 19	26,960	B	48%	12,940
SR 19	CR 17	26,020	B	51%	13,270
CR 17	SR 15	26,220	B	53%	13,900
SR 15	US 131 / SR 13	25,640	B	55%	14,100
US 131 / SR 13	SR 9	23,710	B	59%	13,990
SR 9	I-69	22,790	B	62%	14,130
I-69	Ohio State Line	21,680	B	63%	13,660

Please note that the Indiana East-West Toll Road (Interstate 90, with Interstate 80 traveling over from Mile 21 at the Borman Expressway to the Indiana / Ohio State Line at Mile 157) is not addressed in this document. While it is owned by the State of Indiana, it is leased to, maintained, and operated by the Indiana Toll Road Concession Company, LLC (ITRCC) through 2081. It is separately and exclusively funded by way of patron (motorist) tolls and concession fees and is wholly independent of INDOT. This AADT, LOS, truck percentage information, and Truck AADT for the Indiana Toll Road is merely provided as a basis for comparison to other Interstates and freeways in Indiana maintained and operated by INDOT. No intent of existing or future ITS field device deployment is provided or implied in the table above.

2.2.8. Interstate 94 *

FROM	TO	AADT / FRI & SUN SUMMER VOLUMES	LOS / FRI & SUN SUMMER LOS	Truck %	AADTT
End I-94 travel over I-80					
I-90 (Toll Road)	SR 249	69,970 / 91,760	C / D	30%	20,990
SR 249	US 20	56,340 / 78,130	C / D	34%	19,160
US 20	SR 49	51,970 / 73,760	B / C	35%	18,190
SR 49	US 421	43,980 / 65,770	B / C	39%	17,150
US 421	US 20/35	41,990 / 63,780	B / C	39%	16,380
US 20/35	Michigan State Line	31,700 / 53,490	A / B	45%	14,270

* - Note: While I-94 generally does not have high volumes or exceptionally poor LOS on its six lanes, it does experience significant spikes in traffic on Fridays and Sundays in summer. Data from the segment from US 421 to US 20/35 indicates a 40% increase in traffic on Fridays during summer and a 48% increase in traffic on Sundays during summer compared to AADT. The average increase of these two days during the summer is 44% on I-94 between US 421 and US 20/35, an increase of 21,790 vehicles over AADT. This additional traffic is reflected in the chart above as an across the board increase of 21,790 vehicles on a Friday or Sunday during summer, with the corresponding LOS for summertime Fridays and Sundays also shown. The shading corresponds to AADT LOS, not the Friday and Sunday LOS during summer. As the table above shows, LOS deteriorates by one level on Fridays and Sundays on I-94 during the summer months.

2.2.9. Interstate 164

FROM	TO	AADT	LOS	Truck %	AADTT
US 41	Green River Rd	24,070	B	13%	3,130
Green River Rd	SR 662 / Newburgh Rd	21,240	A	14%	2,970
SR 662 / Newburgh Rd	SR 66 (Lloyd Expwy)	22,990	B	14%	3,220
SR 66 (Lloyd Expwy)	SR 62 (Morgan Ave)	27,750	B	16%	4,400
SR 62 (Morgan Ave)	Lynch Rd	27,450	B	16%	4,390
Lynch Rd	Boonville-New Harmony Rd	25,900	B	18%	4,660
Boonville-New Harmony Rd	SR 57	24,390	B	19%	4,630
SR 57	I-64	25,700	B	20%	5,140

Note: I-69 will be incorporated into I-164 in the future from approximately 1.5 miles east of US 41 to I-64.

2.2.10. Interstate 265

FROM	TO	AADT	LOS	Truck %	AADTT
I-64	*State St*	*51,260*	*C*	*7%*	*3,590*
State St	*SR 111 (Grant Line Rd)*	*53,020*	*D*	*7%*	*3,710*
SR 111 (Grant Line Rd)	*SR 311 (Charlestown Rd)*	*51,180*	*C*	*8%*	*4,090*
SR 311 (Charlestown Rd)	*I-65*	*45,040*	*C*	*9%*	*4,050*

2.2.11. Interstate 275

FROM	TO	AADT	LOS	Truck %	AADTT
Kentucky State Line	US 50	35,860	B	18%	6,450
US 50	Ohio State Line	33,950	B	17%	5,770

2.2.12. Interstate 465

FROM	TO	AADT	LOS	Truck %	AADTT
I-65 (Exit 53)	US 31 / East St	94,360	D	18%	16,990
US 31 / East St	SR 37 / Harding St	93,290	D	19%	17,730
SR 37 / Harding St	Mann Rd	96,170	D	19%	18,270
Mann Rd	SR 67 / Kentucky Ave	85,470	D	21%	17,950
SR 67 / Kentucky Ave	I-70 (Exit 9)	106,220	C	18%	19,120
I-70 (Exit 9)	Sam Jones Expwy	103,260	D	14%	14,460
Sam Jones Expwy	US 40 / W Washington St	134,280	E	13%	17,460
US 40 / W Washington St	US 36 / Rockville Rd	137,720	F	13%	17,900
US 36 / Rockville Rd	10th St	137,900	F	13%	17,930
10th St	I-74 /US 136/Crawfordsville Rd	137,210	F	13%	17,840
End I-74 travel over I-465					
I-74 /US 136/Crawfordsville Rd	38th St	119,090	E	12%	14,290
38th St	56th St	111,700	C	12%	13,400
56th St	I-65 (Exit 20)	100,950	C	13%	13,120
I-65 (Exit 20)	71st St	108,500	C	9%	9,760
71st St	86th St	92,200	B	8%	7,380
86th St	I-865	81,060	C	8%	6,480
I-865	US 421 / Michigan Rd	102,730	D	10%	10,270
US 421 / Michigan Rd	US 31 / Meridian St	116,010	E	10%	11,600
US 31 / Meridian St	Keystone Ave	121,040	F	8%	9,680
Keystone Ave	Allisonville Rd	129,140	F	8%	10,330
Allisonville Rd	I-69 / SR 37	124,190	E	8%	9,940
I-69 / SR 37	Shadeland Ave / 56th St	146,940	E	12%	17,630
Shadeland Ave / 56th St	US 36 / SR 67 / Pendleton Pike	154,970	D	11%	17,050
US 36 / SR 67 / Pendleton Pike	I-70 (Exit 44)	157,200	D	11%	17,290
I-70 (Exit 44)	US 40 / E Washington St	110,000	C	15%	16,500
US 40 / E Washington St	US 52 / Brookville Rd	96,520	D	15%	14,480
US 52 / Brookville Rd	Shadeland Ave	95,500	C	15%	14,330
Shadeland Ave	I-74 / US 421 /Southeastern Av	110,270	C	15%	15,440
Begin I-74 travel over I-465					
I-74 / US 421 /Southeastern Av	Emerson Ave	101,460	D	16%	16,230
Emerson Ave	I-65 (Exit 53)	112,720	E	15%	16,910

2.2.13. Interstate 469

FROM	TO	AADT	LOS	Truck %	AADTT
I-69 (S jct.)	Lafayette Center Rd	20,960	A	35%	7,340
Lafayette Center Rd	Indianapolis Rd	20,270	A	36%	7,300
Indianapolis Rd	SR 1	18,970	A	38%	7,210
SR 1	Winchester Rd	19,480	A	38%	7,400
Winchester Rd	US 27/33	19,700	A	38%	7,490
US 27/33	Marion Center Rd	18,880	A	42%	7,930
Marion Center Rd	Tillman Rd	17,280	A	44%	7,600
Tillman Rd	Minnich Rd	18,460	A	41%	7,570
Minnich Rd	US 30 / SR 930	17,370	A	43%	7,470
US 30 / SR 930	US 24	40,160	C	31%	12,450
US 24	SR 37	30,300	B	24%	7,270
SR 37	Maplecrest Rd	27,810	B	25%	6,950
Maplecrest Rd	I-69 (N jct.)	40,610	C	17%	6,900

2.2.14. Interstate 865

FROM	TO	AADT	LOS	Truck %	AADTT
I-65	*I-465*	*25,960*	*B*	*21%*	*5,450*

2.2.15. US 20/31 (St. Joseph Valley Pkwy / Dean Mock Expwy)

FROM	TO	AADT	LOS	Truck %	AADTT
Michigan State Line	Cleveland Rd / Brick Rd	18,450	A	19%	3,510
Cleveland Rd / Brick Rd	I-80/90 (Toll Road)	22,010	B	23%	5,060
I-80/90 (Toll Road)	US 20 / Lincolnway West	25,500	B	21%	5,360
Begin US 20 travel over US 31					
US 20 / Lincolnway West	SR 2 / Western Ave	24,460	B	24%	5,870
SR 2 / Western Ave	Mayflower Rd	26,470	B	28%	7,410
Mayflower Rd	SR 23	29,250	B	24%	7,020
SR 23	US 31 / Michigan St	29,440	B	25%	7,360
End US 31 travel over US 20					
US 31 / Michigan St	Ironwood Dr	34,300	B	21%	7,200
Ironwood Dr	SR 331 (W jct.)	35,860	B	20%	7,170
SR 331 (W jct.)	SR 331 (Elm Rd/Capital Ave)	32,240	B	20%	6,450
SR 331 (Elm Rd/Capital Ave)	SR 19 (Nappanee St)	26,760	B	21%	5,620
SR 19 (Nappanee St)	US 33	29,770	B	23%	6,850
US 33	CR 17	20,520	A	25%	5,130

2.2.16. SR 62/66 (Lloyd Expressway) (Freeway Segments Only)

FROM	TO	AADT	LOS	Truck %	AADTT
Fulton Ave	US 41	60,330	C	N/A	N/A
End SR 62 / Begin SR 66					
US 41	Weinbach Ave	62,860	C	N/A	N/A
Weinbach Ave	Boeke Rd	56,010	C	N/A	N/A
Boeke Rd	Vann Ave	66,460	C	N/A	N/A

Note: The above segments are the freeway segments of the Lloyd Expressway. However, the western terminus at Fulton Avenue and the eastern terminus at Vann Avenue are signalized intersections, as are the two ramp terminals at US 41. N/A indicates that vehicle classification counts were not conducted on that segment of roadway.

2.2.17. SR 265

FROM	TO	AADT	LOS	Truck %	AADTT
I-65	*SR 62*	*26,450*	*B*	*12%*	*3,170*

Note: SR 265 will become I-265 when the connection across the Ohio River to I-265 in Kentucky is completed.

2.2.18. SR 912 (Cline Avenue)

FROM	TO	AADT	LOS	Truck %	AADTT
I-90 (Toll Road) (W jct.)	US 41 (Calumet Ave) *	10,490	A	8%	840
US 41 (Calumet Ave)	Riley Rd	24,290	A	N/A	N/A
Riley Rd	Michigan Ave	30,520	A	N/A	N/A
Michigan Ave	US 12 / Industrial Hwy	44,300	B	N/A	N/A
US 12 / Industrial Hwy	SR 312 / Chicago Ave	49,820	C	N/A	N/A
SR 312 / Chicago Ave	I-90 (Toll Road) (E jct.)	50,920	C	N/A	N/A
I-90 (Toll Road) (E jct.)	US 12/20 (5th Ave)	53,060	D	N/A	N/A
US 12/20 (5th Ave)	15th Ave / 169th St	53,940	D	12%	6,470
15th Ave / 169th St	I-80/94 (Borman Expwy)	68,530	E	N/A	N/A

* - Note: This segment is essentially the ramps to and from I-90 (Indiana Toll Road).

Note: The non-freeway segment of SR 912 south of I-80/94 is not included in this freeway analysis. N/A indicates that vehicle classification counts were not conducted on that segment of roadway.

2.3. HIGH VOLUME ARTERIALS INTERSECTING THE INTERSTATE SYSTEM

While investment in ITS devices will be focused on the Interstate System and other freeways, there are arterials that approach and feed the Interstate System with significant volumes of traffic. When incidents occur on a downstream Interstate, motorists on the arterial would benefit from receiving information regarding the incident (as would motorists on the affected Interstate), as some arterial motorists would choose an alternate route and not enter the affected Interstate. This motorist information would be conveyed in the form of a Dynamic Message Sign (DMS).

Candidate arterials should generally meet the following criteria: **an INDOT facility with a current two-way AADT of 40,000 or greater for at least two miles approaching an Interstate that is currently fully deployed with Traffic Management / ITS devices** (vehicle detection every ½ - 1 mile and CCTV cameras) **or is currently proposed for full deployment of Traffic Management / ITS devices** (vehicle detection every ½ - 1 mile and CCTV cameras). A two-way AADT of 40,000 generally corresponds to LOS C for a six lane divided arterial and LOS E for a four lane divided arterial.

2.3.1. US 30 (Northwest Indiana Area)

INTERSTATE BEING APPROACHED ON US 30	LENGTH	AADT
I-65, from the west, Northwest Indiana / Merrillville	7.9 miles	47,990 – 74,100

2.3.2. US 31 (Indianapolis Area)

INTERSTATE BEING APPROACHED ON US 31	LENGTH	AADT
I-465 (South Leg), from the south, Indianapolis *	8.4 miles	38,790 – 62,060
I-465 (North Leg), from the north, Indianapolis	2.8 miles	43,230 – 59,340

* While a portion of US 31's AADT is slightly below 40,000 in the middle of this 8.4 mile segment, the lengthy nature of this segment of US 31, coupled with traffic near or above the 40,000 threshold throughout, warrants consideration of DMS deployment.

2.3.3. US 36 (Indianapolis Area)

INTERSTATE BEING APPROACHED ON US 36	LENGTH	AADT
I-465 (West Leg), from the west, Indianapolis	7.0 miles	40,980 – 62,220

2.3.4. SR 37 (Indianapolis Area)

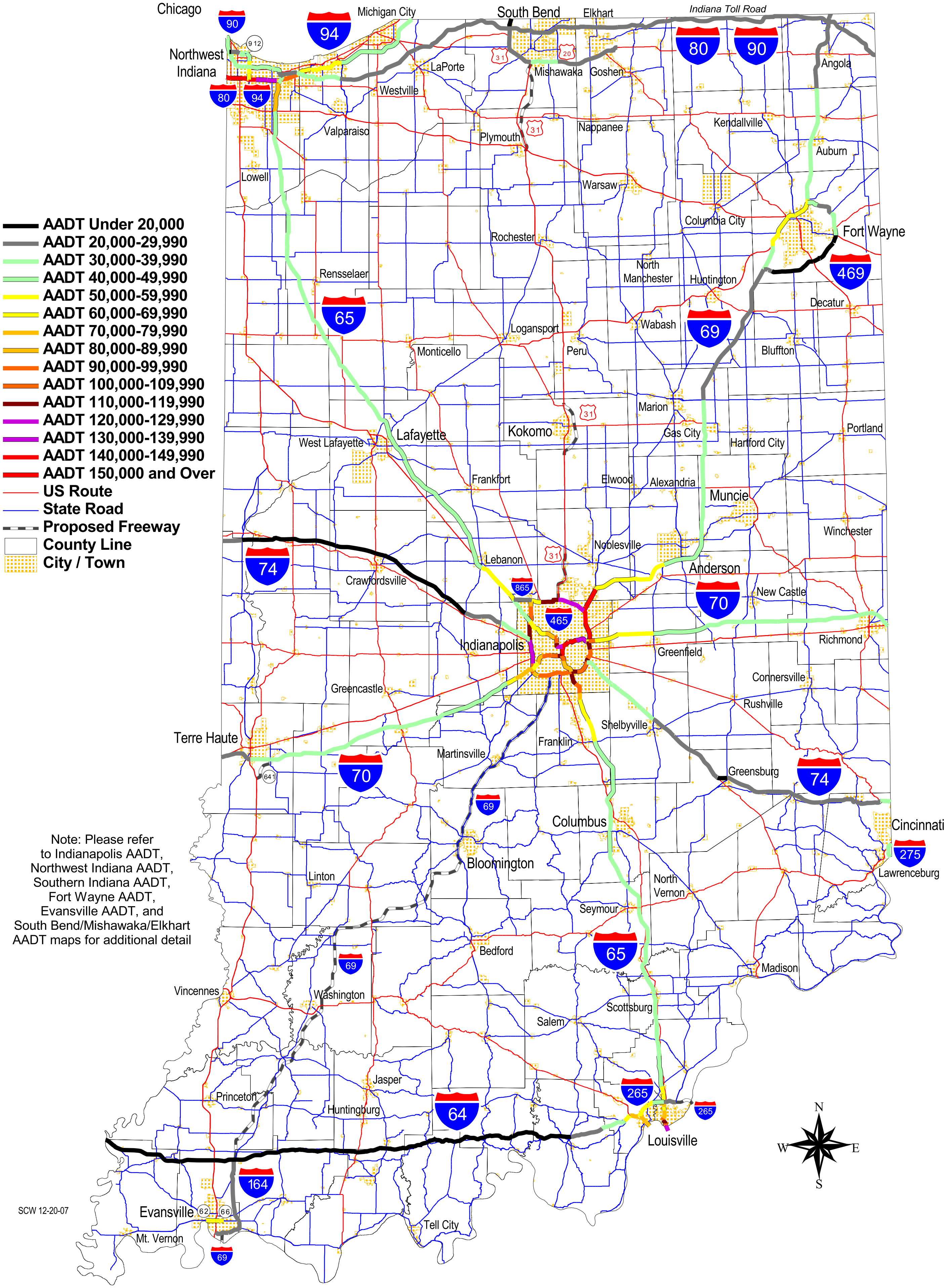
INTERSTATE BEING APPROACHED ON SR 37	LENGTH	AADT
I-69, from the north, Indianapolis (Fishers)	5.7 miles	43,870 – 48,550

2.3.5. SR 912 (Northwest Indiana Area) (Freeway north of I-80/94)

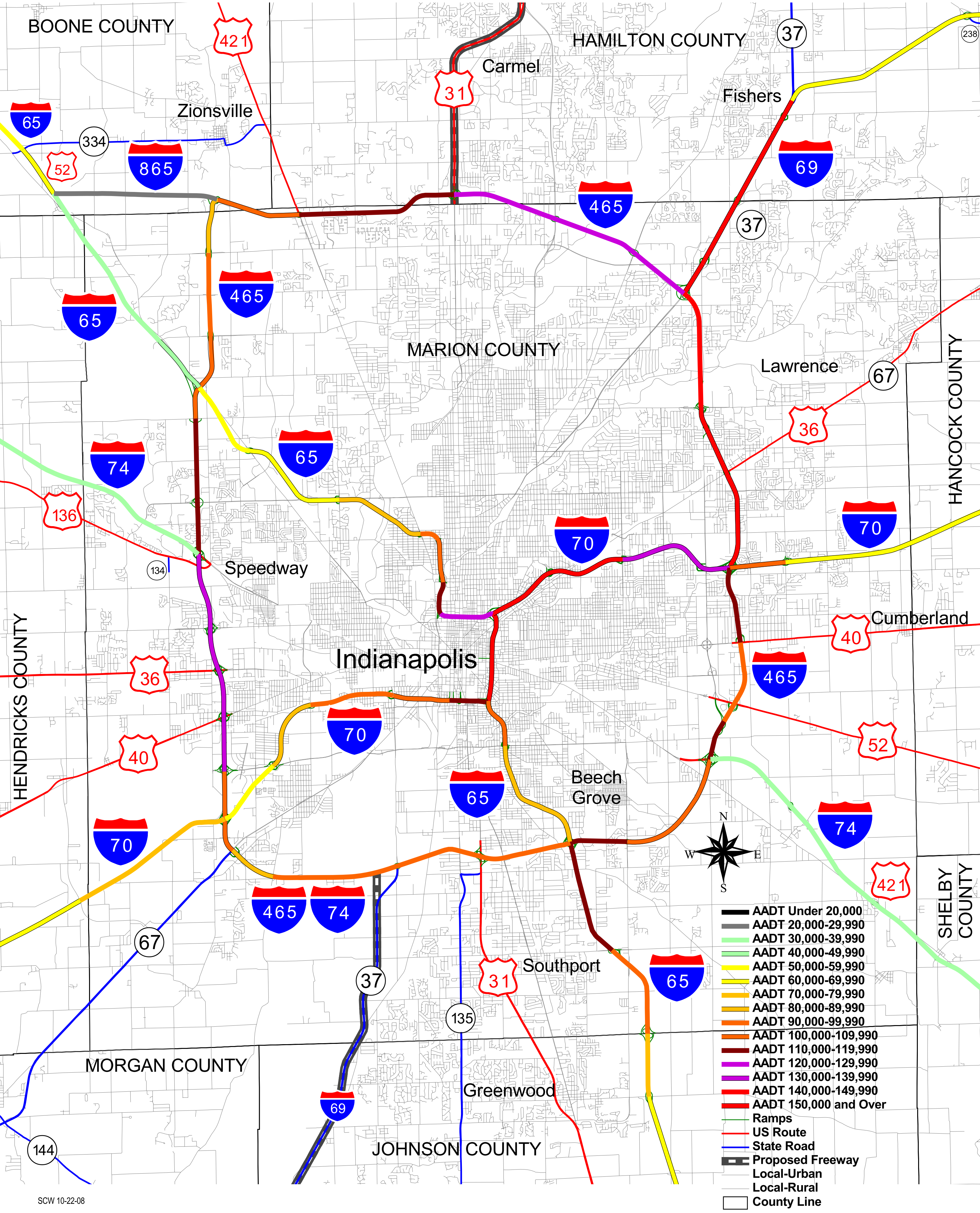
INTERSTATE BEING APPROACHED ON SR 912	LENGTH	AADT
I-80/94 (Borman Expwy), from the north, Northwest IN	5.9 miles	44,300 – 68,530
I-80/94 (Borman Expwy), from the south, Northwest IN *	1.3 miles	41,090 – 43,690

* While the segment of SR 912 approaching I-80/94 from the south is only 1.3 miles in length from its terminus at Ridge Road, it feeds directly into the freeway portion of SR 912, which this document recommends for a full Advanced Traffic Management System (ATMS), as well as intersects I-80/94, thus warranting the consideration of DMS deployment.

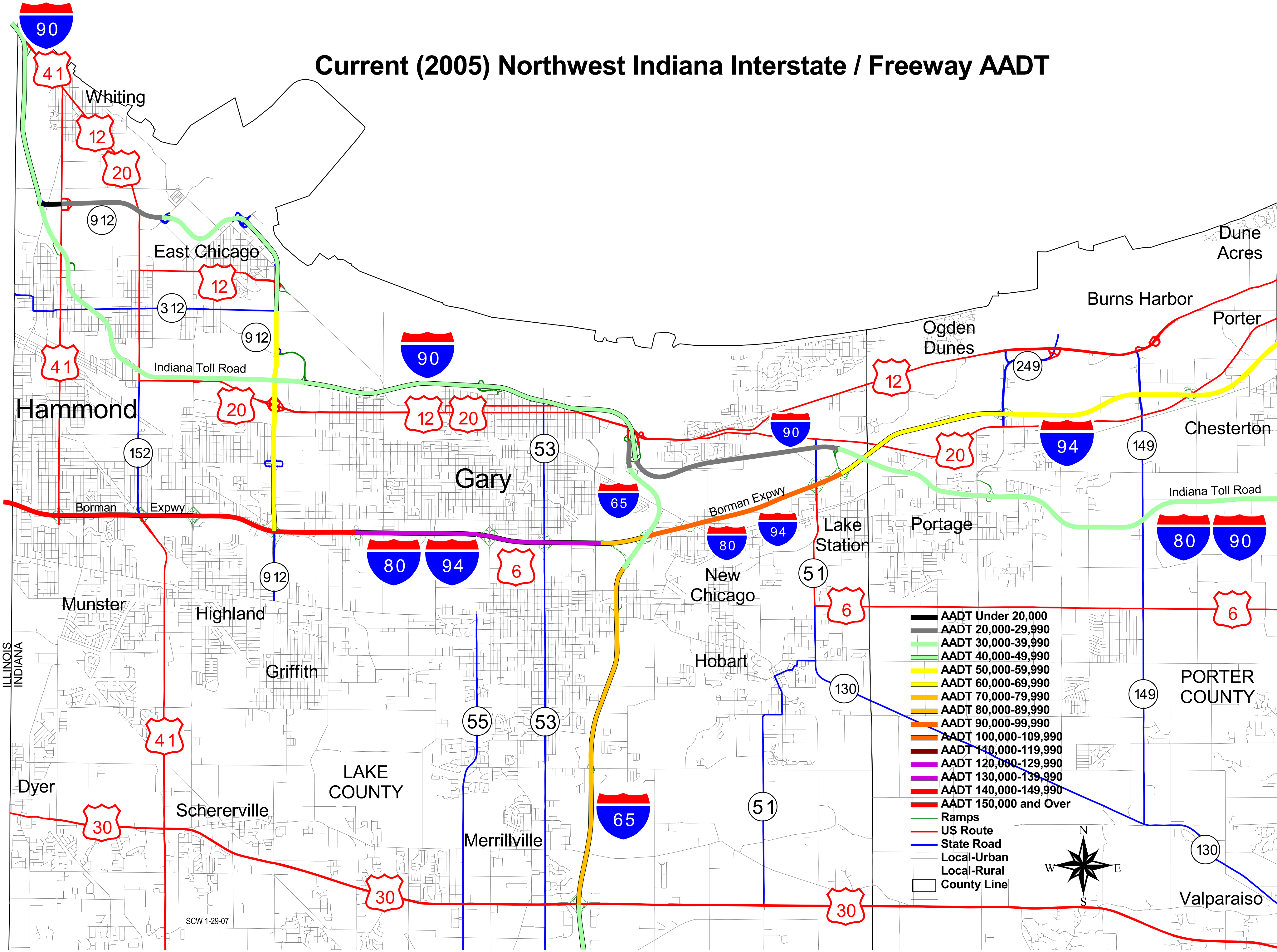
Current (2005) Interstate / Freeway AADT



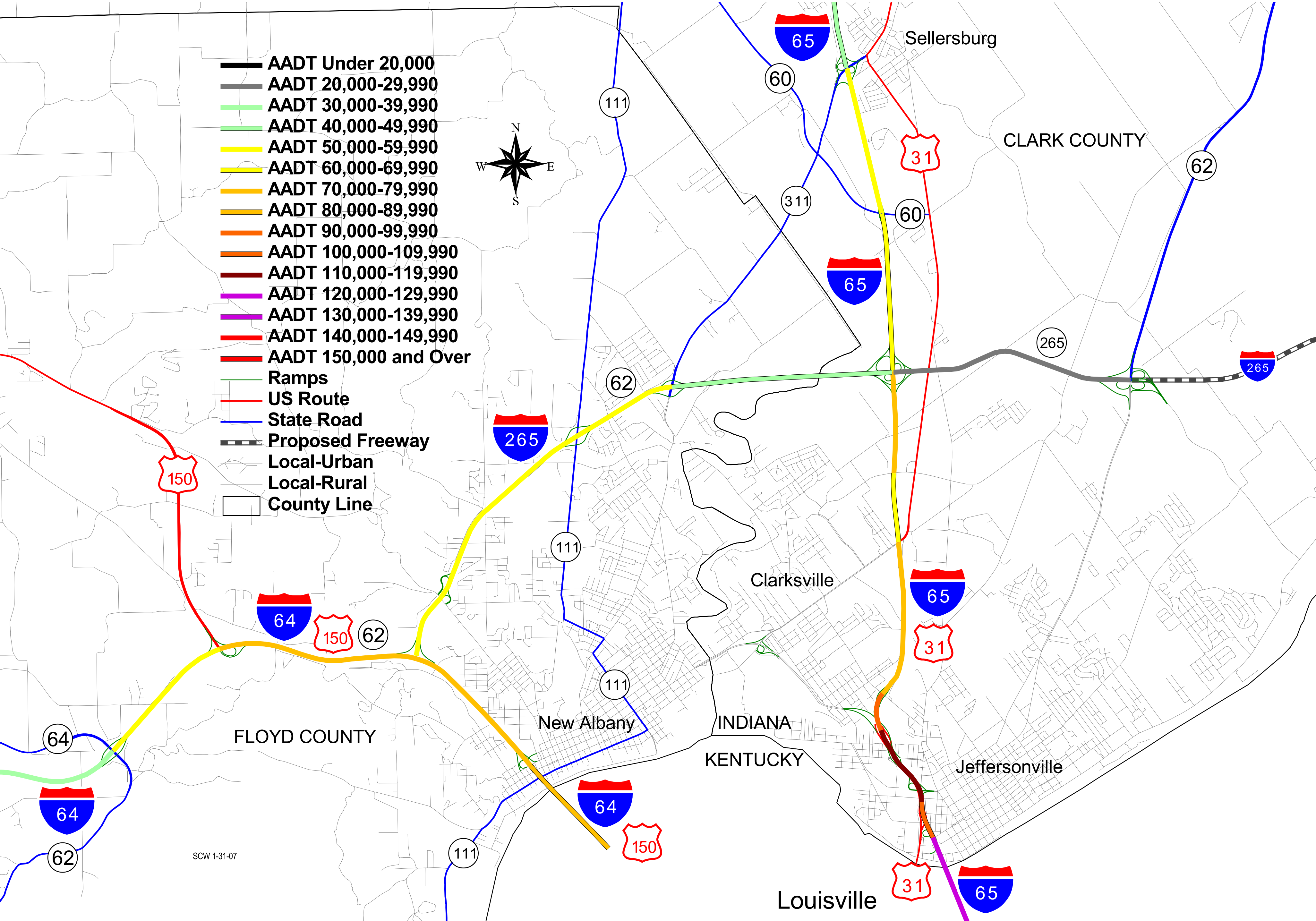
Current (2005) Indianapolis Interstate / Freeway AADT



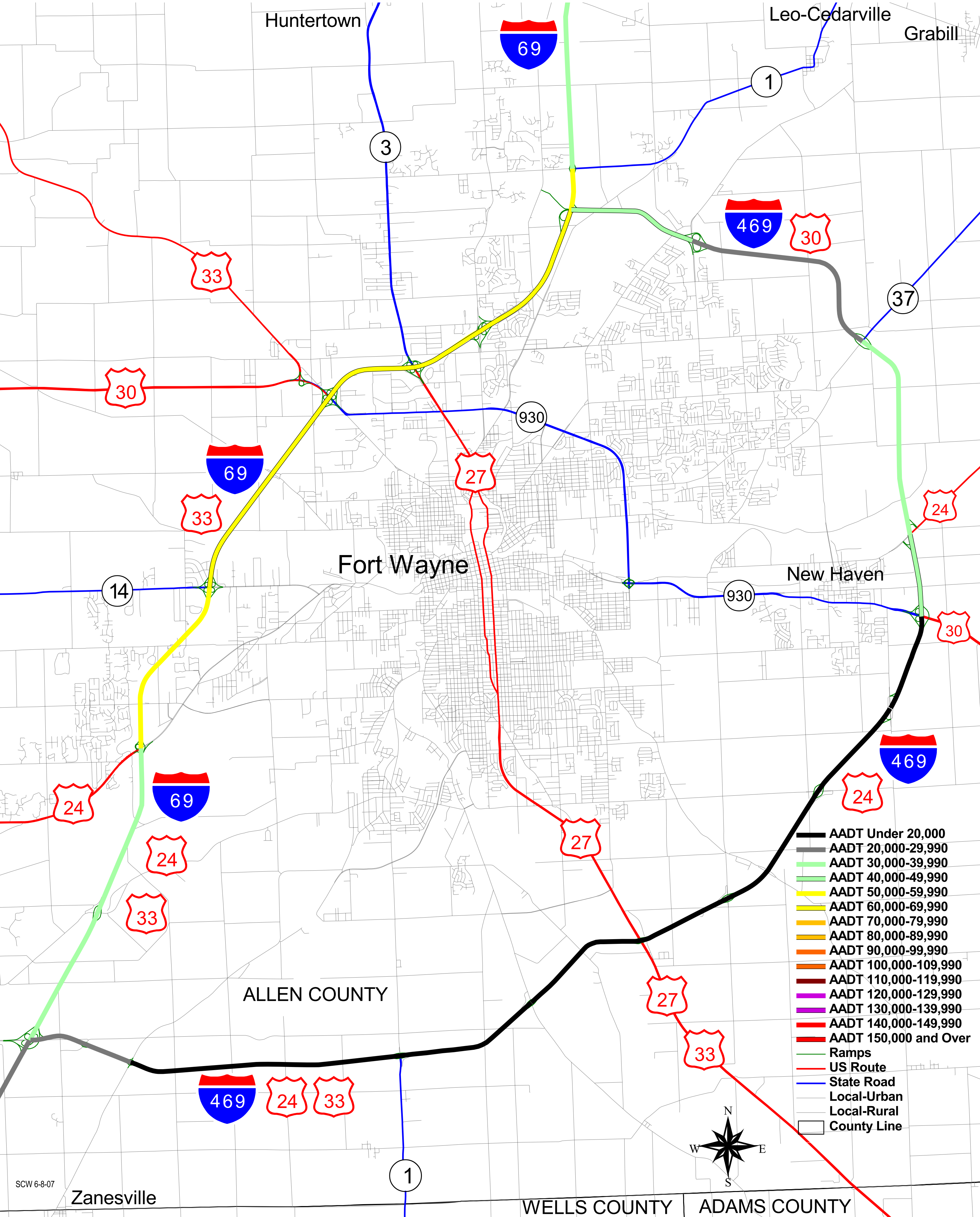
Current (2005) Northwest Indiana Interstate / Freeway AADT



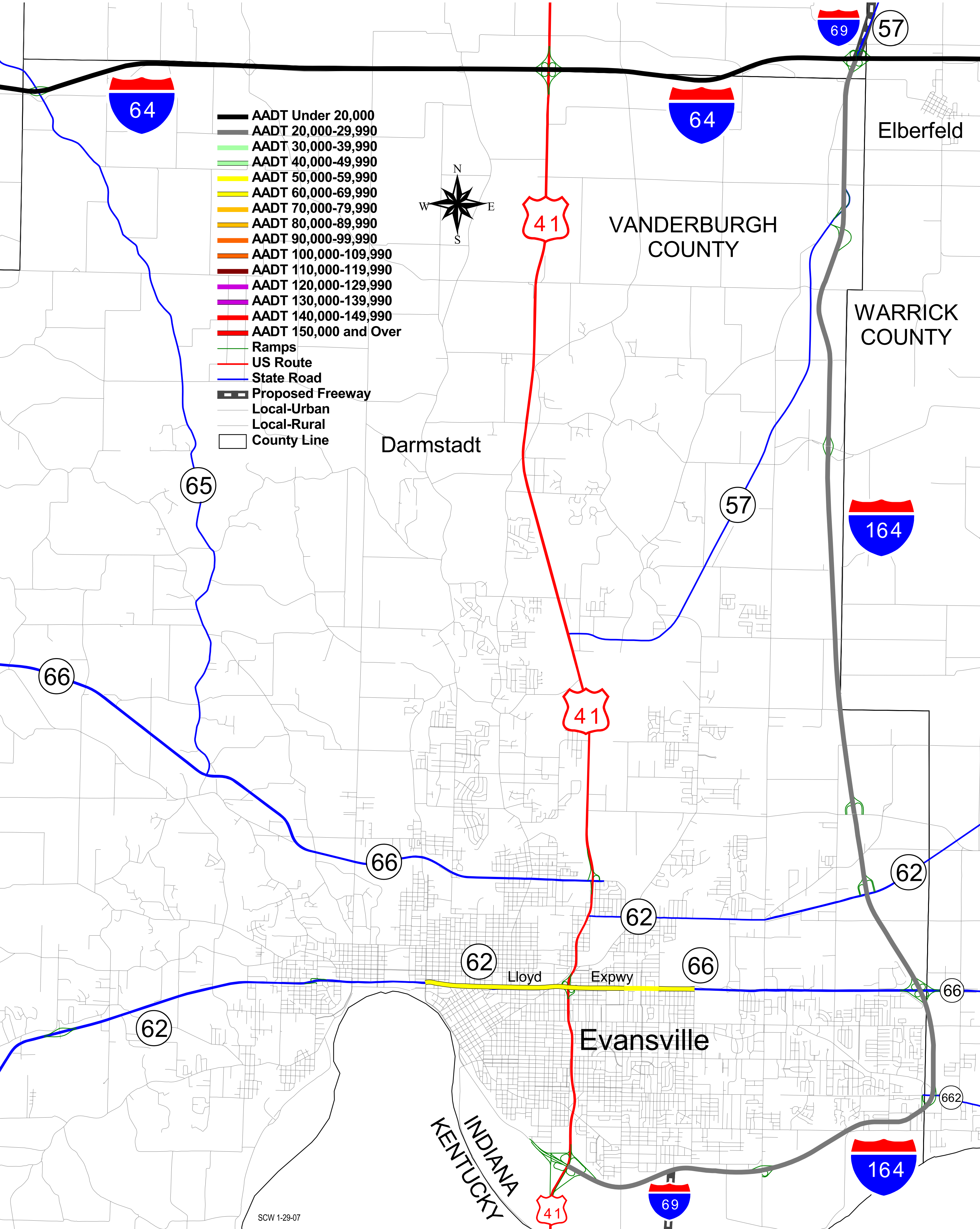
Current (2005) Southern Indiana Interstate / Freeway AADT



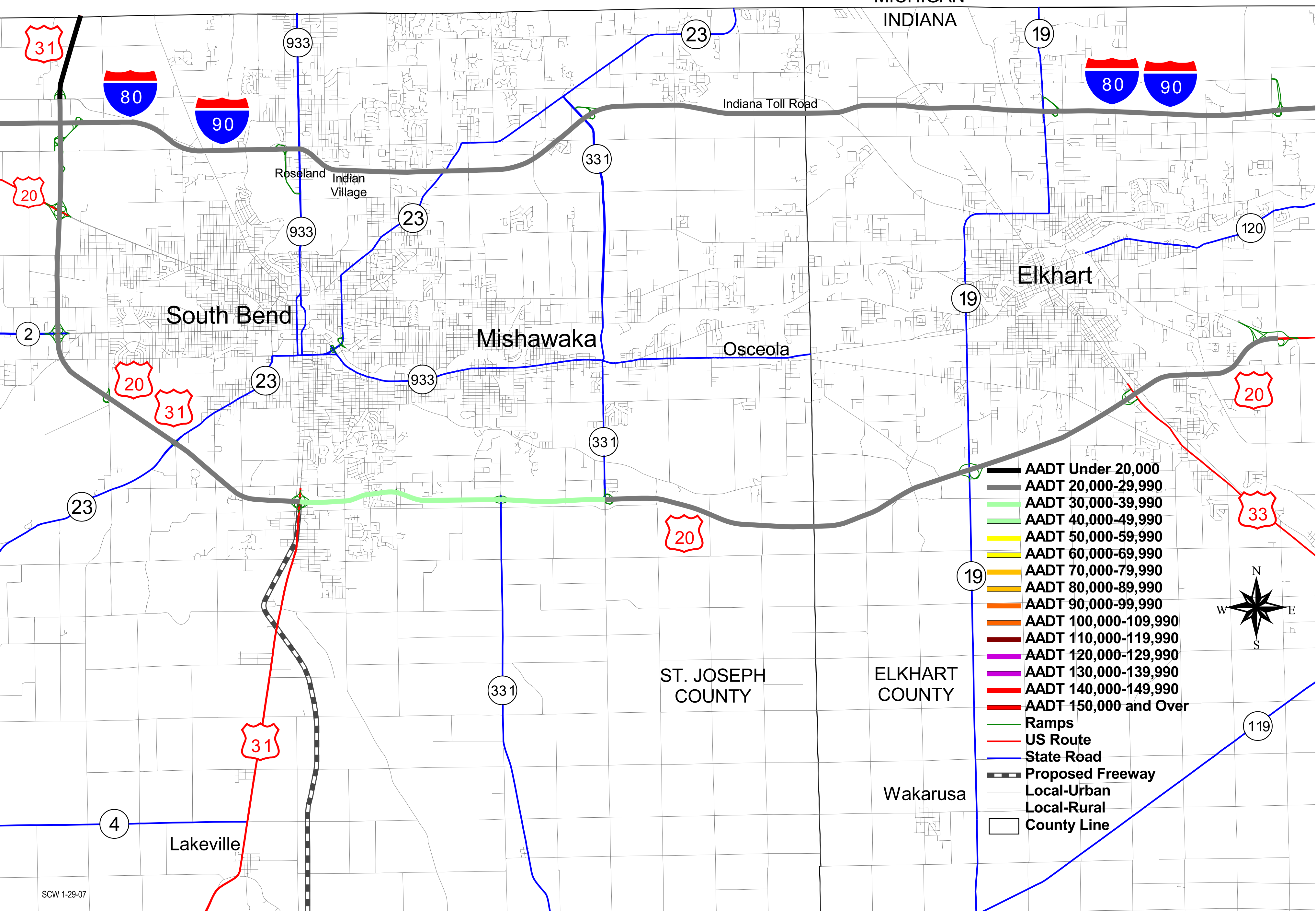
Current (2005) Fort Wayne Interstate / Freeway AADT



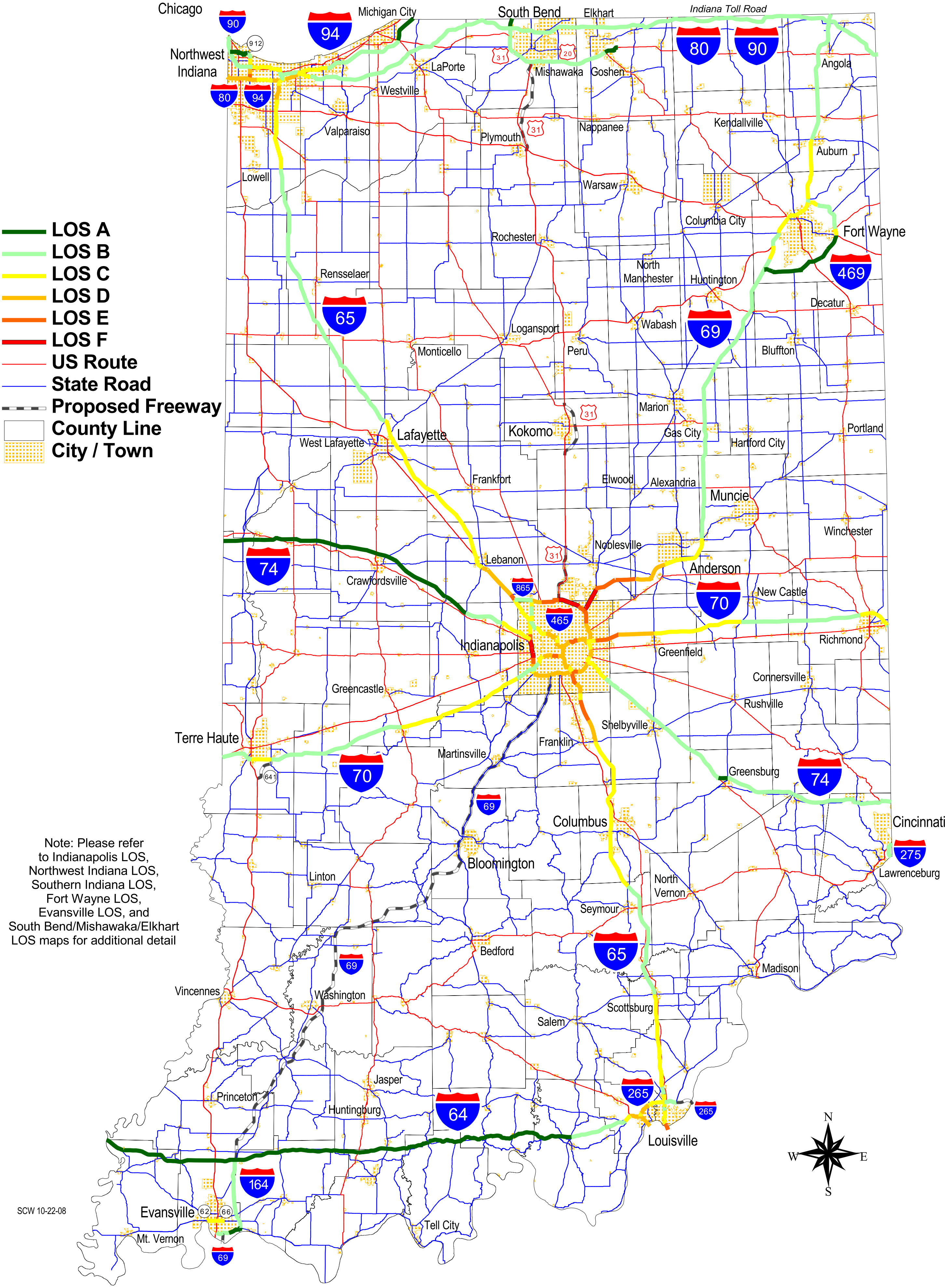
Current (2005) Evansville Interstate / Freeway AADT



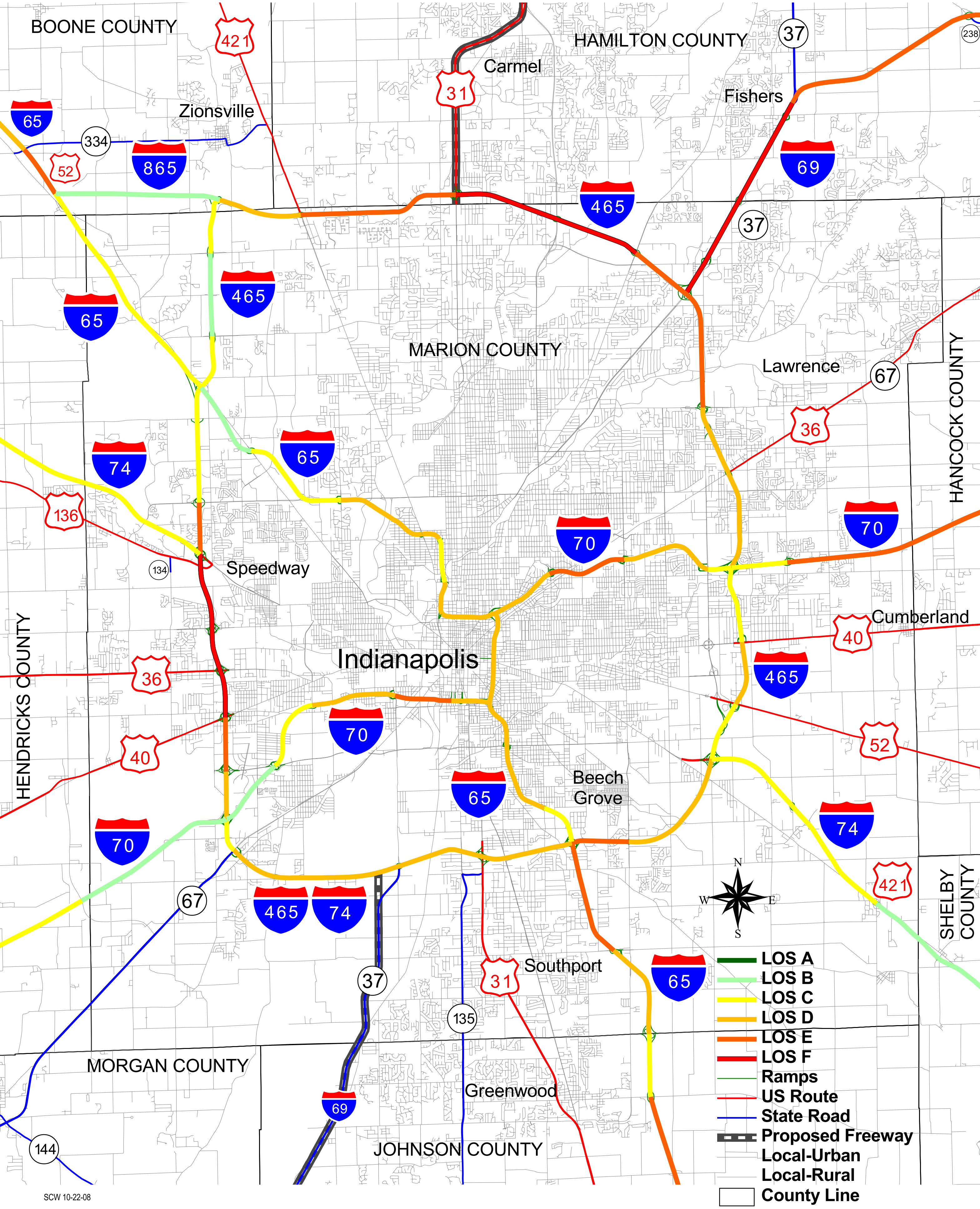
Current (2005) South Bend / Mishawaka / Elkhart Interstate / Freeway AADT



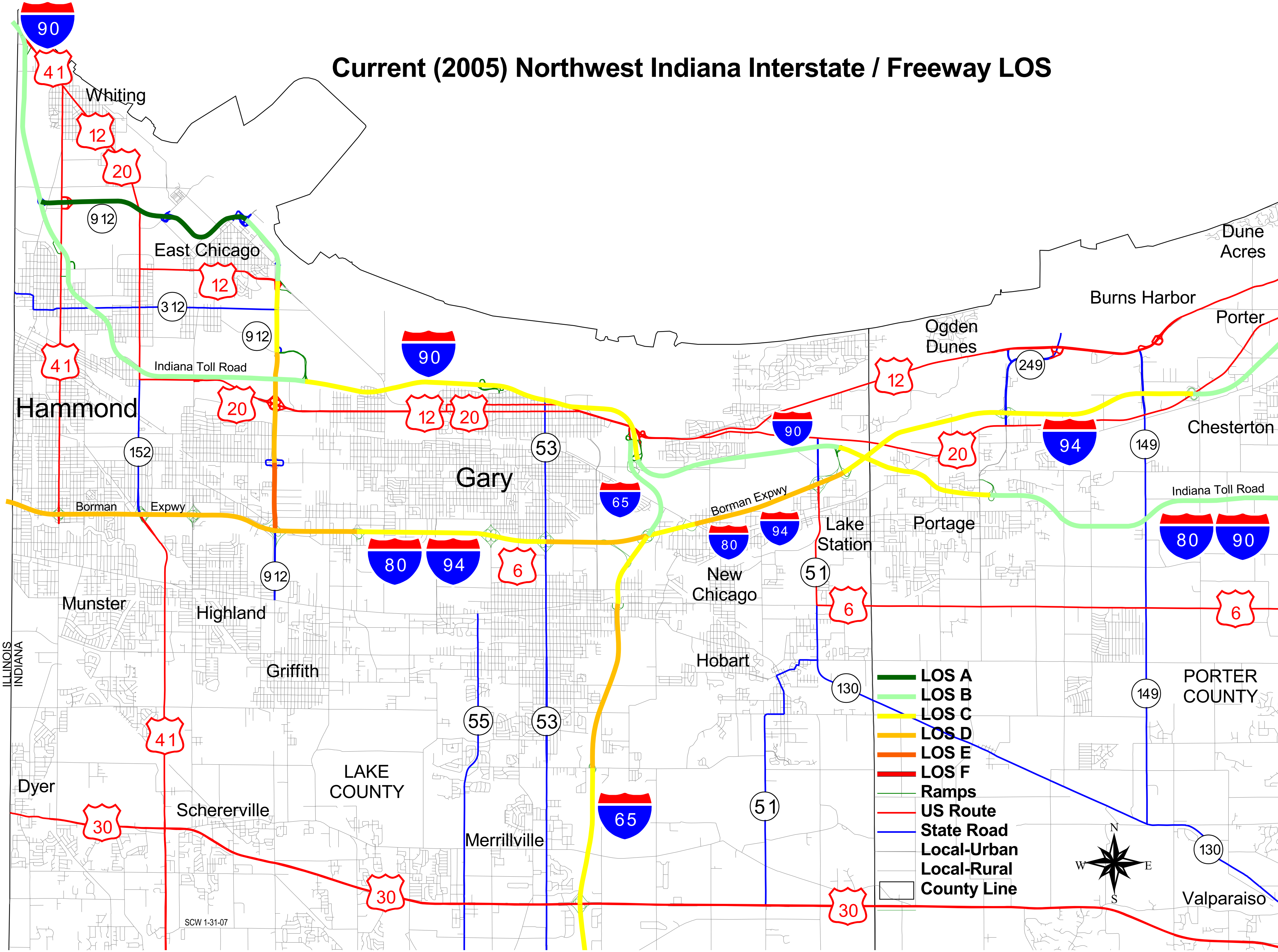
Current (2005) Interstate / Freeway Level of Service (LOS)



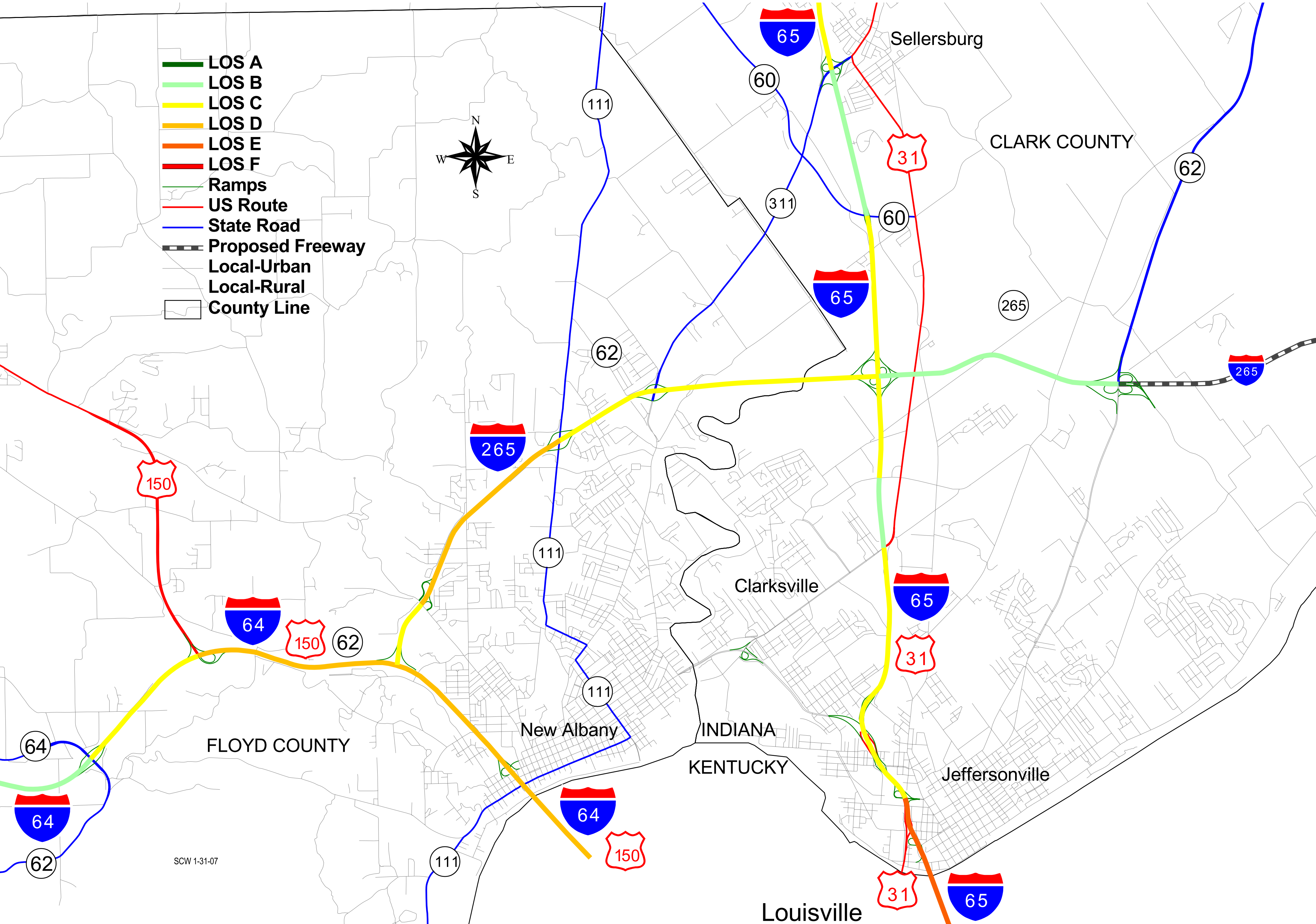
Current (2005) Indianapolis Interstate / Freeway LOS



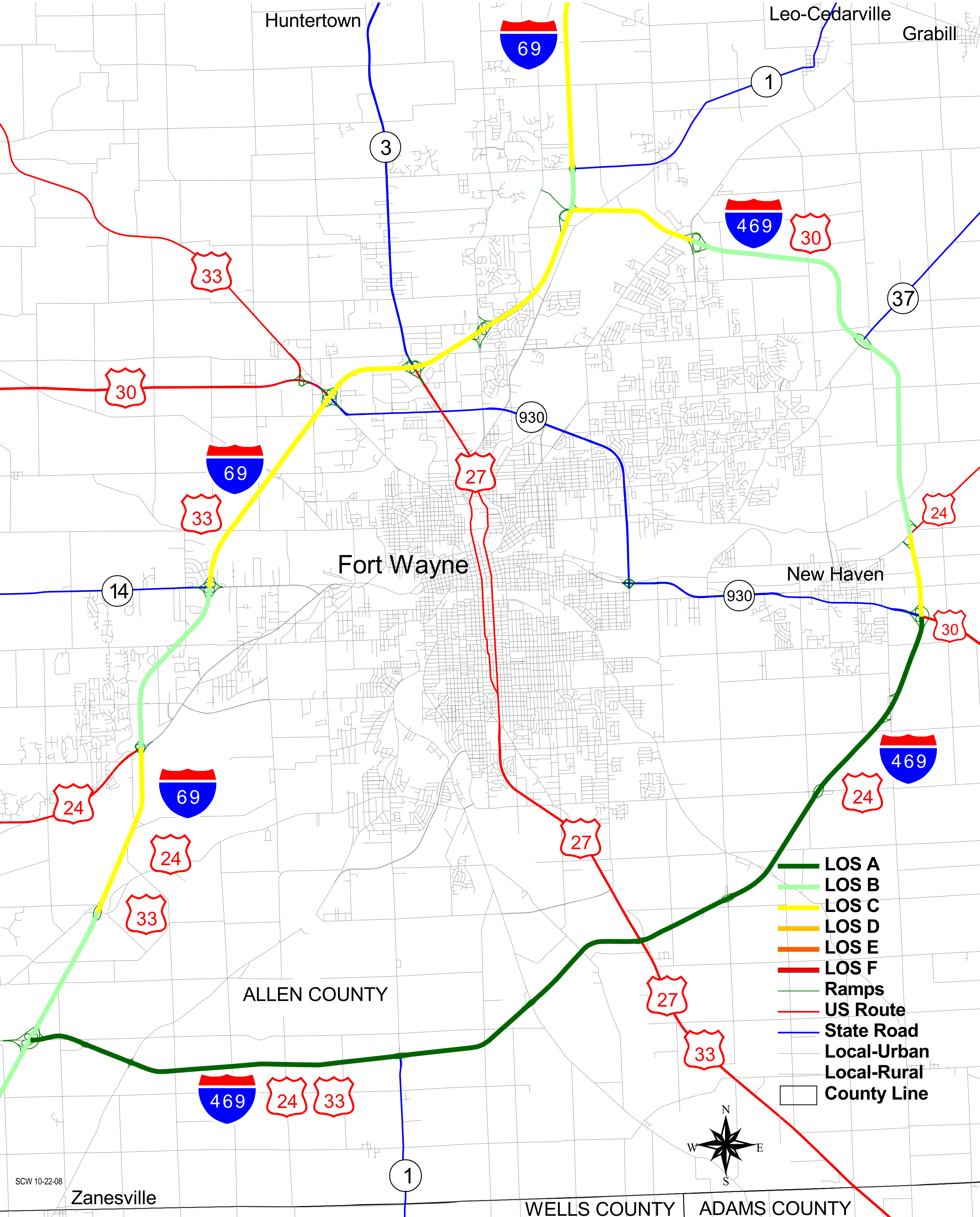
Current (2005) Northwest Indiana Interstate / Freeway LOS



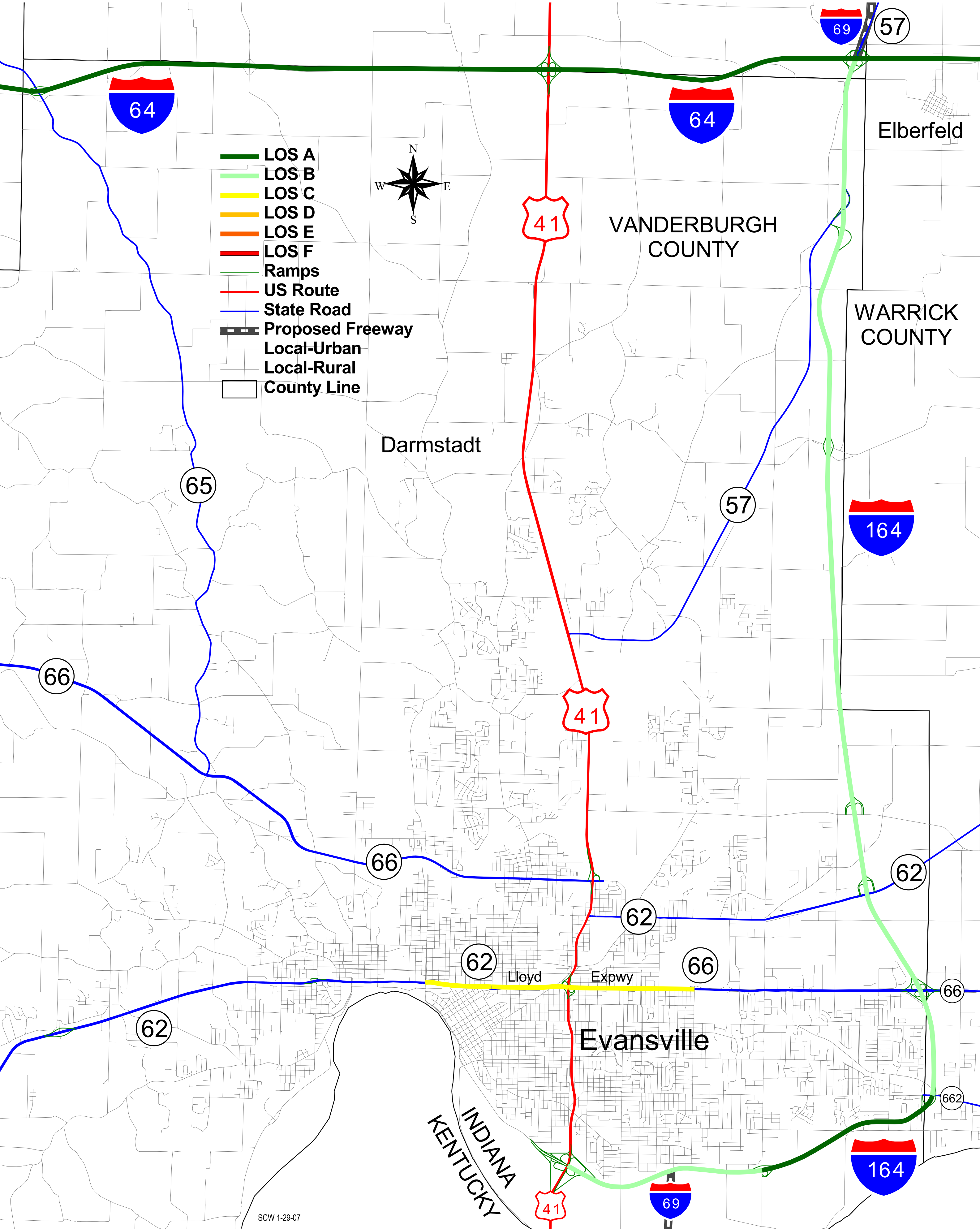
Current (2005) Southern Indiana Interstate / Freeway LOS



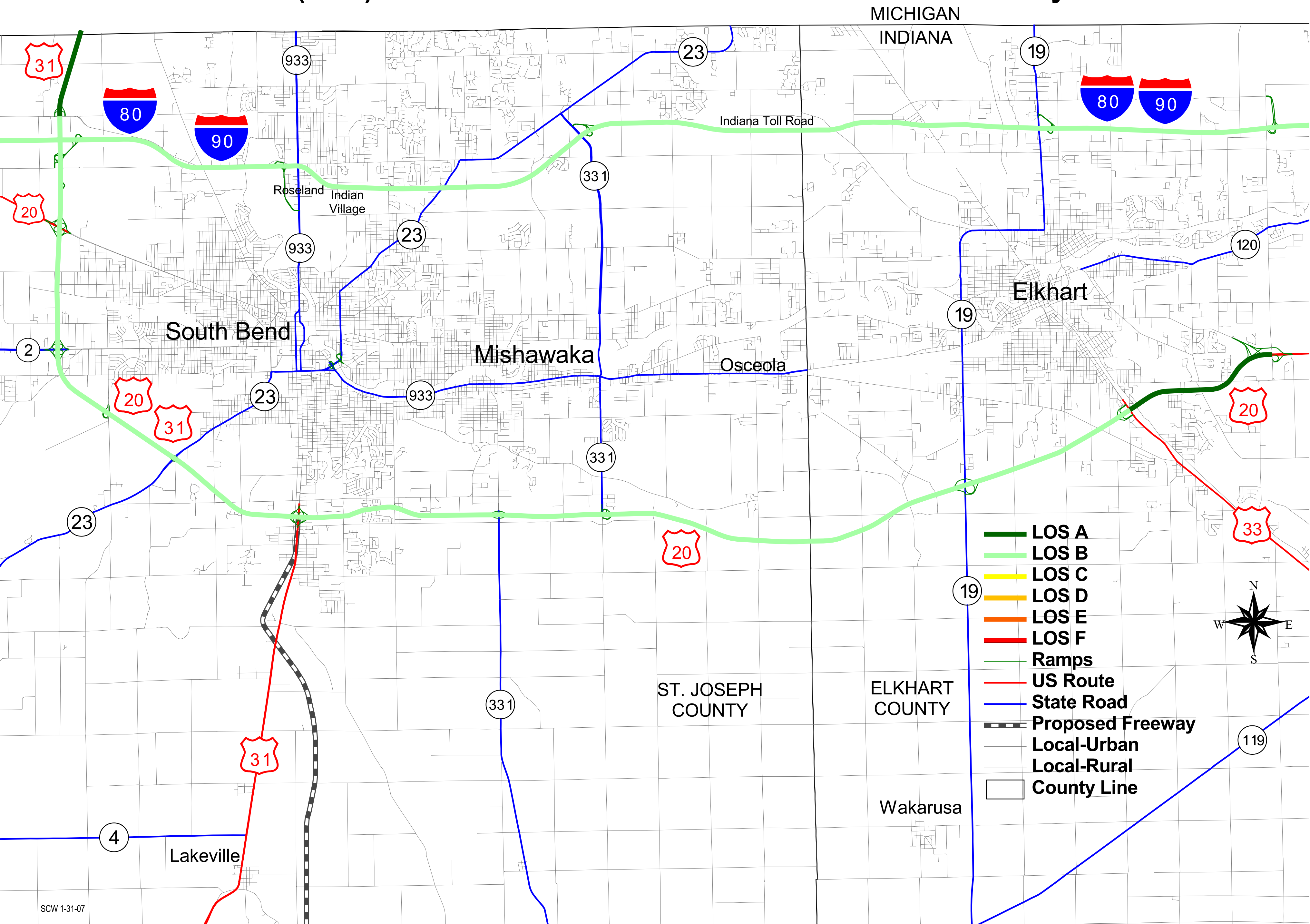
Current (2005) Fort Wayne Interstate / Freeway LOS



Current (2005) Evansville Interstate / Freeway LOS



Current (2005) South Bend / Mishawaka / Elkhart Interstate / Freeway LOS



CHAPTER 3 – PROPOSED INDOT MAJOR CAPITAL IMPROVEMENTS

3.1. INTRODUCTION

The State Highway System is comprised of 11,182 miles of Interstates, US Routes, and State Roads. The system has grown, matured, and been systematically upgraded over the years; this is an ongoing process. Expansion Projects add additional capacity to a roadway or the network, specifically Added Travel Lanes, New Road Construction, large-scale Interchange Modifications, and New Interchange Construction projects. These Expansion Projects are sometimes referred to as Major Capital Improvements, as they often require a large investment of funds for the improvement. Major Capital Improvements or Expansion Projects provide a unique opportunity to implement Traffic Management / ITS devices in a coordinated fashion with a larger project.

Scheduling and Project Management System (SPMS) information in this chapter is current as of early-mid November 2008. The *INDOT 2030 Long Range Transportation Plan* was also consulted at the same time. Comments on Chapter 3 of Version 2.1 of this document were received from INDOT's Office of Urban and Corridor Planning in September 2007; appropriate modifications were incorporated at that time.

3.2. PROPOSED INTERSTATE / FREEWAY MAJOR CAPITAL IMPROVEMENTS

Major Capital Improvements or Expansion Projects provide a unique opportunity to implement Traffic Management / ITS devices in a coordinated fashion with a larger project, further minimizing disruptions to the motoring public. Other noteworthy projects that do not add any significant capacity, such as Pavement Replacement, 3R (Resurface, Restore, and Rehabilitate), or 4R (Resurface, Restore, Rehabilitate, and Reconstruct) projects present a similar opportunity to incorporate Traffic Management / ITS devices on a roadway as part of a larger project.

Please note that preventive maintenance / overlay projects are **not** appropriate for inclusion of ITS field devices, as the scope and magnitude of these pavement projects are purposely limited. Therefore, preventive maintenance / overlay projects are not included in the tables to follow.

As stated in Chapter 2, the focus of ITS field device investments in the INDOT network will be the Interstate System and other freeways. As such, the following tables provide information regarding the proposed timing of these projects on the Interstate System and other freeways that are Ready for Contracts (RFC) in 2009 and beyond. **Only active projects in SPMS are included; proposed, suspended, or provisional projects are not included.** Furthermore, **active projects that are considered funded in the *INDOT 2030 Long Range Transportation Plan* but beyond 2025 are indicated as such as "LRP 2025+" in the "RFC Date" column. Improvements that are considered unfunded ("Illustrative") in the *INDOT 2030 Long Range Transportation Plan* are <u>not</u> included in the tables to follow, even if they are an active project in SPMS.** Logically, projects that are closer to implementation will have a more reliable Ready for Contracts date; projects farther out in the future are more likely to have adjustments in their RFC date due to the nature and varying complexities of project development and funding availability.

It is important to note that if a project is shown in the tables below it in no way reflects that INDOT will make an ITS field device investment in that area; that will be addressed in Chapter 7, ITS Deployment Recommendations - by Deployment Type.

Similar to the tables in Chapter 2, the ***segments of Interstate that are <u>currently fully deployed</u> with Traffic Management / ITS devices*** (½ - 1 mile vehicle detection and Closed Circuit TV Cameras (CCTV Cameras)), ***are shown in bold and italics*** *in the tables to follow.*

Finally, *segments of Interstate that are* ***currently*** *<u>proposed for full deployment</u> of Traffic Management / ITS devices* (½ - 1 mile vehicle detection and CCTV Cameras), *are shown in italics* in the tables to follow. This includes the Indianapolis area and portions of Southern Indiana near Louisville as part of the TRIMARC deployment (Traffic Response and Incident Management Assisting the River Cities), a joint venture of the Kentucky Transportation Cabinet (KYTC) and INDOT, with KYTC the lead agency.

3.2.1. Interstate 64

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Rest Area Modernization at the Dale (Nancy Hanks) Rest Area (EB & WB), E of US 231	9804040	$12.6	10-17
New Interchange Construction at Gethsemane Rd (W of SR 135)	0401394	$21.8	12-10
Interchange Modification at SR 62/64 **	0101102	$10.5	2-09
Added Travel Lanes from I-265 to SR 111 / Spring St *	0500307	$16.3	6-09

* - Note: I-64 from US 150 to the Kentucky State Line currently features CCTV Camera deployment with one mile spacing, but no vehicle detection, nor is it currently proposed for vehicle detection, per the TRIMARC Strategic Plan.

** - Note: I-64 from SR 62/64 to US 150 is proposed for CCTV deployment with one mile spacing, but no vehicle detection, per the TRIMARC Strategic Plan.

3.2.2. Interstate 65

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
New Bridge Construction over the Ohio River (joint project with Kentucky)	***0201294***	***$231.6***	***8-13***
Added Travel Lanes on the approach to the Ohio River (Section 3A)	***0810312***	***$70.4***	***6-13***
Added Travel Lanes on the approach to the Ohio River (Section B)	***0810313***	***$43.3***	***6-14***
Added Travel Lanes on the approach to the Ohio River (Section 3C)	***0810314***	***$51.1***	***6-15***
Added Travel Lanes on the approach to the Ohio River (Section 3D)	***0810315***	***$111.9***	***6-16***
Added Travel Lanes on the approach to the Ohio River (Section 3E)	***0810316***	***$17.6***	***6-17***
Added Travel Lanes on the approach to the Ohio River (Section 3F)	***0810317***	***$30.4***	***6-18***
Interchange Modification at SR 58	0101101	$6.0	10-09
Added Travel Lanes from 0.5 mile S of Whiteland Rd to 0.5 mile S of Greenwood Rd (Main St), including Interchange Modification at Whiteland Rd (Phase 4)	*0300840 0400975*	*$190.9*	*4-24*
Added Travel Lanes from 0.5 mile S of Greenwood Rd (Main St) to 0.5 mile S of County Line Rd, including Interchange Modification at Greenwood Rd (Phase 3)	*0401037 0401039*	*$86.4*	*8-15*
Added Travel Lanes from 0.5 mile S of County Line Rd to 0.5 mile S of Southport Rd, including Interchange Modification at County Line Rd (Phase 2)	*0300853 0401036*	*$85.3*	*8-15*
Added Travel Lanes from 0.5 mile S of Southport Rd to 0.25 mile S of I-465 (South Leg), including Interchange Modification at Southport Rd (Phase 1)	*0400909 0400974*	*$144.0*	*7-14*
Added Travel Lanes from 0.5 mile N of I-465 (South Leg) to Raymond St	*0500413*	*$296.4*	*LRP 2025+*
Added Travel Lanes from Raymond St to and including the I-70 North Split	*9700400 0201047 0201053*	*$1169.9*	*LRP 2021 - 2025*
Added Travel Lanes from I-865 to 0.5 mile N of SR 267 (includes SR 39 bridge over I-65)(Phase 2)	*0200903 0800476*	*$61.2*	*12-09*
Added Travel Lanes from 0.5 mile N of SR 267 to 0.5 mile S of CR 100E (Lebanon Interchange) (Phase 3)	0200904	$45.6	12-10
Added Travel Lanes from to 0.5 mile S of CR 100E (Lebanon Interchange) to US 52 (Phase 4)	0600304 0800484 0600305	$74.9	12-11
Interchange Modification at SR 39 (Phase 5)	0800478	$10.7	12-12

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Interchange Modification at CR 100E (Phase 5)	0800480	$2.3	12-12
Road Rehabilitation (3R/4R) from 4.3 miles N of US 231 (Exit 193) (Hollingsworth Ditch) to just S of bridge over TP&W RR, 0.5 mile south of US 24/231	0300455	$16.1	8-12
Rest Area Modernization at the Wolcott Rest Area NB & SB), S of US 24/231	0800272	$23.0	1-12
New Interchange Construction at 109th Ave	0500468	$17.8	2-09

Note: Interchange Modification at I-465 (West Leg) is shown under I-465

3.2.3. Interstate 69

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
New Road / Bridge Construction from the Breathitt Pkwy in Kentucky to I-164, 1.8 miles E of US 41 (Placeholder)	0500511	$443.0	LRP 2016 - 2020 *
New Road Construction from SR 68 to 1.5 miles N of SR 68	0800284	$17.9	12-09
New Road Construction from 1.5 miles N of SR 68 to 2.0 miles N of SR 68	0500437	$35.1	1-09
New Road Construction from 2.0 miles N of SR 68 to 0.6 mile N of SR 168	0800285	$42.8	9-10
New Road Construction from 0.6 mile N of SR 168 to 0.5 mile N of SR 64	0500438	$65.0	12-10
New Road Construction from 0.5 mile N of SR 64 to 9.6 miles N of SR 64	0500440	$98.4	1-11
New Road Construction from 9.6 miles N of SR 64 to 9.8 miles S of US 50/150	0500441	$98.4	4-12
New Road Construction from 9.8 miles S of US 50/150 to US 50/150	0500442	$98.4	6-13
New Road Construction from US 50/150 to 8.3 miles N of US 50/150	0500443	$110.4	7-12
New Road Construction from 8.3 miles N of US 50/150 to 8.4 miles S of US 231	0500444	$110.4	10-13
New Road Construction from 8.4 miles S of US 231 to US 231	0500445	$110.4	9-14
New Road Construction from US 231 to 5.0 miles N of US 231	0500446	$89.4	LRP 2016 - 2020 *
New Road Construction from 5.0 miles N of US 231 to 5.0 miles S of the Vincennes / Seymour District Line	0500447	$89.4	LRP 2016 - 2020 *
New Road Construction from 5.0 miles S of the Vincennes / Seymour District Line to the Vincennes / Seymour District Line	0500448	$89.4	LRP 2016 - 2020 *
New Road Construction from Vincennes / Seymour District Line to 6.0 miles S of SR 37	0500449	$109.7	LRP 2016 - 2020 *
New Road Construction from 6.0 miles S of SR 37 to SR 37 SW of Bloomington	0500450	$109.7	LRP 2016 - 2020 *
New Road Construction from SR 37 SW of Bloomington to 7.3 miles N of I-69 / SR 37 jct	0500452	$152.3	LRP 2016 - 2020 *
New Road Construction from 7.3 miles N of I-69 / SR 37 jct to 7.4 miles S of SR 39	0500453	$152.3	LRP 2016 - 2020 *
New Road Construction from 7.4 miles S of SR 39 to SR 39	0500454	$152.3	LRP 2016 - 2020 *
Road Rehabilitation (3R/4R) from SR 39 to 8.5 miles N of SR 39	0500430	$103.8	1-17

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Road Rehabilitation (3R/4R) from 8.5 miles N of SR 39 to 9.0 miles S of I-465 (South Leg)	0500431	$103.8	1-18
Road Rehabilitation (3R/4R) from 9.0 miles S of I-465 (South Leg) to I-465 (South Leg)	0500432	$103.8	1-19
Begin Existing I-69 NE of Indianapolis			
Added Travel Lanes from 0.5 mile S of I-465 (75th St) to 0.5 mile S of 96th St, including Interchange Modification at 82nd St	*0400305 0400412*	*$115.2*	*9-12*
Added Travel Lanes from 0.5 mile S of 96th St to 0.5 mile N of SR 37 / 116th St	*0400308*	*$124.5*	*1-24*
Interchange Modification at 96th St	*0400416*	*$45.0*	*6-23*
Interchange Modification at SR 37 / 116th St	*0400417*	*$98.9*	*9-23*
Added Travel Lanes from 0.5 mile N of SR 37 / 116th St to 0.5 mile N of SR 238	*0400356*	*$124.4*	*9-27*
Interchange Modification at SR 238 (Phase 2)	*0400419*	*$43.6*	*8-26*
Road Reconstruction (3R/4R) from SR 18 to 5.6 miles N of SR 18	0710525	$18.0	7-14
New Interchange Construction at Gump / Hursh Rd, 2.95 miles N of SR 1	0500316	$46.0	5-21
Rest Area Modernization at the Auburn Rest Area (MM 123) (NB only)	8013770	$12.8	11-11
Rest Area Modernization at the Pigeon Creek Welcome Center (MM 145) (SB only)	0800274	$14.5	1-13
Interchange Modification at US 20	0300942	$6.6	8-09

* - Note: These projects are shown in the *INDOT 2030 Long Range Transportation Plan* as an “Innovative Financing Project” in the 2016 - 2020 time period; this information is generally more accurate than what is presented in SPMS.

Note: Interchange Modification at I-465 (North Leg) is shown under I-465

3.2.4. Interstate 70

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Rest Area Modernization at the Plainfield Rest Area (MM 64)	0800273	$28.0	1-15
Added Travel Lanes from the I-65 North Split to 0.25 mile E of Rural St / Keystone Ave (Part A - Stage 2)	***0400399***	***$24.5***	***9-16***
Added Travel Lanes from 0.25 mile E of Rural St / Keystone Ave to 0.25 mile E of Emerson Ave (Part B - Stage 2)	***0400400***	***$26.6***	***9-16***
Added Travel Lanes from 0.25 mile E of Emerson Ave to 0.17 mile E of I-465 (East Leg) (Part C - Stage 2)	***0500550***	***$14.1***	***9-16***
Added Travel Lanes from 0.6 mile E of Post Rd to 0.5 mile E of Mt. Comfort Rd	*0200699*	*$61.8*	*4-12*
New Interchange Construction at German Church Rd	*0500415*	*$56.4*	*LRP 2025+*
Added Travel Lanes from 0.5 mile E of Mt. Comfort Rd to 0.8 mile E of SR 9	0200700	$71.0	4-13
Rest Area Modernization at the Centerville Rest Area (MM 143) (WB Only)	9407900	$11.3	7-09

Note: Interchange Modification at SR 641 (Southeast Terre Haute Bypass) is shown under SR 641

Note: Interchange Modification at I-465 (West Leg) is shown under I-465

Note: Interchange Modification at I-465 (East Leg) (Phase 2) is shown under I-465

3.2.5. Interstate 74

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Interchange Modification at Post Rd	***0100968***	***$10.2***	***12-14***

3.2.6. Interstate 80/94 (Borman Expressway)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
None			

3.2.7. Interstate 90 (Indiana Toll Road) (Including I-80 east of I-94)

The Indiana East-West Toll Road (Interstate 90, with Interstate 80 traveling over from Mile 21 at the Borman Expressway to the Indiana / Ohio State Line at Mile 157) is not addressed in this chapter or elsewhere in this document. While it is owned by the State of Indiana, it is leased to, maintained, and operated by the Indiana Toll Road Concession Company, LLC through 2081. It is separately and exclusively funded by way of patron (motorist) tolls and concession fees and is wholly independent of INDOT.

3.2.8. Interstate 94

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Rest Area Modernization at the Michigan City Welcome Center (MM 42) (WB only)	0800269	$15.5	1-14

3.2.9. Interstate 164

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
None			

3.2.10. Interstate 265 (including existing SR 265 from I-65 to SR 62)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
New Road Construction from SR 62 to the Ohio River Ohio River Bridge	*0201297*	*$100.0*	*3-12*
New Bridge Construction over the Ohio River (joint project with Kentucky)	*0201296*	*$190.0*	*12-10*

Note: SR 265 will become I-265 when the connection across the Ohio River to I-265 in Kentucky is completed.

3.2.11. Interstate 275

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
None			

3.2.12. Interstate 465

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Added Travel Lanes from I-65 to 0.8 mile E of SR 67 / Kentucky Ave (South Leg)	*0500412*	*$136.0*	*8-23*
Interchange Modification at SR 37 / Harding St (South Leg)	*9802810*	*$8.5*	*12-09*
Added Travel Lanes from S of Hanna Ave to N of I-70, including Interchange Modification at I-70 (West Leg)	*0600645 9910300*	*$93.1*	*6-09*
Added Travel Lanes from N of I-70 to N of Sam Jones Expwy, including Interchange Modification at Sam Jones Expwy (West Leg)	*0600642 9829310*	*$54.4*	*9-09*
Added Travel Lanes from N of 21st St to N of I-74, including Interchange Modification at I-74 / US 136 (West Leg)	*0600650 9829510*	*$104.5*	*1-10*
Added Travel Lanes from 0.5 mile N of 46th St to 0.3 mile N of I-65, including Interchange Modification at 56th St and Interchange Modification at I-65 (West Leg)	*0200003 0300793 0200005*	*$55.0*	*6-20*
Added Travel Lanes from 0.65 mile N of 86th St to 0.5 mile E of US 421 / Michigan Rd, including Interchange Modification at I-865 and Interchange Modification at US 421 / Michigan Rd (West and North Legs)	*0400881 0400882 0400883*	*$366.6*	*8-18*
Added Travel Lanes from 0.5 mile E of US 421 / Michigan Rd to 0.65 mile W of US 31 / Meridian St (North Leg)	*0400885*	*$54.0*	*9-17*
Added Travel Lanes from 0.35 mile E of US 31 / Meridian St to 0.5 mile W of Allisonville Rd, including Interchange Modification at Keystone Ave (North Leg)	*0400289 0400410*	*$87.9*	*5-10*
Added Travel Lanes from Carmel Creek to White River	*0800421*	*$22.9*	*10-09*
Added Travel Lanes from 0.5 mile W of Allisonville Rd to 0.5 mile W of I-69, including Interchange Modification at Allisonville Rd (North Leg)	*0400286 0400409*	*$59.5*	*11-10*
Added Travel Lanes from 0.5 mile W of I-69 to 75th St, including Interchange Modification at I-69	*0400283 0400408*	*$240.9*	*1-12*
Added Travel Lanes from 75th St to south end of bridge over Fall Creek) (East Leg)	*0800422*	*$15.0*	*6-10*
Interchange Modification at I-70 (East Leg) (Phase 2)	*0066810*	*$17.4*	*11-09*
Added Travel Lanes from US 40 (East Leg) to I-65 (South Leg)	*0500411*	*$41.7*	*8-19*

3.2.13. Interstate 469

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Road Rehabilitation (3R/4R) from 0.7 mile W of SR 1 to 0.05 mile E of US 27/33)	0400603	$31.2	7-11

3.2.14. Interstate 865

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
None			

3.2.15. US 20/31 (St. Joseph Valley Parkway / Dean Mock Expressway)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
None			

3.2.16. US 31 (Freeway Upgrade / New Road Construction from Indianapolis to South Bend)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Added Travel Lanes (Freeway Upgrade) from 0.2 mile S of I-465 (North Leg) to 111th St	0600430	$65.7	11-11
Added Travel Lanes (Freeway Upgrade) from 111th St to 0.75 mile N of 131st St	0600432	$95.2	8-13
Added Travel Lanes (Freeway Upgrade) from 0.75 mile N of 131st St to 156th St	0600438	$90.2	8-14
Added Travel Lanes (Freeway Upgrade) from 156th St to 0.2 mile N of 169th St	0600440	$61.7	8-15
Added Travel Lanes (Freeway Upgrade) from 0.2 mile N of 169th St to Blackburn Ave	0600441	$61.7	8-16
Added Travel Lanes (Freeway Upgrade) from Blackburn Ave to 203rd St	0600431	$86.2	11-12
Added Travel Lanes (Freeway Upgrade) from 203rd St to 216th St	0600424	$33.7	11-10
New Road Construction from CR 550N to 0.5 mile S of SR 26	0600340	$68.3	4-11
New Road Construction from 0.5 mile S of SR 26 to 0.5 mile N of SR 26	0800268	$30.9	4-10
New Road Construction from 0.5 mile N of SR 26 to 1.5 mile S of US 35 / SR 22	0600339	$38.8	11-09
New Road Construction from 1.5 mile S of US 35 / SR 22 to 0.5 mile S of US 35 / SR 22	0600338	$31.4	9-09
New Road Construction from 0.5 mile S of US 35 / SR 22 to 0.5 mile N of US 35 / SR 22	0800234	$30.1	4-10
New Road Construction from 0.5 mile N of US 35 / SR 22 to 0.65 mile N of CR 200N	0600341	$55.3	6-11
New Road Construction from 0.65 mile N of CR 200N to 1.25 mile N of CR 200N	0800583	$20.4	7-11
New Road Construction from 1.25 mile N of CR 200N to 0.5 mile N of CR 400N	0600342	$32.0	4-12
New Road Construction from 0.5 mile N of CR 400N to 0.8 mile N of N jct with US 35	0600343	$34.8	6-12
Freeway Upgrade from US 30 to Elmer Seltenright Ditch, including New Interchange Construction at 7th Rd	0710778 0710776	$17.6	10-12
New Road Construction from existing US 31 at Elmer Seltenright Ditch to 2000 feet N of US 6	0710769	$36.2	10-11
New Road Construction from 2000 feet N of US 6 to 2000 feet N of SR 4 (Paving)	0710758	$45.4	10-10

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
New Road Construction from 2000 feet N of SR 4 to existing US 31 S of Roosevelt Rd (Grading & Paving)	0710754 0710774	$38.6	11-09
New Road Construction from existing US 31 S of Roosevelt Rd to 200 feet N of Kern Rd	0710755	$20.5	4-10
New Road Construction from 1000 feet W of US 31 to existing US 31	0710753	$14.5	5-10
New Road Construction from 200 feet N of Kern Rd to Jewel Ave	0710760	$26.1	7-11
Added Travel Lanes from Jewel Ave to Ireland Rd, including Interchange Modification at US 20	0710783 0710784	$87.4	8-12

3.2.17. SR 62/66 (Lloyd Expressway)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Added Travel Lanes (Freeway Upgrade) from 0.25 mile W of Boehne Camp Rd to 0.25 mile E of Rosenberger Ave, including New Interchange Construction at Boehne Camp Rd and New Interchange Construction at Rosenberger Ave (Segment 3)	0201368 0201370 0201371	$127.0	9-24
Added Travel Lanes (Freeway Upgrade) from 0.25 mile E of Rosenberger Ave to the W end of the Pigeon Creek bridge, including Interchange Modification at Barker Ave and New Interchange Construction at St. Joseph Ave (Segment 2)	0201365 0201366 0201367	$91.0	10-17
Interchange Modification at US 41	0015020	$25.8	2-10

3.2.18. SR 641 (Southeast Terre Haute Bypass)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
New Road Construction from US 41 to McDaniel Rd interchange (Paving)	0400857	$24.8	12-08
New Road Construction from 0.25 mile N of existing Feree Rd to 3.5 miles N of Riley Rd (Phase 3A) (Grading)	9738400	$28.3	7-11
New Road Construction from 500 meters N of Relocated SR 46 / Riley Rd to I-70 (Phase 4A) (Grading)	0200305	$19.8	7-11
New Interchange Construction at Relocated SR 46 / Riley Rd (Phase 3B) (Paving)	0200304	$17.8	7-11
Interchange Modification at I-70 (Phase 4B)	0200306	$13.2	7-11

3.2.19. SR 912 (Cline Avenue)

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Bridge Deck Reconstruction on bridge over Indiana Harbor Canal, Riley Rd, RRs, and Ramp C *	0501114	$75.0	7-12
Bridge Deck Reconstruction on bridge over CSX (Conrail) RR, Dickey Rd, and Dock St *	0501120	$9.0	4-13
Road Reconstruction (3R/4R) from 1.66 miles W of US 12 to 0.26 mile W of US 12	0400210	$8.3	10-12

* - Note: These are long (1.2 miles and 0.5 mile long, respectively) elevated bridges; these are essentially the equivalent of a Road Reconstruction project

Note: The non-freeway segment of SR 912 south of I-80/94 is not included

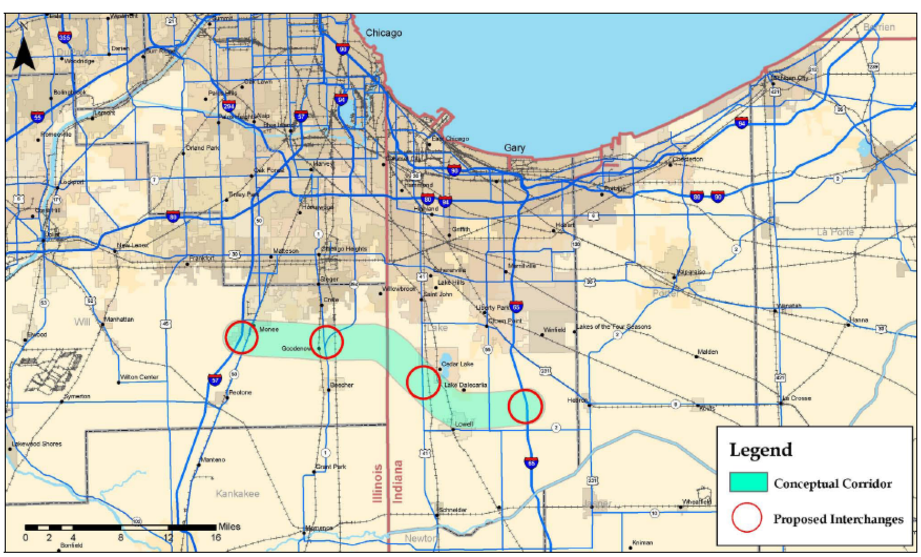
3.2.20. Proposed Public-Private Partnership Corridors

3.2.20.1. Illiana Expressway

Periodic discussion has taken place over the years for the need for an east-west, high-type facility south of the densely populated areas in Lake and Porter Counties in Northwest Indiana and extending into Illinois. In December 2006, Governor Mitch Daniels, in cooperation with the Illinois Department of Transportation, proposed a 63-mile full access control highway connecting I-57 in Illinois to I-94 near Michigan City, intersecting with key routes along the way such as US 41 near Lowell and Cedar Lake, I-65 south of Crown Point, US 231 near Hebron, US 30 near Valparaiso, US 6 near Westville, and I-80/90 (the Indiana Toll Road). Fifty of the miles of the route would be in Indiana. This roadway would provide an outlet to ease congestion on I-80/94 (the Borman Expressway), US 30, State Road 10, and existing roadways in the corridor described above, as well as serve as a catalyst for economic development for the Northwest Indiana / Southland region of Chicagoland.

The Indiana General Assembly must transfer the tolling authority from the proposed I-69 from Evansville to Indianapolis to the Illiana Expressway. **In March 2007, Governor Daniels withdrew the suggestion that any action be taken by the General Assembly on the proposed Illiana Expressway to the east of I-65, but maintained support for the proposed Illiana Expressway to the west of I-65;** Senate Enrolled Act 105 (2007) calls for a feasibility study of the corridor to the west of I-65. He also encouraged the General Assembly to research the proposed corridor to the east of I-65 if they wish.

If this roadway found feasible and pursued, it would likely be tolled and built as a Public-Private Partnership (P3) with state ownership of the land but operations and maintenance performed by a private company. While the roadway would be wholly independent of INDOT and would not feature any INDOT Traffic Management / ITS field devices, it is logical to consider traveler information devices, namely Dynamic Message Signs, in advance of the proposed Illiana Expressway.



3.2.21. Proposed Corridors of the Future with Dedicated Lanes

3.2.21.1. Interstate 70 Dedicated Truck Lanes

The September 5, 2006 Federal Register called for applications for the "Corridors of the Future" Program, followed by the February 7, 2007 Federal Register announcing the 14 applications which had advanced to Phase II of this program. In May 2007, the Indiana Department of Transportation, in cooperation with the Missouri, Illinois, and Ohio Departments of Transportation, submitted the Phase II application to the Federal Highway Administration (FHWA) requesting the designation of Interstate 70 through these four states as a "Corridor of the Future". This application proposed to develop dedicated Truck Only Lanes (TOLs) along this 789-mile east-west corridor. This strategy is being pursued with the recognition that the separation of truck traffic from passenger vehicle traffic is a viable strategy to reduce congestion, and improve mobility and safety through both the urban and rural segments of the corridor. In addition, providing these dedicated TOLs will improve the flow of goods and encourage commerce and economic growth throughout the Midwest and Nation.

In September 2007, this corridor was one of six Interstate corridors nationwide selected by FHWA as a "Corridor of the Future". INDOT will coordinate with the four-state Corridor Coalition and participate financially in the corridor-wide planning, research, design, and financial feasibility analyses needed to advance the concept of dedicated Truck Only Lanes. This includes entering into agreements with the coalition of states and other agencies, supporting and conducting public participation and planning feasibility activities, utilizing environmental and design processes to "fast-track" the project, evaluating innovative funding and financing options such as Public-Private Partnerships and tolling, advocating to the Indiana General Assembly the regulatory changes needed to advance the realistic innovative financing options recommended in the financial feasibility analysis, and securing legal commitments to ensure the project will advance beyond the current administration.

I-70 is a logical candidate for numerous reasons. This is a key east-west corridor that carries regional, national, and international commodities across the Nation and currently is in need of upgrading in many areas of these four Midwestern states. Dedicated Truck Only Lanes for nearly 800 miles can be designed for larger, heavier long-haul trucks, attracting traffic from the parallel I-40 and I-80 corridors, the latter which crosses the lake-effect snow belt of the Great Lakes. Truck staging areas and intermodal connections would facilitate freight transfers on and off the TOL corridor. I-70 would become more attractive for passenger vehicles by virtue of the dedicated lanes and the additional capacity that would be provided.

Several ITS applications will be examined for potential deployment on I-70 with Dedicated Truck Only Lanes. An Advanced Traffic Management System (ATMS), essentially the backbone of other ITS applications, includes vehicle detection, Closed Circuit Television (CCTV) Cameras, and a communications system, with the information processed and disseminated to motorists and other stakeholders via a Traffic Management Center (TMC). Traveler Information devices provide information to travelers via Dynamic Message Signs (DMS), Highway Advisory Radio (HAR), 511 traffic information, and the Internet to assist them in making informed, real-time decisions about travel. Incident Management provides the tools to allow for quick and efficient response to incidents. Commercial Vehicle Operations applications improve the efficiency and safety of trucks by automating several processes such as screening, weighing, and credentialing. At the federal level, the Commercial Vehicle Information Systems and Networks (CVISN) program has been developed and is beginning to be deployed; this I-70 dedicated TOL lane corridor could serve as a pilot corridor for this initiative. Electronic Toll Collection and Congestion Pricing automates and speeds the collection of tolls and allows for the adjustment of fees collected based on time of day and vehicle classification. Finally, Advanced Vehicle Safety Systems via the Vehicle Infrastructure Integration (VII) initiative, a joint effort between the USDOT and the automobile industry, offers systems that communicate between roadside devices and vehicles to improve safety and mobility, such as Automated Crash Notification Systems, Rear-End Collision Avoidance Systems, and Road Departure Collision Avoidance Systems.

An ATMS is currently in various stages of deployment in the Indianapolis area (in use, under construction, and being designed). Dynamic Message Signs are deployed, as are a Highway Advisory Radio system, real-time traffic via the Internet, and the Hoosier Helper Freeway Service Patrol, a key component in incident management. A 511 system will be deployed statewide in 2009. Chapter 4 describes the existing and committed ITS projects statewide. Chapters 7 and 8 of this document provide details on the recommended additional deployments.

The aforementioned activities will take place to determine specific and overall feasibility of the corridor concept, as well as ITS applications. The feasibility study phase would be through mid-2009, followed by environmental studies from 2010 through 2014, with design, land acquisition, and construction from 2014 through 2025.

3.2.21.2. Illiana Expressway and Freight Corridor

The September 5, 2006 Federal Register called for applications for the "Corridors of the Future" Program, followed by the February 7, 2007 Federal Register announcing the 14 applications which had advanced to Phase II of this program. In May 2007, the Indiana Department of Transportation, in cooperation with the Illinois Department of Transportation, the Northwestern Indiana Regional Planning Commission, and the Chicago Metropolitan Agency for Planning, submitted the Phase II application to the Federal Highway Administration (FHWA) for the Illiana Expressway and Freight Corridor. This Corridor would relieve congestion and enhance safety on existing bi-state roadways, including I-80/94 (Borman Expressway), I-90 (Indiana Toll Road), and US 30. The concept for this corridor dates back to the early 1900s, and need for the corridor is apparent as the existing corridors can not feasibly be expanded further. This corridor can relieve the current bottlenecks that impair the mobility of the region and the Nation as a whole, as several east-west corridors are funneled south of the Great Lakes, specifically the southern tip of Lake Michigan. As a result, the concentration of freight in this corridor is exceptionally intense, compounded by the proximity of Chicago as a major freight hub for highways and rail.

While this corridor was not selected by FHWA as a "Corridor of the Future", INDOT is proceeding with an independent study of the feasibility of this corridor, as required by Senate Enrolled Act 105 (2007). The study will identify the facility's purpose and need, identify a preliminary corridor, examine the proposed project for barriers to development, and test the financial feasibility of using the tolled Public-Private Partnership delivery model. In addition to a traditional full access control highway, consideration and cost estimates will be prepared for a full access control highway with dedicated Truck Only Lanes (TOLs), in addition to general purpose lanes. These TOLs will enhance freight mobility by providing an alternative route to existing congested routes, freeing up capacity and enhancing safety on these existing roadways, and providing a safer new facility by separating freight traffic from passenger vehicle traffic.

The Illiana Expressway would be located from Interstate 57 in Will County, Illinois to Interstate 65 in Lake County, Indiana, a distance of approximately 25 miles, with the primary function to serve through traffic; interchanges would only be constructed at I-57, Illinois Routes 1/394, US 41, and I-65.

Several ITS applications would be logical potential deployments on the Illiana Expressway and Freight Corridor. An Advanced Traffic Management System (ATMS), essentially the backbone of other ITS applications, includes vehicle detection, Closed Circuit Television (CCTV) Cameras, and a communications system, with the information processed and disseminated to motorists and other stakeholders via a Traffic Management Center (TMC). Traveler Information devices provide information to travelers via Dynamic Message Signs (DMS), Highway Advisory Radio (HAR), 511 traffic information, and the Internet to assist them in making informed, real-time decisions about travel. Incident Management provides the tools to allow for quick and efficient response to incidents. A Road Weather Information System (RWIS) provides automated weather information vital to snow and ice removal in the winter months. Commercial Vehicle Operations applications improve the efficiency and safety of trucks by automating several processes such as screening, weighing, and credentialing. Electronic Toll Collection (ETC) automates and speeds the collection of tolls based on vehicle classification. ETC will be specifically addressed in the upcoming feasibility study, with Open Road Tolling being the base consideration with electronic interoperability across all existing regional ETC systems.

An ATMS is currently deployed in the Northwest Indiana area on I-80/94 and I-65 from US 30 to I-80/94. Dynamic Message Signs are deployed, as are a Highway Advisory Radio system, real-time traffic via the Internet, and the Hoosier Helper Freeway Service Patrol, a key component in incident management. A 511 system will be deployed statewide in 2009. Chapter 4 describes the existing and committed ITS projects statewide. Chapters 7 and 8 of this document provide details on the recommended additional deployments.

A multidisciplinary consulting team was selected by INDOT in August 2007 to conduct this feasibility study. The study to determine project feasibility and funding options feasibility will be completed by July 1, 2009.

3.2.22. Potential Parallel Rail Lines

Rail corridors are generally privately-owned facilities operated by for-profit railroads for the purposes of moving freight. Other rail corridors are publicly-owned facilities operated by a mass transit provider. Both entities are understandably protective of their Right-of-Way for liability and other reasons. However, several studies and initiatives are or will be soon underway which may provide the opportunity for ITS deployments.

Senate Enrolled Act 105, enacted by the 115th General Assembly in 2007, calls for, amongst other items, INDOT to commission six studies concerning mass transit in six regions of the state: Central Indiana, Northwest Indiana, Northeast Indiana, South Central Indiana, Southwest Indiana, and Southeast Indiana. The studies will analyze the need and demand for public transportation, ways to eliminate barriers for investment in public transportation, the relationship between land use and public transportation, the role that public transportation plays in promoting economic growth, environmental quality and quality of life, policies to develop a mass transit system, transit-oriented development, the impact of mass transit on projected demographic patterns, current and future commuter patterns, current mass transit trends, a review of federal mass transit activities, and funding options. A multidisciplinary consulting team was selected by INDOT in July 2007 to conduct these studies. These studies shall be completed by January 1, 2009.

Furthermore, a specific study is called for in SEA 105: a study of the feasibility of a commuter rail system from Muncie to Indianapolis and from Indianapolis to Bloomington. Study items include potential routes, cost estimates, ridership estimates, the effect on existing transportation systems, and other issues. The same multidisciplinary consulting team as above was selected by INDOT in July 2007 to conduct this feasibility study. The *Central Indiana Commuter Rail Feasibility Study* Final Report was completed in August 2008; this document may be found at the following link: http://www.in.gov/legislative/igareports/agency/reports/INDOT08.pdf.

In addition, Indiana is one of nine member states in the Midwest Regional Rail Initiative, an ongoing effort to develop high-speed (80-110 mph) rail service in the Midwest. The nine states are Nebraska, Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, and Ohio. Three routes are designated in Indiana: Chicago to Cleveland, Chicago to Detroit, and Chicago to Cincinnati and Louisville via Indianapolis.

If any of these areas or corridors are found to be feasible for mass transit services, then several ITS applications should be investigated for inclusion. The strongest candidates are Transit Vehicle Tracking, Transit Traveler Information, Transit Fixed-Route Operations, Transit Passenger and Fare Management, Transit Security, Multi-modal Coordination, Transit Maintenance, Standard Railroad Grade Crossings (for at-grade crossings with trains operating at 79 mph and below), and Advanced Railroad Grade Crossings (for at-grade crossings with trains operating at speeds greater than 79 mph). Decisions regarding ultimate implementation of these ITS applications would be the responsibility of the service provider.

3.3. PROPOSED MAJOR CAPITAL IMPROVEMENTS ON HIGH VOLUME ARTERIALS INTERSECTING THE INTERSTATE SYSTEM

As explained earlier in this chapter, Major Capital Improvements or Expansion Projects provide a unique opportunity to implement Traffic Management / ITS devices in a coordinated fashion with a larger project, further minimizing disruptions to the motoring public. Other noteworthy projects that do not add any significant capacity, such as Pavement Replacement, 3R (Resurface, Restore, and Rehabilitate), or 4R (Resurface, Restore, Rehabilitate, and Reconstruct) projects present a similar opportunity to incorporate Traffic Management / ITS devices on a roadway as part of a larger project.

While investment in Traffic Management / ITS devices will be focused on the Interstate System and other freeways, there are arterials that approach and feed the Interstate System and other freeways with significant volumes of traffic, as discussed in Section 2.3 in Chapter 2. These arterials generally meet the following criteria: an INDOT facility with a current two-way AADT of 40,000 or greater for at least two miles approaching an Interstate that is currently fully deployed with Traffic Management / ITS devices (vehicle detection every ½ - 1 mile and CCTV cameras) or is currently proposed for full deployment of Traffic Management / ITS devices (vehicle detection every ½ mile and CCTV cameras).

As such, the following tables provide information regarding the proposed timing of these projects on arterials that meet the above criteria. **Only active projects in SPMS are included; proposed, suspended, or provisional projects are not included.** Logically, projects that are closer to implementation will have a more reliable Ready for Contracts (RFC) date; projects farther out in the future are more likely to have adjustments in their RFC date due to the nature and varying complexities of project development and funding availability.

It is important to note that if a project is shown in the tables below it in no way reflects that INDOT will make an ITS investment in that area; that will be addressed in Chapter 7, ITS Deployment Recommendations – by Deployment Type.

3.3.1. US 30 (Northwest Indiana Area)

INTERSTATE BEING APPROACHED ON US 30	LENGTH	AADT
I-65, from the west, Northwest Indiana / Merrillville	7.9 miles	47,990 – 74,100

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Added Travel Lanes from US 41 to 0.4 mile W of I-65	0500457	$385.2	*LRP 2025+*
Added Travel Lanes from 0.9 mile E of I-65 to SR 51	0500458	$79.7	*LRP 2025+*

3.3.2. US 31 (Indianapolis Area)

INTERSTATE BEING APPROACHED ON US 31	LENGTH	AADT
A: I-465 (South Leg), from the south, Indianapolis	8.4 miles	38,790 – 62,060
B: I-465 (North Leg), from the north, Indianapolis	2.8 miles	43,230 – 59,340

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
A: Pavement Replacement from 1.55 miles S of I-465 (South Leg) (Beechwood Ln) to 0.39 mile N of I-465 (South Leg) (Mills Ave)	0100721	$13.0	10-13
B: Added Travel Lanes (Freeway Upgrade) from 0.2 mile S of I-465 (North Leg) to 216th St (7 projects) *	Multiple	$494.4	11-10 thru 8-16

* - Note: This project is shown in greater detail under US 31 in Section 3.2.16, and, thus, is already a candidate for full ITS deployment.

3.3.3. US 36 (Indianapolis Area)

INTERSTATE BEING APPROACHED ON US 36	LENGTH	AADT
I-465 (West Leg), from the west, Indianapolis	7.0 miles	40,980 – 62,220

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Added Travel Lanes from Transfer Dr to I-465 (West Leg) (Phase 1)	0600246	$32.0	7-11

3.3.4. SR 37 (Indianapolis Area)

INTERSTATE BEING APPROACHED ON SR 37	LENGTH	AADT
I-69, from the north, Indianapolis (Fishers)	5.7 miles	43,870 – 48,550

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
Added Travel Lanes from I-69 to SR 32/38	0400361	$249.4	LRP 2021 - 2025

3.3.5. SR 912 (Northwest Indiana Area) (Freeway North of I-80/94)

INTERSTATE BEING APPROACHED ON SR 912	LENGTH	AADT
A: I-80/94 (Borman Expwy), from the north, Northwest IN	5.9 miles	44,300 – 68,530
B: I-80/94 (Borman Expwy), from the south, Northwest IN*	1.3 miles	41,090 – 43,690

PROJECT DESCRIPTION AND LOCATION	DES #	CN COST (millions)	RFC DATE
A: Road Reconstruction (3R/4R) from 1.66 miles W of US 12 to 0.26 mile W of US 12	0400210	$8.3	10-12

* - Note: This project is also shown under SR 912 in Section 3.2.19, and, thus, is already a candidate for full ITS deployment.

3.4. PROPOSED NEW INTERSTATE / FREEWAY PROJECTED AADT AND LOS

A key component of INDOT's program to address safety and mobility needs is the construction of new facilities, including Interstates and freeways. As the previous sections alluded to via the Ready for Contracts date, the following proposed new Interstates and freeways are in various stages of development; some are nearly ready for construction while others are still in the Environmental Impact Statement (EIS) or Environmental Assessment (EA) phase. The following tables provide information from various project development documents (generally from the Environmental document) regarding projected design year AADT and projected design year LOS.

It should be noted that this is a somewhat different approach than was taken in Chapter 2, where 2005 AADT and LOS were presented as the key figures for Traffic Management / ITS investment decision making. Since these are new freeways, data is oriented more to the design year of the facility, not the opening year. As such, projected LOS C in 2025, 2030, or 2035 (or some other design year beyond the planning horizon of this document) does not necessarily signal the need for some Traffic Management / ITS investment at the current time or even the near future. It should also be noted that some of these improvements are still in the Environmental phase of development and a Record of Decision has not yet been issued for the proposed project; thus the represented corridor may or may not be the improvement ultimately selected or constructed.

As stated in Chapter 2, the minimum Level of Service policies for new or completely reconstructed freeways from the *Indiana Design Manual* will serve as a basis for possible investment in Traffic Management / ITS devices on Indiana's Interstates and freeways. **Segments of freeway at or below Level of Service C will be highlighted in the tables below based upon their <u>projected (Design Year) Level of Service</u> as follows:**

<u>Level of Service C (Desirable Minimum LOS)</u>

Interstates / Freeways at LOS C in Design Year

<u>Level of Service D, E, or F (Below Desirable Minimum LOS)</u>

Interstates / Freeways at LOS D in Design Year

Interstates / Freeways at LOS E in Design Year

Interstates / Freeways at LOS F in Design Year

3.4.1. Interstate 69

3.4.1.1. I-69 from the Kentucky State Line to I-64 (Evansville) (Alt 2)

The proposed improvement results in a four lane divided, full access control facility (freeway) from the Breathitt (formerly Pennyrile) Parkway south of Henderson, Kentucky to I-64 north of Evansville, including a new Ohio River Bridge, constructed on new alignment from the Breathitt Parkway to I-164 and on the existing I-164 from east of US 41 to I-64. The Ohio River bridge will be designed to accommodate a future six lane cross section. This information is from the I-69 Henderson to Evansville Draft Environmental Impact Statement, dated February 2004.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
Kentucky State Line	S jct with I-164	31,400	B	2025
S jct with I-164	Green River Rd	29,820	B	2025
Green River Rd	SR 662	30,100	B	2025
SR 662	SR 66	36,830	B	2025
SR 66	SR 62	46,860	C	2025
SR 62	Lynch Rd	55,500	C	2025
Lynch Rd	Boonville-New Harmony Rd	50,270	C	2025
Boonville-New Harmony Rd	SR 57	45,450	C	2025
SR 57	I-64	53,250	C	2025

3.4.1.2. I-69 from I-64 to I-465 (Evansville to Indianapolis) (Alt 3C)

The proposed improvement results in a four lane divided, full access control facility (freeway) from I-64 north of Evansville to SR 37 southwest of Bloomington, a six lane divided, full access control facility (freeway) from southwest of Bloomington to SR 144 at Waverly, and an eight lane divided, full access control facility (freeway) from SR 144 at Waverly to I-465 at Indianapolis, constructed on new alignment from I-64 to SR 37 at Bloomington, on the existing SR 37 alignment from SR 37 at Bloomington to just south of I-465 (South Leg), with a short segment on new alignment just south of I-465.

The Tier 1 Final Environmental Impact Statement (FEIS) was completed in December 2003, followed by the Record of Decision (ROD) in March 2004. The Tier 1 FEIS addressed the large-scale planning and environmental issues. The Tier 1 FEIS Reevaluation was issued in June 2006, but was not finalized, as the tolling option for I-69 was dismissed in November 2006. The six identified Sections of Independent Utility have advanced into more detailed analysis in the Tier 2 Environmental Studies, including detailed traffic analysis. The Section 1 (I-64 to SR 64) Tier 2 Final EIS (DEIS) was completed in October 2007, followed by the ROD in December 2007; the remaining five Draft or Final EISs have yet to be completed. Although no detailed traffic information is available at this time, the Tier 1 FEIS Reevaluation document states that Vehicle-Miles of Travel (VMT) on SR 37 will increase 55% to 107% over the No Build alternative, as illustrated below.

FROM	TO	VMT % INCREASE	DESIGN YEAR
SR 46	SR 39	83%	2030
SR 39	SR 44	84%	2030
SR 44	Egbert Rd	107%	2030
Egbert Rd	SR 144	103%	2030
SR 144	County Line Rd (Marion /Johnson)	77%	2030
County Line Rd (Marion /Johnson)	I-465	55%	2030

3.4.2. Interstate 265 from SR 62 to the Kentucky State Line (Alt A-15)

The proposed improvement results in a six lane divided, full access control facility (freeway) from SR 62 in Indiana to I-71 in Kentucky, including a new Ohio River Bridge, constructed on new alignment, except for the Kentucky segment from US 42 to I-71 which follows KY 841. This information is from the Louisville - Southern Indiana Ohio River Bridges Project Final Environmental Impact Statement, dated April 2003, and Record of Decision (ROD), dated September 2003.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
SR 62	I-71	68,200	C	2025

3.4.3. US 31

3.4.3.1. US 31 from I-465 to SR 38 (Hamilton County) (Major Moves Alternative)

The proposed improvement results in a six lane divided, full access control facility (freeway) from 96th Street (just south of I-465, North Leg) to SR 32 and a four lane divided, full access control facility (freeway) from SR 32 to 216th Street, 0.5 mile north of SR 38 in Hamilton County, constructed on the existing US 31 alignment. This information is from the US 31 Supplemental Draft Environmental Impact Statement, dated May 2008.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
I-465	116th St	90,390	D	2035
116th St	131st St	67,060	C	2035
131st St	136th St	80,240	C	2035
136th St	Keystone / 146th / 151st St	75,450	C	2035
Keystone / 146th St / 151st St	161st St	69,920	C	2035
161st St	SR 32	55,080	B	2035
SR 32	191st St	42,520	C	2035
191st St	SR 38	39,290	C	2035
SR 38	216th St	37,980	C	2035

3.4.3.2. US 31 from CR 600N (Tipton County) to the North Junction with US 35 (Kokomo / Howard County) (Alt J Modified)

The proposed improvement results in a four lane divided, full access control facility (freeway) from existing US 31 at Tipton County Road 600N (south of SR 26) to existing US 31 at the north junction with US 35 near Kokomo, constructed on new alignment. This information is from the US 31 Kokomo Final Environmental Impact Statement (FEIS), dated March 2007. The Record of Decision (ROD) was issued in May 2007.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
CR 600N (Tipton Co)	SR 26	*	AM - A / PM - A	2030
SR 26	Boulevard St	*	AM - A / PM - B	2030
Boulevard St	US 35 / SR 22	*	AM - A / PM - B	2030
US 35 / SR 22	Touby Pike	*	AM - A / PM - B	2030
Touby Pike	N jct with US 35	*	AM - A / PM - B	2030

* - The FEIS did not present Design Year AADT; it presented peak hour volumes

3.4.3.3. US 31 from US 30 at Plymouth to US 20 at South Bend (Marshall and St. Joseph Counties) (Alt G-Es)

The proposed improvement results in a four lane divided, full access control facility (freeway) from US 30 at Plymouth to Kern Road and a six lane divided, full access control facility (freeway) from Kern Road to US 20/31 at South Bend, constructed on the existing US 31 alignment from US 30 to 1.5 miles south of Michigan Road, on new alignment 1.5 miles south of Michigan Road to 0.7 mile south of US 20/31, and on the existing US 31 alignment from 0.7 mile south of US 20/31 to US 20/31. This information is from the US 31 Plymouth to South Bend Final Environmental Impact Statement, dated April 2006. The Record of Decision (ROD) was issued in July 2006.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
US 30	CR 7th Rd Extension	30,820	B	2030
CR 7th Rd Extension	US 6	32,590	B	2030
US 6	Pierce Rd/SR 4 Extension	32,480	B	2030
Pierce Rd/SR 4 Extension	Kern Rd	34,590	C	2030
Kern Rd	US 20/31	46,780	B	2030

3.4.4. SR 62 (Lloyd Expressway) (Alt 6)

The proposed improvement results in a six lane divided, full access control facility (freeway) from Eikhoff Road / University Boulevard to Fulton Ave / First Avenue on the West Side of Evansville, constructed on the existing SR 62 alignment. This information is from the Environmental Assessment, dated July 2005. Please note that this project's implementation is much farther in the future than any other improvement in this section.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
Eikhoff Rd/University Blvd	Boehne Camp Rd	66,110	C	2028
Boehne Camp Rd	Red Bank Rd	70,060	C	2028
Red Bank Rd	Rosenberger Ave	74,760	C	2028
Rosenberger Ave	St. Joseph Ave	84,210	C	2028
St. Joseph Ave	Fulton Ave	89,370	C	2028

3.4.5. SR 641 (Southeast Terre Haute Bypass)

The proposed improvement results in a four lane divided, full access control facility (freeway) from US 41 south of Terre Haute to I-70 at the existing SR 46 interchange southeast of Terre Haute, constructed on new alignment. This information is from the SR 641 Final Environmental Impact Statement, dated November 1999.

FROM	TO	DESIGN YEAR AADT	DESIGN YEAR LOS	DESIGN YEAR
US 41	Canal Rd / McDaniel Rd	30,270	B	2020
Canal Rd / McDaniel Rd	Relocated SR 46 /Riley Rd	18,950	A	2020
Relocated SR 46 /Riley Rd	I-70	14,930	A	2020

CHAPTER 4 – EXISTING PLUS COMMITTED ITS DEPLOYMENTS

4.1. INTRODUCTION

The Interstate Highway System is the backbone of the Indiana surface transportation network and a critical element in the state and national economy. Logically, traffic volumes are highest in the larger urbanized areas and, as such, INDOT has concentrated the initial deployment of Intelligent Transportation Systems (ITS) devices in these areas, mainly on the Interstate System. This approach is consistent with the Federal Highway Administration's 1996 goal to implement ITS infrastructure in the Nation's 75 largest metropolitan areas. This investment philosophy will continue with the planned Indianapolis area Advanced Traffic Management System (ATMS) deployment, currently scheduled through 2010.

This chapter will focus on the existing ITS infrastructure, plus committed ITS deployments that are new to a particular area or segment of freeway. Ongoing operational-type replacements or upgrades to ITS hardware in existing deployment areas are not the theme of this chapter or the document itself.

Please note that the Indiana East-West Toll Road (Interstate 90, with Interstate 80 traveling over from Mile 21 at the Borman Expressway to the Indiana / Ohio State Line at Mile 157) is not addressed in this chapter or elsewhere in this document. While it is owned by the State of Indiana, it is leased to, maintained, and operated by the Indiana Toll Road Concession Company, LLC through 2081. It is separately and exclusively funded by way of patron (motorist) tolls and concession fees and is wholly independent of INDOT.

4.2. EXISTING ITS DEPLOYMENTS

The Indiana Department of Transportation (INDOT) has deployed an Advanced Traffic Management System (ATMS) in Lake County in Northwest Indiana along Interstate 80/94 (the Borman Expressway) from the Indiana / Illinois State Line to Interstate 90 (the Indiana Toll Road) and along Interstate 65 from US 30 to I-80/94 (the Borman Expressway). This ATMS consists of vehicle detection generally every ½ mile, Closed Circuit Television (CCTV) Cameras, Dynamic Message Signs (DMS), Highway Advisory Radio (HAR) Stations (with flasher notification in case of an incident), a communications system, a Traffic Management Center (TMC), 2/10 Mile Reference Markers (1/10 Mile Reference Markers on I-80/94), and the deployment of the Hoosier Helper Freeway Service Patrol (FSP), which began on a limited basis in 1991. A similar system is currently in different phases of project development in the Indianapolis area, with many devices deployed and operational, many more under construction, and others still under design. A similar system in the Louisville area (including portions of Clark and Floyd Counties in Southern Indiana) known as TRIMARC (Traffic Response and Incident Management Assisting the River Cities) is in varying stages of development and deployment and historically has been controlled by the Kentucky Transportation Cabinet (with Northrop Grumman Corporation operating the system) with the cooperation of INDOT. DMSs are also located in Evansville and Kokomo (generally controlled by the Indianapolis TMC) and in Fort Wayne (generally controlled by the Gary TMC). The latter three locations do not have any ATMS detection or verification capabilities; activation of these DMSs only occurs when human notification takes place with the appropriate TMC.

The following sections list **existing ITS deployments by deployment type**, then by road and direction.

4.2.1. Sections with 2/10 Mile Reference Markers

A low-tech but very important ITS deployment are the 2/10 Mile Reference Markers that are installed in Indianapolis, Northwest Indiana, Southern Indiana near Louisville, Evansville, Fort Wayne, and Kokomo. These blue signs are located every two-tenths of a mile in the median of Interstates, although they are placed every one-tenth of a mile along the heavily traveled Borman Expressway (I-80/94) and a portion of I-94 in Northwest Indiana, as well as a portion of I-70 in Indianapolis. The 2/10 Mile Reference Markers are also placed on US Routes and State Roads in the Evansville area since these routes are significant to the overall highway system in the area. These signs are in place on US 31 in the Kokomo area, a critical route in a region not directly served by the Interstate System.

The 2/10 Mile Reference Markers display the direction of travel, a route shield indicating the highway the motorist is traveling, and the Mile Marker location on the highway (to the tenth of a mile). At interchanges, Ramp Reference Markers are positioned along the ramps indicating which ramp a motorist is traveling within an interchange.

These Reference Markers provide motorists with better location information and improved roadside assistance. Incident response teams are able to more quickly arrive on the scene of crashes, clearing debris and improving traffic flow. In an emergency, these signs serve the same purpose as the “street address” on other roads, aiding motorists and emergency response vehicles in identifying their location or destination on the highway system. As a result, crashes are reached sooner, and stranded motorists receive assistance more quickly.

The 2/10 Mile Reference Markers also serve as a key component in the messages displayed on Dynamic Message Signs (DMS) and broadcasts heard on the Highway Advisory Radio (HAR) stations. Information regarding location of an incident or heavy traffic is shown / broadcast based on the Mile Marker location (to the tenth of a mile) on a highway.

The following sections of roadway feature 2/10 Mile Reference Markers, or 1/10 Mile Reference Markers, as indicated:

I-64
EB & WB I-64 from 4.0 miles W of US 41 to 1.5 miles E of I-164, *Mile 21 to Mile 31*
EB & WB I-64 from SR 62/64 to the Kentucky State Line, *Mile 118 to Mile 124*

I-65
NB & SB I-65 from the Kentucky State Line to Memphis Rd, *Mile 0 to Mile 16*
NB & SB I-65 from 1.0 mile S of Southport Rd to 1.2 miles S of SR 267, *Mile 102 to Mile 132*
NB & SB I-65 from 1.5 miles S of US 231 to I-90 (Indiana Toll Road), *Mile 246 to Mile 262*

I-69

NB & SB I-69 from I-465 to 1.0 mile N of SR 37 / 116th St, *Mile 0 to Mile 6*
NB & SB I-69 from 2.6 miles S of I-469 (S jct) to 2.1 miles N of I-469 (N jct), *Mile 94 to Mile 117*

I-70

EB & WB I-70 from 1.5 miles W of SR 267 to 2.3 miles E of Post Rd, *Mile 65 to Mile 93*
Note: 1/10 Mile Reference Markers are in place from Mile 82.6 to Mile 89.6

I-74

EB & WB I-74 from 0.3 mile W of I-465 (West Leg) to 0.3 mile E of I-465 (West Leg), *Mile 73 to Mile 73.6*
EB & WB I-74 from 0.8 mile W of I-465 (East Leg) to 1.0 mile E of Acton Rd, *Mile 92.8 to Mile 100*
Note: in addition to the above sections, the I-74 travelover on I-465 is fully covered as I-465

I-80/94 – Borman Expressway (1/10 Mile Reference Markers)

EB & WB I-80/94 from the Illinois State Line to the I-80/90 (Indiana Toll Road) interchange, *Mile 0 to Mile 15.5*

I-94 (1/10 Mile Reference Markers)

EB and WB I-94 from the I-80/90 (Indiana Toll Road) interchange to SR 249, *Mile 15.5 to Mile 19*

I-164

Entire length and all directions of I-164 from US 41 to I-64, *Mile 0 to Mile 21*

I-265

Entire length of EB & WB I-265 from I-64 to I-65, *Mile 0 to Mile 6.7*

I-465

Entire length and all directions of I-465 from I-65 (South Leg) to I-65 (South Leg), *Mile 0 to Mile 53.2*

US 31

NB & SB US 31 from 1.1 miles S of SR 26 to 1.0 mile N of US 35 (north jct), *Mile 157 to Mile 168*

US 41

NB & SB US 41 from the Kentucky State Line to SR 68, *Mile 0 to Mile 19*

SR 62

EB & WB SR 62 from 5.4 miles W of US 41 (south jct) to US 41 (south jct), *Mile 22 to Mile 27.4 (Lloyd Expwy)*
EB & WB SR 62 from US 41 (N jct) to 1.2 miles E of I-164, *Mile 28.6 to Mile 34 (Morgan Ave)*
Note: in addition to the above sections, the SR 62 travelover on US 41 is fully covered as US 41

SR 66

EB & WB SR 66 from 4.6 miles W of US 41 (north jct) to US 41 (N jct), *Mile 21 to Mile 25.6 (Diamond Ave)*

EB & WB SR 66 from US 41 (S jct) to 1.8 miles E of I-164, *Mile 27.5 to Mile 34 (Lloyd Expwy)*

Note: in addition to the above sections, the SR 66 travelover on US 41 is fully covered as US 41

4.2.2. Sections Covered by Highway Advisory Radio (Area of Influence of a HAR)

Heard at AM 530 (or AM 1610 in one instance), the Highway Advisory Radio (HAR) Stations are a statewide component of the TrafficWise system. It provides similar automated information as contained on a Dynamic Message Sign (DMS), but in greater detail than can be provided by a DMS. The HAR warns motorists of incidents, construction, heavy traffic, and other circumstances that can affect traffic. Flashing beacons are installed on most of the HAR panel signs placed in advance of the HAR transmitter that notify motorists when traffic alerts are being broadcast.

INDOT currently operates 23 Highway Advisory Radio stations statewide. Seven stations are operating in the Greenfield District, five stations in both the LaPorte and Crawfordsville Districts, four stations in the Fort Wayne District, and one station each in the Seymour and Vincennes Districts. TRIMARC operates one station in the Louisville / Southern Indiana area.

The following sections of roadway are within the Area of Influence (A of I) of a Highway Advisory Radio station:

I-64
EB I-64 from 5.0 miles W of US 41 to SR 162, *Mile 20 to Mile 63*
WB I-64 from 6.0 miles E of I-164 to the Illinois State Line, *Mile 35 to Mile 0*
EB & WB I-64 from US 150 to the Kentucky State Line, *Mile 119 to Mile 124*

I-65
NB & SB I-65 from the Kentucky State Line to SR 60, *Mile 0 to Mile 7*
NB I-65 from 1.8 miles N of SR 58 to I-90 (Indiana Toll Road), *Mile 65.5 to Mile 262*
SB I-65 from the I-80/94 Connector Ramps to the Kentucky State Line, *Mile 259 to Mile 0*

I-69
NB I-69 from 2.6 miles S of SR 238 to the Michigan State Line, *Mile 7.5 to Mile 158*
Entire length of SB I-69 from the Michigan State Line to I-465, *Mile 158 to Mile 0*

I-70
Entire length of EB I-70 from the Illinois State Line to the Ohio State Line, *Mile 0 to Mile 157*
WB I-70 from 3.0 miles W of US 35 to the Illinois State Line, *Mile 146 to Mile 0*

I-74
EB I-74 from 1.3 miles W of I-465 (West Leg) to I-465 (West Leg), *Mile 72 to Mile 73.4*
EB I-74 from 2.7 miles W of SR 9 to the Ohio State Line, *Mile 110 to Mile 171*
WB I-74 from SR 44 to I-465 (East Leg), *Mile 116 to Mile 94*
WB I-74 from I-465 (West Leg) to the Illinois State Line, *Mile 73.3 to Mile 0*
Note: in addition to the above sections, the I-74 travelover on I-465 is fully covered as I-465

I-80/94 – Borman Expressway
Entire length of EB & WB I-80/94 from the Illinois State Line to the I-80/90 (Indiana Toll Road) interchange, *Mile 0 to Mile 15.5*

I-94
Entire length of EB & WB I-94 from the I-80/90 (Indiana Toll Road) interchange to the Michigan State Line, *Mile 15.5 to Mile 46*

I-164
Entire length, all directions of I-164 from US 41 to I-64, *Mile 0 to Mile 21*

I-265
Entire length of EB & WB I-265 from I-64 to I-65, *Mile 0 to Mile 6.7*

I-465
Entire length, ***clockwise*** I-465 from I-65 (South Leg) to I-65 (South Leg), *Mile 0 to Mile 53.2*
Counterclockwise I-465 from I-65 (South Leg) to I-865, *Mile 53.2 to Mile 24*
Counterclockwise I-465 from 0.5 mile S of I-65 (West Leg) to I-65 (South Leg), *Mile 19.4 to Mile 0*

I-469
Entire length, all directions of I-469 from both junctions with I-69, *Mile 0 to Mile 31*

US 31
NB US 31 from 0.6 mile S of SR 26 to 1.0 mile N of US 35 (N jct), *Mile 157.5 to Mile 168*
SB US 31 from 1.0 mile N of US 35 (N jct) to 1.0 mile S of SR 26, *Mile 168 to Mile 157.1*

US 41
NB & SB US 41 from the Kentucky State Line to SR 68, *Mile 0 to Mile 19*

SR 57
NB & SB SR 57 from US 41 to SR 68, *Mile 0 to Mile 12*
Note: in addition to the above sections, the SR 57 travelover on I-164 is fully covered as I-164

SR 62
EB & WB SR 62 from 7.4 miles W of US 41 (S jct) to 3.8 miles E of I-164, *Mile 20 to Mile 36.3*
Note: in addition to the above sections, the SR 62 travelover on US 41 is fully covered as US 41

SR 66
EB & WB SR 66 from 8.1 miles W of US 41 (N jct) to 2.0 miles E of I-164, *Mile 17.5 to Mile 34.2*
Note: in addition to the above sections, the SR 66 travelover on US 41 is fully covered as US 41

4.2.3. Sections Covered by Permanent Overhead Dynamic Message Signs (Area of Influence of at least one DMS)

These electronic signs, which can display changing messages, are the most visible part of the TrafficWise system. These permanent signs warn motorists of incidents and delays, allowing them to choose alternate routes. Dynamic Message Signs are in place in Indianapolis, Northwest Indiana, Evansville, Fort Wayne, Kokomo, and Southern Indiana near Louisville. Three of the four Southern Indiana Dynamic Message Signs are operated by TRIMARC, the ITS deployment in the Louisville / Southern Indiana area.

INDOT currently has 45 Permanent Overhead DMSs statewide under INDOT control, in addition to approximately 20 Portable DMSs statewide. Twenty-one Permanent Overhead DMSs are located in the Indianapolis area, along with eleven in Northwest Indiana, eight in the Evansville area, two in the Fort Wayne area, two in the Kokomo area, and one in Southern Indiana. TRIMARC operates three Permanent Overhead DMSs in Southern Indiana.

The following sections of roadway are within the Area of Influence (A of I) of at least one Permanent Overhead Dynamic Message Sign (Portable DMSs cover some areas not included below):

I-64
EB I-64 from 3.8 miles W of US 41 to SR 162, *Mile 21.2 to Mile 63*
EB I-64 from 1.0 mile W of I-265 to the Kentucky State Line, *Mile 120.4 to Mile 124*
WB I-64 from the Kentucky State Line to US 150, *Mile 124 to Mile 119*
WB I-64 from 1.6 miles E of I-164 to the Illinois State Line, *Mile 31.1 to Mile 0*

I-65
NB I-65 from the Kentucky State Line to SR 60, *Mile 0 to Mile 7*
NB I-65 from 1.3 miles S of I-465 (S Leg) to SR 28, *Mile 104.7 to Mile 158*
NB I-65 from 2.4 miles S of US 30 to I-90 (Indiana Toll Road), *Mile 250.3 to Mile 262*
SB I-65 from 0.9 mile N of I-80/94 to US 24/231, *Mile 260.7 to Mile 201*
SB I-65 from 2.0 miles N of SR 334 to SR 46, *Mile 131.9 to Mile 68*
SB I-65 from 1 mile S of SR 311 to the Kentucky State Line, *Mile 8 to Mile 0*

I-69
NB I-69 from I-465 to SR 32/67, *Mile 0 to Mile 34*
NB I-69 from 2.4 miles S of I-469 (S jct) to the Michigan State Line, *Mile 94.2 to Mile 158*
SB I-69 from 2.2 miles N of I-469 (N jct) to SR 26, *Mile 117.1 to Mile 55*
SB I-69 from 4.3 miles N of I-465 to I-465, *Mile 4.3 to Mile 0*

I-70
EB I-70 from 1.1 miles E of SR 267 to SR 3, *Mile 67.6 to Mile 123*
WB I-70 from 2.7 miles E of I-465 (E Leg) to SR 243, *Mile 92.1 to Mile 37*

I-74
EB I-74 from I-465 (East Leg) to SR 244, *Mile 93.8 to Mile 119*
WB I-74 from 4.9 miles E of I-465 (E Leg) to I-465 (E Leg), *Mile 98.5 to Mile 93.8*
Note: in addition to the above sections, the I-74 travelover on I-465 is fully covered as I-465

I-80/94 – Borman Expressway
EB I-80/94 from 1.3 miles E of the Illinois State Line to the I-80/90 (Indiana Toll Road) interchange, *Mile 1.3 to Mile 15.5*
Entire length of WB I-80/94 from the I-80/90 (Indiana Toll Road) interchange to the Illinois State Line, *Mile 15.5 to Mile 0*

I-94
Entire length of EB I-94 from the I-80/90 (Indiana Toll Road) interchange to the Michigan State Line, *Mile 15.5 to Mile 46*
WB I-94 from 1.7 miles E of SR 249 to the I-80/90 (Indiana Toll Road) interchange, *Mile 20.7 to Mile 15.5*

I-164
Entire length and all directions of I-164 from US 41 to I-64, *Mile 0 to Mile 21*

I-265
Entire length of EB & WB I-265 from I-64 to I-65, *Mile 0 to Mile 6.7*

I-465
Entire length and all directions of I-465 from I-65 (South Leg) to I-65 (South Leg), *Mile 0 to Mile 53.2*

I-469
Entire length and all directions of I-469 from both junctions with I-69, *Mile 0 to Mile 31*

US 30
Note: A DMS is located 1.5 miles E of I-65 on WB US 30. The Area of Influence for this sign is on I-65 and I-80/94.

US 31
NB US 31 from 0.5 mile S of SR 26 to 1.0 mile N of US 35 (N jct), *Mile 157.6 to Mile 168*
SB US 31 from 1.0 mile N of US 35 (N jct) to 1.1 miles S of SR 26, *Mile 168 to Mile 157*

US 41
NB US 41 from 1.0 mile S of I-164 to SR 68, *Mile 0.4 to Mile 19*
SB US 41 from 1.4 miles N of I-64 to the Kentucky State Line, *Mile 18.4 to Mile 0*

SR 57
NB SR 57 from US 41 to SR 68, *Mile 0 to Mile 12*
SB SR 57 from I-164 to US 41, *Mile 8 to Mile 0*
Note: in addition to the above sections, the SR 57 travelover on I-164 is fully covered as I-164

SR 62
EB SR 62 from 5.4 miles W of US 41 (S jct) to 3.8 miles E of I-164, *Mile 22 to Mile 36.3*
WB SR 62 from I-164 to 7.4 miles W of US 41 (S jct), *Mile 32.4 to Mile 20*
Note: in addition to the above sections, the SR 62 travelover on US 41 is fully covered as US 41

SR 66
EB SR 66 from US 41 (S jct) to 2.0 miles E of I-164, *Mile 27.5 to Mile 34.2*
WB SR 66 from 1.1 miles E of I-164 to 8.1 miles W of US 41 (N jct), *Mile 33.3 to Mile 17.5*
Note: in addition to the above sections, the SR 66 travelover on US 41 is fully covered as US 41

Brown's Station Way (former SR 62)
Note: A DMS is located approximately 1.0 mile W of I-65 on EB Brown's Station Way (formerly SR 62) in Clarksville as part of the TRIMARC ATMS. The Area of Influence for this sign is on SB I-65.

4.2.4. Sections Covered by the Hoosier Helper Freeway Service Patrol

The Hoosier Helper Freeway Service Patrol (FSP) serves 157 miles of Indiana's busiest freeways in their distinctive trucks or vans, helping stranded motorists, removing debris from the road, or summoning help quickly in case of a crash, vehicle fire, or other emergency. They can change a tire, supply enough fuel to get a motorist to a service station, perhaps fix a minor mechanical problem, and summon help for the problems they can't solve. The Hoosier Helpers do more than provide an extra measure of security and safety for motorists. They also keep traffic moving, and that makes them a key element in an Advanced Traffic Management System (ATMS) deployment.

INDOT operates three Hoosier Helper programs statewide:

The first program began in Northwest Indiana on I-80/94 (the Borman Expressway) in August 1991 as a daytime program that expanded to 24 hour / 7 days a week service in May 1996. However, effective September 2008, no service is provided Saturday and Sunday nights from 10 p.m. to 6 a.m. The 34 mile patrol area in Northwest Indiana includes I-65 from US 231 to US 12/20 (just north of the interchange with I-90 (Indiana Toll Road), I-80/94 (the Borman Expressway) from the Illinois State Line to I-90, and I-94 from I-90 to SR 249. The coverage on the Borman Expressway actually extends 1.5 miles into Illinois on I-80/94 (the Kingery Expressway) to Illinois Route 83 (Torrence Avenue), a logical and safe turnaround that assures complete coverage in Indiana on I-80/94. These 1.5 miles are not included in the 34 mile figure above.

The second Hoosier Helper deployment began in August 1997 in the Indianapolis area and operates during peak travel periods, specifically weekdays from 6:30 a.m. to 8:30 p.m. and special events. Service is provided on 95 miles of Indianapolis area freeways: I-65 from Southport Road to 71st Street, I-69 from I-465 to 96th Street, I-70 from the West Leg of I-465 to Post Road, and all of I-465.

The third Hoosier Helper deployment began serving the Indiana portion of metropolitan Louisville (the Falls City area in Southern Indiana) in May 1999 and operates during peak travel periods, specifically weekdays from 5:30 a.m. to 7:30 p.m. and special events. Service is provided on 28 miles of freeway in this area: I-64 from SR 62/64 to the Sherman Minton Bridge over the Ohio River (Kentucky State Line), I-65 from the Kennedy Bridge over the Ohio River to Memphis Road (Exit 16), and I-265 from I-64 to I-65. Hoosier Helpers do cross the Ohio River into Kentucky to turn around to assure complete coverage in Indiana on I-64 and I-65 and to provide service to motorists on these critical river crossings.

The next page provides information regarding the total number of motorists assisted by the Hoosier Helper FSP since 1996. Statistics are not available from 1991 to 1995, when the service was only provided during peak travel times in Northwest Indiana only:

HOOSIER HELPER MOTORIST ASSISTANCE STATISTICS SINCE 1996

Year	Northwest Indiana	Indianapolis	Falls City	TOTAL
1996	13,871	N/A	N/A	13,871
1997	15,895	1,607*	N/A	17,502
1998	15,629	4,082	N/A	19,711
1999	17,902	5,937	2,749**	26,588
2000	16,726	10,077	4,168	30,971
2001	15,241	10,316	4,128	29,685
2002	17,990	10,941	4,293	33,224
2003	16,006	11,160	4,698	31,864
2004	13,289	11,647	6,657	31,593
2005	12,988	15,485	5,240	33,713
2006	13,222	17,494	2,928	33,644
2007	14,203	21,971	3,445	39,619
TOTAL	**182,962**	**120,717**	**38,306**	**341,985**

N/A - Not applicable; service not yet deployed in area
* - Partial year figure; service began Labor Day Weekend
** - Partial year figure; service began Memorial Day Weekend

The following provides information regarding the type and number of motorist assistance services provided by the Hoosier Helper Freeway Service Patrol in 2006:

2007 HOOSIER HELPER MOTORIST ASSISTANCE STATISTICS

Service Rendered	Northwest Indiana	Indianapolis	Falls City	TOTAL
Abandoned Vehicle	1,538	5,914	765	8,217
Assist INDOT Maintenance	16	0	0	16
Cell Phone Used by Motorist	80	152	68	300
Checked on Motorist Welfare	2,199	4,081	832	7,112
Crash	1,152	995	51	2,198
Debris Removal	898	1,432	265	2,595
Diesel Fuel	61	73	7	141
Escort/Transport Motorist	266	383	59	708
Fire	44	28	1	73
First Aid	0	3	0	3
Gasoline	1,703	1,708	287	3,698
Information	337	1,841	113	2,291
Jump Start	379	388	69	836
Minor Repairs	893	796	113	1,802
Other	777	294	63	1,134
Tire	2,914	2,075	417	5,406
Traffic Control	424	1,181	231	1,836
Water	215	152	69	436
Woke Sleeping Motorist	97	200	2	299
Wrecker Called	210	275	33	518
TOTAL	**14,203**	**21,971**	**3,445**	**39,619**

The following sections of roadway are served by the Hoosier Helper Freeway Service Patrol:

I-64
EB & WB I-64 from SR 62/64 to the Kentucky State Line, *Mile 118 to Mile 124*

I-65
NB & SB I-65 from the Kentucky State Line to Memphis Rd, *Mile 0 to Mile 16*
NB & SB I-65 from Southport Rd to 71st St, *Mile 103 to Mile 124.4*
NB & SB I-65 from US 231 to US 12/20, *Mile 247.4 to Mile 262.2*

I-69
NB & SB I-69 from I-465 to 96th St, *Mile 0 to Mile 2.4*

I-70
EB & WB I-70 from I-465 (West Leg) to Post Rd, *Mile 72.8 to Mile 90.7*

I-80/94 – Borman Expressway
Entire length of EB & WB I-80/94 from the Illinois State Line to the I-80/90 (Indiana Toll Road) interchange, *Mile 0 to Mile 15.5*

I-94
EB & WB I-94 from the I-80/90 (Indiana Toll Road) interchange to SR 249, *Mile 15.5 to Mile 19*

I-265
Entire length of EB & WB I-265 from I-64 to I-65, *Mile 0 to Mile 6.7*

I-465
Entire length and all directions of I-465, *Mile 0 to Mile 53.2*

4.2.5. Sections Covered by Closed Circuit Television (CCTV) Cameras

Closed Circuit Television (CCTV) Cameras are used to monitor traffic conditions and to quickly investigate, locate, and determine the cause of any slowed traffic. When vehicle detecton (sensors), if installed, detect slowed traffic, operators in the TMC can direct the cameras to focus on the apparent trouble spot. The information is then relayed to the appropriate emergency responders and to the various communication tools used to provide information to motorists, such as the Dynamic Message Signs and Highway Advisory Radio.

Twenty-six CCTV cameras are deployed in Northwest Indiana. Approximately 85 cameras, nearly ¾ of the total of 125 that will deployed, are currently deployed in the Indianapolis area. Ten cameras are currently deployed in Southern Indiana near Louisville. Four cameras are deployed in Kokomo on US 31.

The following sections of roadway are covered by CCTV cameras:

I-64
EB & WB I-64 from US 150 to the Kentucky State Line, *Mile 119 to Mile 124*

I-65
NB & SB I-65 from the Kentucky State Line to SR 311, *Mile 0 to Mile 9*
NB & SB I-65 from Whiteland Rd (CR 500N) to Cold Spring Rd, *Mile 95 to Mile 117.4*
SB I-65 from 0.4 mile N to 0.2 mile S of Mile 123.3 camera @ I-465 (West Leg), *Mile 123.7 to Mile 123.1*
NB & SB I-65 from 1.2 miles S to 1.0 mile N of Mile 127.8 camera, 0.3 mile N of the Marion/Hendricks County Line, *Mile 126.6 to Mile 128.8*
NB & SB I-65 from 1.0 mile S of US 30 to 0.7 mile N of I-80/94, *Mile 251.5 to Mile 260.5*

I-69
NB & SB I-69 from I-465 to 0.6 mile north of SR 238, *Mile 0 to Mile 10.6*

I-70
EB & WB I-70 from 0.9 mile W of SR 267 to 0.7 mile east of Post Rd, *Mile 65.5 to Mile 91.4*

I-74
EB & WB I-74 from 0.8 mile W of I-465 (W Leg) to Mile 73.3 camera @ I-465 (W Leg), *Mile 72.5 to Mile 73.3*
EB & WB I-74 from Fisher Rd to 1.0 mile E of Pleasant View Rd, *Mile 94.1 to Mile 102*

I-80/94 – Borman Expressway
Entire length of EB & WB I-80/94 from the Illinois State Line to the I-80/90 (Indiana Toll Road) interchange, *Mile 0 to Mile 15.5*

I-94
EB & WB I-94 from the I-80/90 (Indiana Toll Road) interchange to I-80/90 (Indiana Toll Road), *Mile 15.5 to Mile 16*

I-265
EB & WB I-265 from I-64 to 0.6 mile E of Mile 0.0 camera @ I-64, *Mile 0 to Mile 0.6*

I-465
WB & EB I-465 from I-65 (South Leg) to 0.6 mile S of I-70 (West Leg), *Mile 0 to Mile 8.8*
NB & SB I-465 from 0.6 mile S of I-70 (West Leg) to 0.2 mile S of I-65 (West Leg) (temporary cameras on wood poles), *Mile 8.8 to Mile 19.8*
NB/EB & WB/SB I-465 from 0.8 mile S of 71st St (West Leg) to 1.0 mile E of I-865, *Mile 20.4 to Mile 25.7*
EB & WB I-465 from 1.0 mile W to 0.6 mile E of Mile 30.8 camera @ US 31 (North Leg), *Mile 29.8 to Mile 31.4*
EB & WB I-465 from 1.6 miles W to 0.6 mile E of Mile 36.6 camera @ I-69 (North Leg), *Mile 35 to Mile 37.2*
NB & SB I-465 from 0.8 mile N to 0.2 mile S of Mile 43.8 camera @ I-70 (East Leg), *Mile 43 to Mile 44*
EB & WB I-465 from 1.6 miles E of Emerson Ave to I-65 (South Leg), *Mile 50.2 to Mile 53.2*

I-865
EB & WB I-865 from 0.5 mile W to 0.3 mile E of Mile 4.7 camera @ I-465, *Mile 4.2 to Mile 5*

US 31
NB & SB US 31 from Alto Rd to North St in Kokomo

4.2.6. Sections with Vehicle Detection to Monitor Traffic Flow

Vehicle detectors are used to monitor overall traffic speed. These detectors can be either magnetic microloops under the pavement or radar-like devices mounted above ground. These sensors are connected to computers in the Traffic Management Center; when slowdown in traffic is detected, the CCTV cameras are used to verify the nature of the incident. Appropriate emergency responders are then notified and a message placed on the appropriate Dynamic Message Signs and/or Highway Advisory Radio station.

Approximately 70 detection devices are in place in Northwest Indiana on I-80/94 and I-65, approximately 70 in the Indianapolis area on I-65, I-70, and I-465, and two on I-65 just north of the Ohio River as part of the TRIMARC deployment. The following segments feature vehicle detection devices:

I-65
NB & SB I-65 from the Kentucky State Line to 10th St, *Mile 0 to Mile 0.5*
NB & SB I-65 from the I-70 South Split to S of Cold Spring Rd, *Mile 110.1 to Mile 116.9*
NB & SB I-65 from US 30 to 0.5 mile N of I-80/94, *Mile 252.5 to Mile 260.3*

I-69
NB & SB I-69 from I-465 (North Leg) to SR 238, *Mile 0 to Mile 10*

I-70
EB & WB I-70 from SR 267 to I-465 (East Leg), *Mile 66.4 to Mile 89*

I-465
NB & SB I-465 from I-70 (West Leg) to 56th St (West Leg) (temporary detection on wood poles), *Mile 9.5 to Mile 19.2*
NB & SB I-465 from 71st St to 86th St (West Leg), *Mile 21 to Mile 23.4*

I-80/94 – Borman Expressway
Entire length of EB & WB I-80/94 from the Illinois State Line to the I-80/90 (Indiana Toll Road) interchange, *Mile 0 to Mile 15.5*

4.2.7. Sections Covered by a Traveler Information Phone Number (511)

Numerous traveler information phone numbers exist around the country. In an effort to streamline and simplify the myriad of numbers for motorists, the Federal Communications Commission has assigned the number “511” for transportation / travel information. INDOT anticipates the deployment of a statewide 511 system on all INDOT-maintained roadways (Interstates, US-signed routes, and State Roads) will be complete by the end of 2009.

4.3. PLANNED / COMMITTED ITS DEPLOYMENTS

4.3.1. Indianapolis Area ATMS

INDOT is in the latter stages of a multi-year deployment of ITS devices on the Interstate System in Marion and portions of surrounding counties in the Indianapolis area. This Advanced Traffic Management System (ATMS) implementation is a primary focus of the INDOT ITS deployment through 2010.

The Indianapolis area ITS deployment began in 1997 with the commencement of the Hoosier Helper Freeway Service Patrol on a limited portion of the Interstate System. Hoosier Helpers currently patrol 95 miles of Indianapolis area Interstates during the peak travel period of 6:30 AM to 8:30 PM, Monday through Friday. The 2/10 Mile Reference Markers were installed in the median of Indianapolis area Interstates in 1998 to assist motorists and emergency responders in navigation and location identification on the Interstate System.

The implementation of ITS technology in the Indianapolis area started with the installation of the initial three permanent overhead Dynamic Message Signs (DMS) in 2000, followed by the next six DMSs in 2001. These nine DMSs were supplemented by the addition of 12 DMSs in 2003, bringing the total number of permanent overhead DMSs in the Indianapolis area to 21. With the completion of the 12 “backbone” Communication Distribution Point towers in 2004 (Phase One of a five phase ATMS), INDOT added 11 locations from which 22 cameras were added to monitor traffic and verify incidents. This significant milestone coincided with the opening of the INDOT Indianapolis Traffic Management Center. This was still just a fraction of the 125 cameras that will ultimately be installed in phases through 2010. These cameras, placed approximately every mile, will supplement a system of vehicle detection that will be placed approximately every ½ mile on high-volume and one mile on lower volume Interstates in the Indianapolis area to measure the overall flow of traffic.

Phase Two of the Indianapolis ATMS was completed in 2006. This phase installed vehicle detection and additional cameras along I-65 from just south of the I-70 South Split to Cold Spring Road, I-70 from SR 267 to Ritter Avenue, and temporary devices on the West Leg of I-465 from I-70 to 56th Street.

Phases Three and Four of the Indianapolis area ATMS were let in July 2006 and are nearly complete. These phases deploy vehicle detection and additional cameras in 2006-2008 in the northeastern, eastern, and southern portions of the Indianapolis area on I-65 from Whiteland Road to just south of the I-70 South Split, I-69 from I-465 to SR 238, I-70 from I-465 (East Leg) to Mt. Comfort Road, and I-465 from the White River (North Leg) around the East and South Legs to SR 67 / Kentucky Avenue.

The Fifth and final phase of the Indianapolis area ATMS deploys the vehicle detection and additional cameras in 2009-2010 in the northwestern portion of the Indianapolis area on I-65 from Cold Spring Road to SR 267, I-74 from Raceway Road to I-465 (West Leg), I-465 from 56th Street (West Leg) to the White River (North Leg), and I-865 from I-65 to I-465.

4.3.2. Transportation Technology Innovation & Demonstration Program (TTID) *

In 2006, INDOT was selected by the Federal Highway Administration (FHWA) to participate in the Transportation Technology Innovation and Demonstration Program (TTID) in the Indianapolis area. As part of the TTID Program, Traffic.com will deploy, operate, and maintain 60 vehicle detection sites in and directly adjacent to the Indianapolis ATMS deployment area with this public/private partnership, as well as integrate INDOT data for presentation to the local Indianapolis media outlets and subsequent traffic information dissemination to the public.

* - Formerly the Intelligent Transportation Infrastructure Program (ITIP)

In 2007, Traffic.com constructed 57 above ground, side-fire radar vehicle detection sites on the following Interstates and US 31 in and near the Indianapolis area:

I-65 from SR 44 at Franklin to Whiteland Road (Mile 90 to Mile 95): 4 sites
I-65 from Cold Spring Road to I-465 (West Leg) (Mile 117 to 123): 5 sites ******
I-69 from SR 238 to SR 9/109 at Anderson (Mile 10 to Mile 26): 13 sites
I-70 from SR 39 to SR 267 at Plainfield (Mile 59 to Mile 66): 7 sites
I-70 from Mt. Comfort Road to SR 9 at Greenfield (Mile 96 to Mile 104): 6 sites
I-465 from I-65 (West Leg) to White River (North Leg) (Mile 20 to Mile 34): 12 sites ******
US 31 from I-465 (North Leg) to SR 32 at Westfield: 10 sites

****** *- These sites will be replaced by more closely spaced vehicle detection as part of the Phase 5 Indianapolis ATMS deployment in 2009 - 2010. The detection is being provided for now by Traffic.com to provide continuous vehicle detection on and inside I-465, albeit at a level of detection less than INDOT intentions during Phase V of the Indianapolis ATMS.*

Furthermore, in 2010 near the conclusion of the Phase 5 Indianapolis ATMS deployment, Traffic.com will construct three additional above ground, side-fire radar vehicle detection sites on I-74 from SR 267 at Brownsburg to Raceway Road (Mile 66 to Mile 70).

4.3.3. TRIMARC (Louisville / Southern Indiana Area)

The Advanced Traffic Management System (ATMS) in the Louisville area (including portions of Clark and Floyd Counties in Southern Indiana) known as TRIMARC (Traffic Response and Incident Management Assisting the River Cities) is in varying stages of development and deployment and historically has been controlled by the Kentucky Transportation Cabinet with the cooperation of INDOT. TRIMARC updated their original July 1998 Strategic Plan in July 2003; general existing and planned deployment information may be found in the next section.

In 2007, INDOT decided to assume responsibility for implementing ITS / Traffic Management devices in Southern Indiana near Louisville. Please note that the information in this chapter is not reflective of recommendations in Chapter 7 regarding INDOT's planned intentions for this area (Sections 7.2.2 and 7.4.2). This allows for a comparison of the existing TRIMARC intentions for the area versus the planned INDOT intentions for the Southern Indiana area.

4.3.4. Traveler Information (511)

A 511 traveler information deployment in Indiana was studied in another document and is not a deployment of field devices, thus, it is not a focus of this document. Regardless, INDOT anticipates the deployment of a statewide 511 system on all INDOT-maintained roadways (Interstates, US-signed routes, and State Roads) will be complete by the end of 2009 and is considered to be a committed project.

4.4. EXISTING PLUS COMMITTED (E+C) ITS DEPLOYMENTS

The following tables present the **existing plus committed** ITS deployments statewide by route by direction (north-south roadways are listed south to north and then north to south; east-west roadways are listed west to east and then east to west. **Committed is defined as either a part of the ongoing Indianapolis Advanced Traffic Management System (ATMS) deployment, the Transportation Technology Innovation & Demonstration Program (TTID) vehicle detection in conjunction with Traffic.com, as part of the TRIMARC Strategic Plan, or the 511 traveler information system on all INDOT-maintained roadways.** Information regarding the deployment of seven key ITS components is provided: 2/10 Mile Reference Markers, Highway Advisory Radio (HAR) (specifically, the segments of a route within the Area of Influence (A of I) of a HAR), Permanent Overhead Dynamic Message Signs (DMS) (specifically, the segments of a route within the Area of Influence (A of I) of an existing DMS), Hoosier Helper Freeway Service Patrol (FSP), Closed Circuit Television (CCTV), Vehicle Detection, and 511.

Please note that the information in this chapter is not reflective of recommendations in Chapter 7 regarding INDOT's planned intentions for the TRIMARC (Louisville / Southern Indiana) area (Sections 7.2.2 and 7.4.2). This allows for a comparison of the existing TRIMARC intentions for the area versus the planned INDOT intentions for the Southern Indiana area. In addition, please note that the 511 traveler information system will be deployed on all INDOT-maintained roadways but for obvious reasons, all INDOT maintained roadways are not listed in the tables to follow.

4.4.1. Interstate 64

4.4.1.1. Eastbound I-64

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Illinois State Line to 5.0 miles W of US 41 (0 to 20)							X
5.0 miles W of US 41 to 4.0 miles W of US 41 (20 to 21)		X					X
4.0 miles W of US 41 to 1.5 miles E of I-164 (21 to 31) (DMS @ 21.2)	X	X	X				X
1.5 miles E of I-164 to SR 162 (31 to 63)		X	X				X
SR 162 to SR 62/64 (63 to 118)							X
SR 62/64 to 1.0 mile W of I-265 (118 to 120.4)	X	X		X	X		X
1.0 mile W of I-265 to Kentucky State Line (120.4 to 124)	X	X	X	X	X		X

4.4.1.2. Westbound I-64

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Kentucky State Line to SR 62/64 (124 to 118)	X	X	X	X	X		X
SR 62/64 to 6.0 miles E of I-164 (118 to 35)							X
6.0 miles E of I-164 to1.6 miles E of I-164 (35 to 31.1)		X					X
1.6 miles E of I-164 to 4.0 miles W of US 41 (31.1 to 21) (RM begin @ 31)	X	X	X				X
4.0 miles W of US 41 to Illinois State Line (21 to 0)		X	X				X

4.4.2. Interstate 65

4.4.2.1. Northbound I-65

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
Kentucky State Line to SR 60 (0 to 7)	X	X	X	X	X	X	X
SR 60 to SR 311 (7 to 9)	X	X	X	X	X		X
SR 311 to Memphis Rd (9 to 16)	X			X			X
Memphis Rd to 1.8 miles N of SR 58 (16 to 65.5)							X
1.8 miles N of SR 58 to SR 44 (65.5 to 90)		X					X
SR 44 to Whiteland Rd (90 to 95)		X				X	X
Whiteland Rd to 1.0 mile S of Southport Rd (95 to 102)		X			X	X	X
1.0 mile S of Southport Rd to Southport Rd (102 to 103)	X	X			X	X	X
Southport Rd to 1.3 miles S of I-465 (S Leg) (102 to 104.7)	X	X		X	X	X	X
1.3 mile S of I-465 (S Leg) to 71st St (104.7 to 124.4)	X	X	X	X	X	X	X
71st St to 1.2 miles S of SR 267 (124.4 to 132)	X	X	X		X	X	X
1.2 miles S of SR 267 to SR 267 (132 to 133.2)		X	X		X	X	X
SR 267 to SR 28 (133.2 to 158)		X	X				X
SR 28 to 1.5 miles S of US 231 (Exit 247) (158 to 246)		X					X
1.5 miles S of US 231 (Exit 247) to US 231 (Exit 247) (246 to 247.5)	X	X					X
US 231 (Exit 247) to 2.4 miles S of US 30 (247.5 to 250.3)	X	X		X			X
2.4 miles S of US 30 to US 30 (250.3 to 252.7)	X	X	X	X			X
US 30 to 0.5 mile N of I-80/94 (252.7 to 260.3)	X	X	X	X	X	X	X
0.5 mile N of I-80/94 to I-90 (260.3 to 262)	X	X	X	X			X

4.4.2.2. Southbound I-65

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-90 to 0.9 mile N of I-80/94 (262 to 260.7)	X			X			X
0.9 mile N of I-80/94 to I-80/94 (260.7 to 259.8)	X		X	X			X
0.5 mile N of I-80/94 to I-80/94 Connector Ramps (260.3 to 259)	X		X	X	X	X	X
I-80/94 Connector Ramps to US 30 (259 to 252.7)	X	X	X	X	X	X	X
US 30 to US 231 (Exit 247) (252.7 to 247.5)	X	X	X	X			X
US 231 (Exit 247) to 1.5 miles S of US 231 (Exit 247) (247.5 to 246)	X	X	X				X
1.5 miles S of US 231 (Exit 247) to US 24/231 (246 to 201)		X	X				X
US 24/231 to SR 267 (201 to 133.2)		X					X
SR 267 to 1.2 miles S of SR 267 (133.2 to 132)		X			X	X	X
1.2 miles S of SR 267 to 71st St (132 to 124.4)	X	X	X		X	X	X
71st St to Southport Rd (124.4 to 103)	X	X	X	X	X	X	X
Southport Rd to 1.0 mile S of Southport Rd (103 to 102)	X	X	X		X	X	X
1.0 mile S of Southport Rd to Whiteland Rd (102 to 95)		X	X		X	X	X
Whiteland Rd to SR 44 (95 to 90)		X	X			X	X
SR 44 to SR 46 (90 to 68)		X	X				X
SR 46 to Memphis Rd (68 to 16)		X					X
Memphis Rd to SR 311 (16 to 9)	X	X		X			X
SR 311 to 1.0 mile S of SR 311 (9 to 8)	X	X		X	X		X
1.0 mile S of SR 311 to SR 60 (8 to 7)	X	X	X	X	X		X
SR 60 to Kentucky State Line (7 to 0)	X	X	X	X	X	X	X

4.4.3. Interstate 69 (North of Indianapolis Only)

4.4.3.1. Northbound I-69

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-465 to 96th St (0 to 2.4)	X	X	X	X	X	X	X
96th St to 1.0 mile N of 116th St (2.4 to 6)	X	X	X		X	X	X
1.0 mile N of 116th St to SR 238 (6 to 10)		X	X		X	X	X
SR 238 to SR 9/109 (10 to 26)		X	X			X	X
SR 9/109 to SR 32/67 (26 to 34)		X	X				X
SR 32/67 to 2.6 miles S of I-469 (S jct) (34 to 94)		X					X
2.6 miles S of I-469 (S jct) to 1.0 mile N of SR 1 (94 to 117) (DMS @ 94.2)	X	X	X				X
1.0 mile N of SR 1 to Michigan State Line (117 to 158)		X	X				X

4.4.3.2. Southbound I-69

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Michigan State Line to 1.1 miles N of SR 1 (158 to 117.1)		X					X
1.1 miles N of SR 1 to 2.6 miles S of I-469 (S jct) (117.1 to 94) (2/10 RM begin @ 117)	X	X	X				X
2.6 miles S of I-469 (S jct) to SR 26 (94 to 55)		X	X				X
SR 26 to SR 9/109 (55 to 26)		X					X
SR 9/109 to SR 238 (26 to 10)		X				X	X
SR 238 to 1.0 mile N of 116th St (10 to 6)		X			X	X	X
1.0 mile N of 116th St to 4.3 miles N of I-465 (6 to 4.3)	X	X			X	X	X
4.3 miles N of I-465 to 96th St (4.3 to 2.4)	X	X	X		X	X	X
96th St to I-465 (2.4 to 0)	X	X	X	X	X	X	X

4.4.4. Interstate 70

4.4.4.1. Eastbound I-70

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Illinois State Line to SR 39 (0 to 59)		X					X
SR 39 to 1.4 miles W of SR 267 (59 to 65)		X				X	X
1.4 miles W of SR 267 to SR 267 (65 to 66.4)	X	X				X	X
SR 267 to 1.2 miles E of SR 267 (66.4 to 67.6)	X	X			X	X	X
1.2 miles E of SR 267 to I-465 (West Leg) (67.6 to 72.8)	X	X	X		X	X	X
I-465 (West Leg) to Post Rd (72.8 to 90.7)	X	X	X	X	X	X	X
Post Rd to 2.3 miles E of Post Rd (90.7 to 93)	X	X	X		X	X	X
2.3 miles E of Post Rd to Mt. Comfort Rd (93 to 96)		X	X		X	X	X
Mt. Comfort Rd to SR 9 (96 to 104)		X	X			X	X
SR 9 to SR 3 (104 to 123)		X	X				X
SR 3 to Ohio State Line (123 to 157)		X					X

Note: the I-70 travelover on I-65 from Mile 81 to 82.6 is covered as I-65

4.4.4.2. Westbound I-70

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Ohio State Line to 3.0 miles W of US 35 (157 to 146)							X
3.0 miles W of US 35 to SR 9 (146 to 104)		X					X
SR 9 to Mt. Comfort Rd (104 to 96)		X				X	X
Mt. Comfort Rd to 2.3 miles E of Post Rd (96 to 93)		X			X	X	X
2.3 miles E of Post Rd to 1.4 miles E of Post Rd (93 to 92.1)	X	X			X	X	X
1.4 miles E of Post Rd to Post Rd (93 to 90.7)	X	X	X		X	X	X
Post Rd to I-465 (West Leg) (90.7 to 72.8)	X	X	X	X	X	X	X
I-465 (West Leg) to SR 267 (72.8 to 66.4)	X	X	X		X	X	X
SR 267 to 1.4 miles W of SR 267 (66.4 to 65)	X	X	X			X	X
1.4 miles W of SR 267 to SR 39 (65 to 59)		X	X			X	X
SR 39 to SR 243 (59 to 37)		X	X				X
SR 243 to Illinois State Line (37 to 0)		X					X

Note: the I-70 travelover on I-65 from Mile 82.6 to 81 is covered as I-65

4.4.5. Interstate 74

4.4.5.1. Eastbound I-74

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Illinois State Line to SR 267 (0 to 70)							X
SR 267 to 3.3 miles W of I-465 (West Leg) (66 to 70)						X	X
3.3 miles W of I-465 (W Leg) to 1.3 miles W of I-465 (W Leg) (70 to 72)					X	X	X
1.3 miles W of I-465 (W Leg) to 0.3 mile W of I-465 (W Leg) (72 to 73)		X			X	X	X
0.3 mile W of I-465 (W Leg) to I-465 (W Leg) (73 to 73.3) (2/10 RM continue to 73.6)	X	X			X	X	X
I-465 (East Leg) to 1.0 mile E of Acton Rd (93.8 to 100) (2/10 RM begin at 93.0)	X		X		X	X	X
1.0 mile E of Acton Rd to Pleasant View Rd (100 to 101)			X		X	X	X
Pleasant View Rd to 2.7 miles W of SR 9 (101 to 110)			X				X
2.7 miles W of SR 9 to SR 244 (110 to 119)		X	X				X
SR 244 to Ohio State Line (119 to 172)		X					X

Note: the I-74 travel over on I-465 from Mile 73.3 to 93.8 is covered as I-465

4.4.5.2. Westbound I-74

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Ohio State Line to SR 44							X
SR 44 to Pleasant View Rd (116 to 101)		X					X
Pleasant View Rd to 1.0 mile E of Acton Rd (101 to 100)		X			X	X	X
1.0 mile E of Acton Rd to 0.5 mile W of Acton Rd (100 to 98.5)	X	X			X	X	X
0.5 mile W of Acton Rd to I-465 (East Leg) (98.5 to 93.8)	X	X	X		X	X	X
I-465 (West Leg) to 0.3 mile W of I-465 (West Leg) (73.3 to 73) (2/10 RM start at 73.6)	X	X			X	X	X
0.3 mile W of I-465 (W Leg) to 3.3 miles W of I-465 (W Leg) (73 to 70)		X			X	X	X
3.3 miles W of I-465 (W Leg) to SR 267 (70 to 66)		X				X	X
SR 267 to Illinois State Line (66 to 0)		X					X

Note: the I-74 travel over on I-465 from Mile 93.8 to 73.3 is covered as I-465

4.4.6. Interstate 80/94 (Borman Expressway)

4.4.6.1. Eastbound I-80/94 (Borman Expressway)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	1/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Illinois State Line to 1.3 miles E of Illinois State Line (0 to 1.3)	X	X		X	X	X	X
1.3 miles E of Illinois State Line to I-80/90 (Toll Road) (1.3 to 15.5)	X	X	X	X	X	X	X

4.4.6.2. Westbound I-80/94 (Borman Expressway)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	1/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-80/90 (Toll Road) to Illinois State Line (15.5 to 0)	X	X	X	X	X	X	X

4.4.7. Interstate 94

4.4.7.1. Eastbound I-94

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	1/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-80/90 (Toll Road) to SR 249 (15.5 to 19)	X	X	X	X			X
SR 249 to Michigan State Line (19 to 46)		X	X				X

4.4.7.2. Westbound I-94

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	1/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Michigan State Line to 1.7 miles E of SR 249 (46 to 20.7)		X					X
1.7 miles E of SR 249 to SR 249 (20.7 to 19)		X	X				X
SR 249 to I-80/90 (Toll Road) (19 to 15.5)	X	X	X	X			X

4.4.8. Interstate 164

4.4.8.1. Eastbound / Northbound I-164

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
US 41 to I-64 (0 to 21)	X	X	X				X

4.4.8.2. Southbound / Westbound I-164

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
I-64 to US 41 (21 to 0)	X	X	X				X

Note: I-69 will be incorporated into I-164 in the future from approximately 1.5 miles east of US 41 to I-64.

4.4.9. Interstate 265 (including existing SR 265 from I-65 to SR 62)

4.4.9.1. Eastbound I-265 / SR 265 (East of I-65)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
I-64 to I-65 (I-265) (0 to 6.7)	X	X	X	X	X	X	X
I-65 to SR 62 (SR 265) (6.7 to 9.3)	X	X	X		X	X	X
Future I-265 from SR 62 to Ohio River / Kentucky State Line	X	X	X		X	X	X

4.4.9.2. Westbound I-265 / SR 265 (East of I-65)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
Future I-265 from Ohio River / Kentucky State Line to SR 62	X	X	X		X	X	X
SR 62 to I-65 (SR 265) (9.3 to 6.7)	X	X	X		X	X	X
I-65 to I-64 (I-265) (6.7 to 0)	X	X	X	X	X	X	X

Note: SR 265 will become I-265 when the connection across the Ohio River to I-265 in Kentucky is completed.

4.4.10. Interstate 275

4.4.10.1. Northbound I-275

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Kentucky State Line to Ohio State Line (0 to 3.2)							X

4.4.10.2. Southbound I-275

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Ohio State Line to Kentucky State Line (3.2 to 0)							X

4.4.11. Interstate 465

4.4.11.1. Clockwise I-465

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-65 (South Leg) to I-65 (South Leg) (0 to 53.2)	X	X	X	X	X	X	X

4.4.11.2. Counterclockwise I-465

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-65 (South Leg) to I-865 (53.2 to 24)	X	X	X	X	X	X	X
I-865 to 0.5 mile S of I-65 (West Leg) (24 to 19.4)	X		X	X	X	X	X
0.5 mile S of I-65 (West Leg) to I-65 (South Leg) (19.4 to 0)	X	X	X	X	X	X	X

4.4.12. Interstate 469

4.4.12.1. "Northbound" I-469 (from S jct with I-69 to N jct with I-69)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-69 (S jct) to I-69 (N jct) (0 to 31)	X	X	X				X

4.4.12.2. "Southbound" I-469 (from N jct with I-69 to S jct with I-69)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-69 (N jct) to I-69 (S jct) (31 to 0)	X	X	X				X

4.4.13. Interstate 865

4.4.13.1. Eastbound I-865

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-65 to I-465 (0 to 5)	X	X	X		X	X	X

4.4.13.2. Westbound I-865

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-465 to I-65 (5 to 0)	X		X		X	X	X

4.4.14. US 20/31 (St. Joseph Valley Parkway / Dean Mock Expwy)

4.4.14.1. Southbound / Eastbound US 20/31

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Michigan State Line to CR 17							X

4.4.14.2. Westbound / Northbound US 20/31

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
CR 17 to Michigan State Line							X

4.4.15. US 31 (Kokomo Area)

4.4.15.1. Northbound US 31 (Kokomo Area)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
1.1 miles S of SR 26 to 0.6 mile S of SR 26 (157 to 157.5)	X						X
0.6 mile S of SR 26 to Alto Rd (157.5 to 159.6) (DMS @ 157.6)	X	X	X				X
Alto Rd to North St (159.6 to 163.9)	X	X	X		X		X
North St to 1.0 mile N of US 35 (N jct) (163.9 to 168)	X	X	X				X

4.4.15.2. Southbound US 31 (Kokomo Area)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS 2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
1.0 mile N of US 35 (N jct) to North St (168 to 163.9)	X	X	X				X
North St to Alto Rd (163.9 to 159.6)	X	X	X		X		X
Alto Rd to 1.1 miles S of SR 26 (159.6 to 157)	X	X	X				X

4.4.16. US 41 (Evansville Area)

4.4.16.1. Northbound US 41 (Evansville Area)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
Kentucky State Line to 1.0 mile S of I-164 (0 to 0.4)	X	X					X
1.0 mile S of I-164 to SR 68 (0.4 to 19)	X	X	X				X

4.4.16.2. Southbound US 41 (Evansville Area)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
SR 68 to 1.4 miles N of I-64 (19 to 18.4)	X	X					X
1.4 miles N of I-64 to Kentucky State Line (18.4 to 0)	X	X	X				X

4.4.17. SR 57 (Evansville Area)

4.4.17.1. Northbound SR 57 (Evansville Area)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
US 41 to SR 68 (0 to 12)		X	X				X

Note: the SR 57 travelover on I-164 from Mile 8 to10 is fully covered as I-164

4.4.17.2. Southbound SR 57 (Evansville Area)

LOCATION (Mile to Mile)	EXISTING + COMMITTED ITS DEPLOYMENTS						
	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
SR 68 to I-64 (12 to 10)		X					X
I-164 (S jct) to US 41 (8 to 0)		X	X				X

Note: the SR 57 travelover on I-164 from Mile 10 to 8 is fully covered as I-164

4.4.18. SR 62 (Evansville Area)

4.4.18.1. Eastbound SR 62 (Evansville Area)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
7.4 miles W of US 41 (S jct) to 5.4 miles W of US 41 (S jct) (Lloyd Expwy) (20 to 22)		X					X
5.4 miles W of US 41 (S jct) to US 41 (S jct) (Lloyd Expwy) (22.0 to 27.4)	X	X	X				X
SR 62 travels over US 41 for 1.2 miles							
US 41 (N jct) to 1.5 miles E of I-164 (Morgan Ave) (28.6 to 34)	X	X	X				X
1.5 miles E of I-164 to 3.8 miles E of I-164 (Morgan Ave) (34 to 36.3)		X	X				X

Note: the SR 62 travelover on US 41 from Mile 27.4 to 28.6 is covered as US 41

4.4.18.2. Westbound SR 62 (Evansville Area)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
3.8 miles E of I-164 to 1.5 miles E of I-164 (Morgan Ave) (36.3 to 34)		X					X
1.5 miles E of I-164 to US 41 (N jct) (Morgan Ave) (34 to 28.6)	X	X					X
I-164 to US 41 (N jct) (Morgan Ave) (32.4 to 28.6)	X	X	X				X
SR 62 travels over US 41 for 1.2 miles							
US 41 (S jct) to 5.4 miles W of US 41 (S jct) (Lloyd Expwy) (27.4 to 22)	X	X	X				X
5.4 miles W of US 41 (S jct) to 7.4 miles W of US 41 (S jct) (Lloyd Expwy) (22 to 20)		X	X				X

Note: the SR 62 travelover on US 41 from Mile 28.6 to 27.4 is covered as US 41

4.4.19. SR 66 (Evansville Area)

4.4.19.1. Eastbound SR 66 (Evansville Area)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
8.1 miles W of US 41 (N jct) to 4.6 miles of US 41 (N jct) (Diamond Ave) (17.5 to 21)		X					X
4.6 miles W of US 41 (N jct) to US 41 (N jct) (Diamond Ave) (21 to 25.6)	X	X					X
SR 66 travels over US 41 for 1.9 miles							
US 41 (S jct) to 2.0 miles E of I-164 (Lloyd Expwy) (27.5 to 34.2)	X	X	X				X

Note: the SR 66 travelover on US 41 from Mile 25.6 to 27.5 is covered as US 41

4.4.19.2. Westbound SR 66 (Evansville Area)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	**2/10 RM**	**HAR A of I**	**Perm DMS A of I**	**Hoosier Helper FSP**	**CCTV**	**Vehicle Detection**	**511**
1.8 miles E of I-164 to 1.1 miles E of I-164 (Lloyd Expwy) (34 to 33.3)	X	X					X
1.1 miles E of I-164 to US 41 (S jct) (Lloyd Expwy) (33.3 to 27.5)	X	X	X				X
SR 66 travels over US 41 for 1.9 miles							
US 41 (N jct) to 4.6 miles W of US 41 (N jct) (Diamond Ave) (25.6 to 21)	X	X	X				X
4.6 miles W of US 41 (N jct) to 8.1 miles W of US 41 (N jct) (Diamond Ave) (21 to 17.5)		X	X				X

Note: the SR 66 travelover on US 41 from Mile 27.5 to 25.6 is covered as US 41

4.4.20. SR 912 (Cline Avenue)

4.4.20.1. Eastbound / Southbound SR 912 (Cline Avenue)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-90 (W jct) to I-80/94							X

4.4.20.2. Northbound / Westbound SR 912 (Cline Avenue)

	EXISTING + COMMITTED ITS DEPLOYMENTS						
LOCATION (Mile to Mile)	2/10 RM	HAR A of I	Perm DMS A of I	Hoosier Helper FSP	CCTV	Vehicle Detection	511
I-80/94 to I-90 (W jct)							X

CHAPTER 5 – ITS ARCHITECTURE / MARKET PACKAGES

5.1. INTRODUCTION

In a general sense, the National ITS Architecture is a framework within which an ITS system can be built. The Architecture functionally defines what the pieces of the system are and the information that is exchanged between them. The Architecture is functionally oriented and not technology-specific which allows the architecture to remain effective over time. It defines what needs to be done, not how it will be done.

More specifically, the National ITS Architecture provides the framework for planning, defining, and integrating Intelligent Transportation Systems. The architecture defines the ITS **functions** (i.e., gather traffic information), the **physical entities (components) or subsystems** where these functions reside (i.e., the field, center, or vehicle), and the **information and data flows (communications)** that must be exchanged to connect these functions and physical subsystems together into an integrated system.

The Market Packages provide a deployment-oriented perspective to the National ITS Architecture. They are tailored to fit real world transportation problems and needs. Market Packages collect together one or more Equipment Packages that work together to deliver a particular transportation service and the Architecture Flows that connect them and other important external systems. In other words, they identify the pieces of the Physical Architecture that are required to implement a particular transportation service.

More details regarding the elements of the National ITS Architecture, Version 5.1, and the ITS Market Packages may be found on the following pages.

Please note that the *Indiana Statewide ITS Architecture* was completed in 2005 and should be referenced for any additional information regarding ITS Architecture.

5.2. ITS USER SERVICES

The ITS User Services, initially developed as part of the National ITS Program Planning process in the 1990s and modified over time, formed the basis for the National ITS Architecture development effort. The National ITS Architecture essentially implements the ITS User Services. The User Services represent what the system will do from a broad scale user's perspective, be it the public or a system operator. These 33 User Services are grouped into eight Bundles for convenience. The User Services allows the process of system or project definition to begin by thinking about what high level services will be provided to address identified problems and needs. The chart below provides additional information regarding the eight User Service Bundles and the associated 33 User Services.

ITS USER SERVICES	
USER SERVICE BUNDLE	**USER SERVICE**
Travel And Traffic Management	Pre-Trip Travel Information En-Route Driver Information Route Guidance Ride Matching and Reservation Traveler Services Information Traffic Control Incident Management Travel Demand Management Emissions Testing and Mitigation Highway-Rail Intersection
Public Transportation Management	Public Transportation Management En-Route Transit Information Personalized Public Transit Public Travel Security
Electronic Payment	Electronic Payment Services
Commercial Vehicle Operations	Commercial Vehicle Electronic Clearance Automated Roadside Safety Inspection On-Board Safety and Security Monitoring Commercial Vehicle Administrative Processes Hazardous Material Security and Incident Response Freight Mobility
Emergency Management	Emergency Notification and Personal Security Emergency Vehicle Management Disaster Response and Evacuation
Advanced Vehicle Safety Systems	Longitudinal Collision Avoidance Lateral Collision Avoidance Intersection Collision Avoidance Vision Enhancement for Crash Avoidance Safety Readiness Pre-Crash Restraint Deployment Automated Vehicle Operation
Information Management	Archived Data Function
Maintenance and Construction Management	Maintenance and Construction Operations

5.3. ITS ARCHITECTURE

As stated earlier, the National ITS Architecture provides the framework for planning, defining, and integrating Intelligent Transportation Systems. The architecture defines the ITS **functions** (i.e., gather traffic information), the **physical entities (components) or subsystems** where these functions reside (i.e., the field, center, or vehicle), and the **information and data flows (communications)** that must be exchanged to connect these functions and physical subsystems together into an integrated system.

5.3.1. Logical Architecture

The Logical Architecture is a broad-level tool that assists in organizing complex entities and relationships, focusing on the functional processes and information flows of a system. Developing a Logical Architecture helps identify the system functions and information flows, and guides development of functional requirements for new systems and improvements. A Logical Architecture should be independent of institutions and technology, i.e., it should not define where or by whom functions are performed in the system, nor how functions are to be implemented. The Logical Architecture of the National ITS Architecture defines a set of functions (or processes) and information flows (or data flows) that respond to the User Service requirements.

5.3.2. Physical Architecture

The Physical Architecture is the physical (versus functional) view of a system, with functions grouped together. A Physical Architecture provides a physical representation, but not a detailed design, of how the system should provide the required functionality. The Physical Architecture takes the processes (functions) identified in the Logical Architecture and assigns them to physical entities, namely subsystems in the National ITS Architecture. Development of a Physical Architecture will identify the desired communications and interactions between different transportation management organizations.

In the National ITS Architecture, the Physical Architecture is described by three layers: the Transportation Layer, the Communications Layer, and the Institutional Layer, briefly described on the next page.

5.3.2.1. Transportation Layer

The Transportation Layer of the Physical Architecture shows the relationships among the transportation management related elements. It is composed of subsystems for travelers, vehicles, Transportation or Traffic Management Centers, and field devices, as well as external system interfaces. The Transportation Layer may include field devices for traffic surveillance and motorist information dissemination, traffic signal and ramp metering controllers, Transportation Management Centers, and Emergency Management Centers.

5.3.2.2. Communications Layer

The Communications Layer of the Physical Architecture provides the communications services that connect the Transportation Layer components. This layer depicts all of the communications necessary to transfer information and data among transportation entities, traveler information and emergency service providers, and other service providers such as towing and recovery. The communications layer identifies system interface points where national Standards and communications protocols can be used.

5.3.2.3. Institutional Layer

While the Institutional Layer is not actually part of the Physical Architecture, the Physical Architecture can not be fully defined in a region without some decisions being made regarding the jurisdictional structure and working relationships that will provide a framework for ITS planning and implementation. These institutional decisions should lead to a depiction of who should communicate with whom, and what information should be communicated in the transportation and communications layers.

5.4. ITS EQUIPMENT PACKAGES

The Logical and Physical Architectures contain all of the architecture elements needed to provide the User Services. Although the formal definition of the National ITS Architecture stops there, other categorizations of the architecture elements were made for the purposes of evaluation and to better understand the deployment implications.

The term "Equipment Package" was used in the National ITS Architecture development effort to group similar functions of a particular subsystem together into a package of hardware and software capabilities for implementation purposes. Documented as part of the Physical Architecture, the Equipment Packages are associated closely with Market Packages and were used as a basis for estimating deployment costs. The National ITS Architecture defined 202 Equipment Packages.

5.5. ITS MARKET PACKAGES

Some of the aforementioned ITS User Services are too broad in nature to be convenient in planning actual deployments. Additionally, they often do not translate easily into existing institutional environments and do not distinguish between major levels of functionality. In order to address these concerns and providing a more meaningful evaluation, a more detailed set of deployment-oriented ITS service building blocks were defined from the original User Services: the **Market Packages**.

The Market Packages provide a deployment-oriented perspective to the National ITS Architecture. Market Packages are defined by groups of Equipment Packages required to work together to deliver a specified transportation service and the major architecture flows between them and other external systems. Basically, they identify the pieces of the National ITS Architecture required to implement a transportation service. Market Packages are designed to address specific transportation problems and needs and can be related back to the User Services and the Architecture Framework. This relationship between Architecture and implementation is presented using a defined set of Market Packages.

The Market Packages represent particular groupings of entities defined in the Physical Architecture that correspond to specific transportation services. The Physical Architecture is comprised of Transportation, Communications, and Institutional Layers. The Transportation Layer includes the various transportation-related centers, roadside devices, vehicle equipment, and other equipment used by travelers to access ITS services. The Communication Layer provides for the transfer of information between the Transportation Layer elements. The Institutional Layer introduces the policies, funding, working arrangements, and jurisdictional structure that support the technical layers of the Architecture. The Transportation and Communication Layers together are the Architecture Framework that coordinates overall system operation by defining interfaces between equipment which may be deployed by different procuring and operating sectors. The Architecture Framework defines what each major transportation system element does and how they interact to provide all User Services.

The National ITS Architecture development effort identified a total of 85 Market Packages that reflect the current definition of ITS and the evolving technology market. The chart on the following two pages contains a complete listing of these, grouped according to their respective major application areas.

Additional details on each Market Package follow the chart. Market Packages that have been identified as an **early deployment candidate** from a **<u>national</u> perspective** due to a promising combination of **low-risk implementation characteristics**, **developing public or private markets** for the package, and **tangible system or user benefits** are indicated as such. **This does not necessarily mean that it would be an early deployment candidate in Indiana on the INDOT system.**

ITS MARKET PACKAGES	
SERVICE AREA	**MARKET PACKAGE**
Archived Data Management	ITS Data Mart ITS Data Warehouse ITS Virtual Data Warehouse
Public Transportation	Transit Vehicle Tracking Transit Fixed-Route Operations Demand Response Transit Operations Transit Passenger and Fare Management Transit Security Transit Maintenance Multi-modal Coordination Transit Traveler Information
Traveler Information	Broadcast Traveler Information Interactive Traveler Information Autonomous Route Guidance Dynamic Route Guidance ISP Based Route Guidance Integrated Transportation Management/Route Guidance Yellow Pages and Reservation Dynamic Ridesharing In-Vehicle Signing
Traffic Management	Network Surveillance Probe Surveillance Surface Street Control Freeway Control HOV Lane Management Traffic Information Dissemination Regional Traffic Control Traffic Incident Management System Traffic Forecast and Demand Management Electronic Toll Collection Emissions Monitoring and Management Virtual TMC and Smart Probe Data Standard Railroad Grade Crossing Advanced Railroad Grade Crossing Railroad Operations Coordination Parking Facility Management Regional Parking Management Reversible Lane Management Speed Monitoring Drawbridge Management Roadway Closure Management

SERVICE AREA	MARKET PACKAGE
Advanced Vehicle Safety Systems	Vehicle Safety Monitoring Driver Safety Monitoring Longitudinal Safety Warning Lateral Safety Warning Intersection Safety Warning Pre-Crash Restraint Deployment Driver Visibility Improvement Advanced Vehicle Longitudinal Control Advanced Vehicle Lateral Control Intersection Collision Avoidance Automated Highway System
Commercial Vehicle Operations	Fleet Administration Freight Administration Electronic Clearance CV Administrative Processes International Border Electronic Clearance Weigh-In-Motion Roadside CVO Safety On-Board CVO and Freight Safety and Security CVO Fleet Maintenance HAZMAT Management Roadside HAZMAT Security Detection and Mitigation CV Driver Security Authentication Freight Assignment Tracking
Emergency Management	Emergency Call-Taking and Dispatch Emergency Routing Mayday and Alarms Support Roadway Service Patrols Transportation Infrastructure Protection Wide-Area Alert Early Warning System Disaster Response and Recovery Evacuation and Reentry Management Disaster Traveler Information
Maintenance and Construction Operations	Maintenance & Construction Vehicle and Equipment Tracking Maintenance & Construction Vehicle Maintenance Road Weather Data Collection Weather Information Processing and Distribution Roadway Automated Treatment Winter Maintenance Roadway Maintenance and Construction Work Zone Management Work Zone Safety Monitoring Maintenance & Construction Activity Coordination

5.5.1. Archived Data Management

5.5.1.1. ITS Data Mart (AD1)

An ITS Data Mart provides an archive that houses data collected and owned by a single organization. This archive usually includes data covering a single transportation mode and one jurisdiction that is collected from an operational data store and archived for future use. This Market Package has been identified as an **early deployment** candidate from a national perspective, as it is the key to better utilizing the information collected during operation of ITS systems to enhance the quantitative support for transportation planning, research, and other analyses.

5.5.1.2. ITS Data Warehouse (AD2)

An ITS Data Warehouse includes all the data collection and management features provided by the ITS Data Mart while adding the opportunity for the collection of data from multiple agencies and data sources across modal and jurisdictional boundaries.

5.5.1.3. ITS Virtual Data Warehouse (AD3)

An ITS Virtual Data Warehouse provides the same wide access to the multimodal data from varied sources as in the ITS Data Warehouse but provides this access using enhanced interoperability between physically distributed ITS archives that are each locally managed.

5.5.2. Public Transportation

5.5.2.1. Transit Vehicle Tracking (APTS1)

Transit Vehicle Tracking monitors current transit vehicle location using an Automated Vehicle Location (AVL) System. The data may be used to determine real-time schedule adherence and update the transit system's schedule. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.2. Transit Fixed-Route Operations (APTS2)

Transit Fixed-Route Operations performs vehicle routing and scheduling functions, as well as automatic operator (driver / conductor) assignment and system monitoring for fixed-route and flexible-route transit services. Transit data is integrated with other modes to provide the public with integrated and personalized dynamic schedules.
This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.3. Demand Response Transit Operations (APTS3)

Demand Response Transit Operations performs the aforementioned vehicle routing and scheduling function as well as automatic operator assignment and system monitoring for demand-responsive transit services. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.4. Transit Passenger and Fare Management (APTS4)

Transit Passenger and Fare Management manages passenger loading information and fare payments on-board transit vehicles using electronic means such as a traveler card or other electronic payment device. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.5. Transit Security (APTS5)

Transit Security provides for the physical security of transit passengers and transit vehicle operators, with on-board video, audio, or other equipment deployed to perform surveillance and sensor monitoring in order to warn of potentially hazardous situations. Other public and non-public areas under the authority of a transit agency are also monitored with similar surveillance and sensor equipment. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.6. Transit Maintenance (APTS6)

Transit Maintenance supports automatic transit maintenance scheduling and monitoring via on-board condition sensors and provides for automatic scheduling of preventive and corrective maintenance. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.7. Multi-modal Coordination (APTS7)

Multi-modal Coordination establishes two-way communications between multiple transit and traffic agencies to improve service coordination and increasing traveler convenience at transit transfer points. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.2.8. Transit Traveler Information (APTS8)

Transit Traveler Information provides transit users at stops and on-board transit vehicles with ready access to transit information including transit stop announcements and real-time schedule displays. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.3. Traveler Information

5.5.3.1. Broadcast Traveler Information (ATIS1)

Broadcast Traveler Information collects a wide variety of information from many sources, such as traffic conditions, advisories, incidents, roadway maintenance and construction, public transportation, toll and parking, air quality, and weather and disseminates this information over a wide area via existing infrastructure and low cost user equipment such as radio or cell phones. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.3.2. Interactive Traveler Information (ATIS2)

Interactive Traveler Information provides tailored, real-time information such as traffic conditions, road construction and detours, transit services, etc. in response to a traveler request. A variety of devices may be used by the traveler to access this information (pre-trip or en-route), such as a personal computer, kiosk, or phone (511). Interactive Traveler Information relies on availability of real-time transportation data from in-field devices. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.3.3. Autonomous Route Guidance (ATIS3)

Autonomous Route Guidance relies on in-vehicle equipment to enable route planning and guidance based on static information; this information is also available to the traveler by way of personal portable devices. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.3.4. Dynamic Route Guidance (ATIS4)

Dynamic Route Guidance offers advanced route planning and guidance that is real-time in nature, embellishing the Autonomous Route Guidance Market Package with a digital receiver.

5.5.3.5. ISP Based Route Guidance (ATIS5)

Information Service Provider (ISP) Based Route Guidance offers the user pre-trip route planning and en-route turn-by-turn route guidance based upon static information or real-time conditions. Unlike the previous two Market Packages (Autonomous Route Guidance and Dynamic Route Guidance) where the user equipment determines the route, the route determination functions are performed by the Information Service Provider.

5.5.3.6. Integrated Transportation Management / Route Guidance (ATIS6)

Integrated Transportation Management / Route Guidance provides advanced route planning and guidance which is responsive to current conditions and supports collection of real-time information on routes from the probe-equipped vehicles in the network.

5.5.3.7. Yellow Pages and Reservation (ATIS7)

Yellow Pages and Reservation provides pre-trip or en-route traveler service information, such as service stations, restaurants, and lodging.

5.5.3.8. Dynamic Ridesharing (ATIS8)

Dynamic Ridesharing provides real-time ridesharing / ride matching services to travelers, including connections to transit.

5.5.3.9. In-Vehicle Signing (ATIS9)

In-Vehicle Signing supports distribution of traffic and travel advisory information, including road-rail intersection status and weather information to drivers via in-vehicle devices.

5.5.4. Traffic Management

5.5.4.1. Network Surveillance (ATMS01)

Network Surveillance includes vehicle detection and other surveillance equipment such as video (CCTV), the supporting field equipment, and the communications to transmit the collected data. This information enables operators at the Traffic Management Center (TMC) to monitor traffic and road conditions, as well as identify and verify incidents.

Network Surveillance is one of the most vital ITS deployments and provides the basic elements for traffic management. It is the foundation upon which traffic control and management systems can be implemented, as well as a critical source of information supporting real-time traveler information. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.2. Probe Surveillance (ATMS02)

Probe Surveillance provides the potential for a less expensive (but less comprehensive) alternative approach to Network Surveillance for monitoring conditions and identifying incidents and making the information available to travelers. Data reduction is required as a large volume of data is collected by probes. It should also be noted that video (CCTV) for verification of incidents is not available with Probe Surveillance. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.3. Surface Street Control (ATMS03)

Surface Street Control provides the central control and monitoring equipment, communications devices, and the signal control equipment for surface street control and/or arterial traffic management, generally within a single jurisdiction. Traffic signal control systems range from fixed-schedule control systems to fully traffic responsive systems that adjust control plans based current traffic conditions. This is a well established Market Package and has been identified as an **early deployment** candidate from a national perspective.

5.5.4.4. Freeway Control (ATMS04)

Freeway Control provides the roadway vehicle detection and video devices and communications to support ramp control (ramp metering) and lane controls for freeways, incorporating the instrumentation included in the Network Surveillance Market Package. This is also a well established Market Package that has been identified as an **early deployment** candidate from a national perspective.

5.5.4.5. HOV Lane Management (ATMS05)

High Occupancy Vehicle (HOV) Lane Management controls HOV lanes by coordinating freeway ramp meters and signals with HOV lane usage signals. HOV Lanes provide preferential treatment via reserved lanes and special bypasses at ramp meter sites during peak volume times of the day for motorists complying with the stated requirements for HOV Lane usage.

5.5.4.6. Traffic Information Dissemination (ATMS06)

Traffic Information Dissemination provides driver information using roadway devices such as Dynamic Message Signs (DMS) or Highway Advisory Radio (HAR) stations. A wide range of information can be disseminated such as incident, traffic, and road information, emergency alerts, and other driver advisories at specific locations on the road network. Careful placement of these devices provides the information in advance of key decision points in the road network where motorists can divert in light of the traveler information. The DMSs and HARs provide traffic information in an equitable fashion; every motorist passing by the device benefits from the information, not just those with in-vehicle equipment. This market package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.7. Regional Traffic Control (ATMS07)

Regional Traffic Control provides for the sharing of traffic information and control among different jurisdiction's Traffic Management Centers (TMC) to support regional traffic control, especially in terms of major travel corridors. This Market Package advances the Surface Street and Freeway Control Market Packages by adding the communications links and control strategies that enable integrated multi-jurisdictional traffic control. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.8. Traffic Incident Management System (ATMS08)

Traffic Incident Management System manages both unplanned incidents and planned events to minimize the impact to the transportation network and improve motorist safety via video (CCTV) surveillance devices and coordination with road maintenance activities, emergency response personnel, and event promoters. Incidents are detected and verified, followed by the appropriate response, which is also monitored. Incident Management also provides information to affected travelers, most often by using the Traffic Information Dissemination Market Package but also via the Broadcast Traveler Information or Interactive Traveler Information Market Packages. Since incidents are a significant cause of congestion, this Market Package is a key **early deployment** candidate from a national perspective which is actively being implemented in many large metropolitan areas.

5.5.4.9. Traffic Forecast and Demand Management (ATMS09)

Traffic Forecast and Demand Management includes advanced algorithms and data processing and storage capabilities that support real-time travel conditions, as well as transportation planning functions such as historic and projected traffic evaluation and analysis. This Market Package also provides data that supports the implementation of Transportation Demand Management (TDM) programs.

5.5.4.10. Electronic Toll Collection (ATMS10)

Electronic Toll Collection provides toll operators with the ability to collect tolls electronically and detect and process violations. Vehicle transponders are automatically processed and the toll is deducted from the available balance; toll violators are read and electronically posted and billed to vehicle owners. The devices can also be used to collect road usage statistics for toll authorities.

This Market Package has been identified as an **early deployment** candidate from a national perspective. Electronic Toll Collection provides tangible time-saving benefits to users and is generally well accepted and widely deployed.

5.5.4.11. Emissions Monitoring and Management (ATMS11)

Emissions Monitoring and Management monitors individual (point) vehicle emissions and provides general (area-wide) air quality monitoring by way of sensors. Point emissions monitoring measures tail pipe emissions and identifies vehicles that exceed emissions standards. Area-wide monitoring measures overall air quality in terms of sectors such as vehicles, business type, etc.

5.5.4.12. Virtual TMC and Smart Probe Data (ATMS12)

Virtual Traffic Management Center (TMC) and Smart Probe Data uses vehicles as probes that are capable of measuring road conditions and providing this information to the roadway for relay to these decentralized “Traffic Management Centers” and potentially relayed to automated road signing equipment or in-vehicle signing. Each jurisdiction has the capability of accessing available road condition information.

5.5.4.13. Standard Railroad Grade Crossing (ATMS13)

A Standard Railroad Grade Crossing manages highway traffic at highway-rail intersections where train speeds are 79 miles per hour or less. The warning systems are activated by trackside equipment when a train is approaching. The equipment may also be interconnected with adjacent signalized intersections for more efficient management of highway traffic at highway-rail intersections.

This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.14. Advanced Railroad Grade Crossing (ATMS14)

An Advanced Railroad Grade Crossing manages highway traffic at highway-rail intersections where train speeds are greater than 79 miles per hour. This Market Package includes all of the features of Standard Railroad Grade Crossing Market Package, supplemented with additional safety features to mitigate the risks associated with higher train speeds.

5.5.4.15. Railroad Operations Coordination (ATMS15)

Railroad Operations Coordination provides for coordination between rail operations and Traffic Management Centers. Rail operators provide train and maintenance schedules that will result in highway-rail intersection closures. This information is used to develop forecast highway-rail intersection closure times and durations, allowing for implementation of traffic control strategies or providing enhanced traveler information.

5.5.4.16. Parking Facility Management (ATMS16)

Parking Facility Management provides enhanced monitoring and management of parking facilities. This Market Package collects and shares current parking lot / garage status with Information Service Providers and collects parking fees.

5.5.4.17. Regional Parking Management (ATMS17)

Regional Parking Management supports coordination between different parking facilities to enable regional parking management strategies.

5.5.4.18. Reversible Lane Management (ATMS18)

Reversible Lane Management provides for the management of reversible lane facilities via video (CCTV) surveillance, sensors that detect wrong-way vehicles, and other equipment that mitigate safety hazards associated with reversible lanes.

5.5.4.19. Speed Monitoring (ATMS19)

Speed Monitoring checks the speed of vehicles traveling through a segment of roadway that has potentially hazardous geometrics, with roadside equipment suggesting a safe driving speed if excessive speed is detected. Existing environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. This data can also be shared with Law Enforcement agencies if chronic excessive speed is detected. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.20. Drawbridge Management (ATMS20)

Drawbridge Management supports systems that manage drawbridges at rivers, canals, and other grade separated multimodal crossings via the use of control devices such as gates and warning lights, and traveler information devices such as Dynamic Message Signs at or in advance of the drawbridge. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.4.21. Roadway Closure Management (ATMS21)

Roadway Closure Management closes roadways to traffic by means of automatic or remotely controlled barriers when driving conditions are unsafe due to weather conditions, significant maintenance must be performed, and other scenarios where access to the roadway must be prohibited. Surveillance (CCTV) is needed to verify the safe activation of the closure system and traveler information systems such as Dynamic Message Signs are often included to provide closure information to motorists in the vicinity of the closure. Roadway Closure Management is currently being used on reversible lanes and HOV Lanes. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.5. Advanced Vehicle Safety Systems

5.5.5.1. Vehicle Safety Monitoring (AVSS01)

Vehicle Safety Monitoring will diagnose critical components of a vehicle and warn the driver of potential dangers. In a simple sense this Market Package already exists in vehicles in the form of vehicle warning lights on the dashboard. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.5.2. Driver Safety Monitoring (AVSS02)

Driver Safety Monitoring will determine the driver's condition and warn the driver of potential dangers.

5.5.5.3. Longitudinal Safety Warning (AVSS03)

Longitudinal Safety Warning will feature sensors that provide a longitudinal warning of potential hazards ahead or behind a vehicle, such as other vehicles, pedestrians, animals, or large pieces of debris and warns the driver of these potential hazards.

5.5.5.4. Lateral Safety Warning (AVSS04)

Lateral Safety Warning will feature safety sensors that provide a lateral warning of potential hazards to the sides of a vehicle, such as other vehicles or animals and warns the driver of these potential hazards.

5.5.5.5. Intersection Safety Warning (AVSS05)

Intersection Safety Warning will determine the probability of a collision in an equipped intersection and provide warnings to drivers in response to potentially hazardous conditions. Monitors in the roadway infrastructure assess vehicle locations and speeds near an intersection and a warning is communicated to the approaching vehicle via in-vehicle signing.

5.5.5.6. Pre-Crash Restraint Deployment (AVSS06)

Pre-Crash Restraint Deployment will provide in-vehicle sensors to detect an impending collision and deploy a pre-crash safety system.

5.5.5.7. Driver Visibility Improvement (AVSS07)

Driver Visibility Improvement will enhance the driver's visibility during difficult driving conditions using an enhanced vision system.

5.5.5.8. Advanced Vehicle Longitudinal Control (AVSS08)

Advanced Vehicle Longitudinal Control will automate the speed and headway control functions on-board the vehicle by utilizing safety and collision sensors combined with vehicle information to control the throttle and brakes, specifically addressing rear-end crashes.

5.5.5.9. Advanced Vehicle Lateral Control (AVSS09)

Advanced Vehicle Lateral Control will automate the steering control on-board the vehicle by utilizing safety and collision sensors combined with vehicle information to control the steering, specifically addressing off-road crashes.

5.5.5.10. Intersection Collision Avoidance (AVSS10)

Intersection Collision Avoidance will determine the probability of an intersection collision and provide information to approaching vehicles so that avoidance actions can be taken. This embellishes other Market Packages by adding in-vehicle equipment that can take control of the vehicle in emergency situations.

5.5.5.11. Automated Highway System (AVSS11)

An Automated Highway System will enable "hands-off" operation of a vehicle on the automated segments of the highway system by use of lateral lane holding, vehicle speed and steering control, and Automated Highway System check-in and checkout.

5.5.6. Commercial Vehicle Operations (CVO)

5.5.6.1. Fleet Administration (CVO01)

Fleet Administration provides the capabilities to manage a fleet of commercial vehicles with Automatic Vehicle Location devices and routing information for a commercial vehicle. Recommended routes are constrained by hazardous materials and height or weight restrictions. Routing changes can be made depending on changes in road conditions, with local public safety agencies notified of the route deviation if necessary. This Market Package has been identified as an **early deployment** candidate from a national perspective; many of these capabilities are being utilized and have provided tangible benefits to the trucking industry.

5.5.6.2. Freight Administration (CVO02)

Freight Administration tracks the movement and condition of cargo from source to destination. Shipments are monitored to ensure that no tampering occurs to the cargo on commercial vehicles, with alerts issued to the driver and freight managers.

5.5.6.3. Electronic Clearance (CVO03)

Electronic Clearance provides for automated clearance at weigh stations, allowing a pre-approved vehicle with a transponder to bypass weigh stations on the mainline of the highway, providing time and operational cost savings to participating carriers. The Electronic Clearance communications between the vehicle and the weigh station supports several of the other CVO Market Packages. Thus, this Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.6.4. CV Administrative Processes (CVO04)

Commercial Vehicle Administrative Processes performs administrative functions electronically, such as application, fee and tax collection, and distribution of CVO credentials, allowing for vehicles to participate in an Electronic Clearance program. This Market Package provides a basis for “paperless trucking” and supports many of the more advanced Commercial Vehicle Market Packages. As such, it has been identified as an **early deployment** candidate from a national perspective.

5.5.6.5. International Border Electronic Clearance (CVO05)

International Border Electronic Clearance provides for automated clearance at international border crossings at Canada and Mexico, supplementing the Electronic Clearance Market Package.

5.5.6.6. Weigh-In-Motion (CVO06)

Weigh-In-Motion provides for high-speed weigh-in-motion with or without Automated Vehicle Identification (AVI) capabilities, providing the equipment that can be used as a stand-alone system or to enhance the Electronic Clearance Market Package.

5.5.6.7. Roadside CVO Safety (CVO07)

Roadside Commercial Vehicle Operations Safety automates commercial vehicle safety inspections at Weigh Stations. The trucks pulled in that are participants in the Electronic Clearance program will have additional information in the transponder that offers additional safety data to support the safety inspection. This Market Package is the basis for the On-board CVO Freight Safety and Security Market Package and has been identified as an **early deployment** candidate from a national perspective.

5.5.6.8. On-Board CVO and Freight Safety and Security (CVO08)

On-Board CVO and Freight Safety and Security, an enhancement of the Roadside CVO Safety Market Package, provides for on-board commercial vehicle safety monitoring and reporting. Safety warnings and cargo breaches are reported to the driver, fleet manager, and the Weigh Station.

5.5.6.9. CVO Fleet Maintenance (CVO09)

Commercial Vehicle Operations Fleet Maintenance supports the maintenance of commercial fleet vehicles equipped with on-board monitoring and Automated Vehicle Location equipment, providing records of vehicle mileage, repairs, and safety violations.

5.5.6.10. HAZMAT Management (CVO10)

Hazardous Material (HAZMAT) Management combines Incident Management with commercial vehicle tracking to assure a coordinated response and proper treatment of HAZMAT material and incidents. This Market Package addresses a significant public safety issue associated with commercial vehicle operations and has been identified as an **early deployment** candidate from a national perspective.

5.5.6.11. Roadside HAZMAT Security Detection and Mitigation (CVO11)

Roadside Hazardous Materials Security Detection and Mitigation provides the capability to detect and classify security-sensitive Hazardous Materials on commercial vehicles. This Market Package provides the ability to verify if the driver or vehicle is permitted to transport the Hazardous Material(s), allowing for vehicle inspection if the credentials and HAZMAT information do not match, a critical need in the post-September 11th security environment we operate in. As such, this Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.6.12. CV Driver Security Authentication (CVO12)

Commercial Vehicle Driver Security Authentication provides the ability for freight management personnel to detect and disable a commercial vehicle when an unauthorized driver attempts to drive a truck. Notification can also be sent to emergency personnel to inform them of a potential commercial vehicle theft or possible hijacking.

5.5.6.13. Freight Assignment Tracking (CVO13)

Freight Assignment Tracking provides for the planning and tracking the truck, freight, and driver for consistency with the planned shipment. Deviations are detected and notification provided to freight managers. Automatic Vehicle Location technology is well established and can be used to track freight shipments. Thus, this Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7. Emergency Management

5.5.7.1. Emergency Call-Taking and Dispatch (EM01)

Emergency Call-Taking and Dispatch provides basic public safety call-taking and dispatch services that enable rapid deployment of appropriate responders to an emergency and notification between agencies. This Market Package is the foundation of coordinated emergency management amongst the emergency service agencies and traffic management personnel and also enhances the Incident Management and Mayday Support Market Packages. As such, this Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.2. Emergency Routing (EM02)

Emergency Routing supports Automated Vehicle Location and routing of emergency vehicles in light of changing traffic and road conditions, in addition to traffic signal preemption priority to improve the safety and response time of emergency vehicles. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.3. Mayday Support (EM03)

Mayday Support allows a traveler to request emergency assistance and help the emergency center locate the user, gather information about the incident, and determine the appropriate response. The request for assistance may be manually or automatically initiated in case of a serious crash. This option is currently available on some new vehicles and this Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.4. Roadway Service Patrols (EM04)

Roadway (Freeway) Service Patrols monitor roads and provide aid to motorists, rapid response to incidents (flat tire, fuel, crashes, etc.) to minimize disruption to the flow of traffic. These Patrols play a key role in identifying problems on highways that frequently have incidents and enhances safety in conjunction with the Incident Management Market Package. This Market Package has been implemented in many areas nationwide and has been identified as an **early deployment** candidate from a national perspective.

5.5.7.5. Transportation Infrastructure Protection (EM05)

Transportation Infrastructure Protection includes the monitoring of critical transportation infrastructure such as bridges, tunnels, and Traffic Management Centers for potential threats using surveillance, sensors, and barriers to prevent and mitigate impact of an incident. Incidents can be natural disasters, terrorist attacks, or other incidents such as a barge hitting the superstructure of a bridge. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.6. Wide-Area Alert (EM06)

A Wide-Area Alert uses Traveler Information Systems to alert the public in emergency situations such as child abductions (AMBER Alerts), severe weather events, and civil emergencies, supplementing other alert systems. Alert information is disseminated to the traveling public using ITS technologies such as Dynamic Message Signs, Highway Advisory Radio, in-vehicle displays, 511, and Web sites. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.7. Early Warning System (EM07)

An Early Warning System monitors, detects, and reports potential and actual emergencies including natural disasters, man-made disasters, and acts of terrorism by monitoring alert systems, emergency call-taking dispatch centers, and ITS sensors and surveillance devices. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.8. Disaster Response and Recovery (EM08)

Disaster Response and Recovery enhances the ability of the surface transportation system to address the most severe incidents such as natural disasters, man-made disasters, and national security emergencies or terrorist attacks that require response and resources from outside the local affected area. This Market Package supports coordination of emergency response plans and information about the transportation system in the vicinity of the disaster for response personnel. Traffic control strategies, detours, and restrictions to manage traffic in and around the disaster are provided, as well as a damage assessment of road facilities and the management of the reconstruction effort, building upon the Traffic Incident Management, Transportation Infrastructure Protection, and Early Warning System Market Packages. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.9. Evacuation and Reentry Management (EM09)

Evacuation and Reentry Management supports evacuation and reentry of the general public from and back into a disaster area, including anticipated disasters, such as a hurricane, or disasters that take place with little or no warning, such as a terrorist attack, coordinating plans among key emergency and transportation agencies. Transportation agencies implement special traffic control strategies to maximize capacity, such as reversible lanes, shoulder use, closures, signal priority, as well as the use of public transportation. This market package has been identified as an **early deployment** candidate from a national perspective.

5.5.7.10. Disaster Traveler Information (EM10)

Disaster Traveler Information is the information component of Evacuation and Reentry Management Market Package, providing disaster-related traveler information to the general public. Information from multiple sources is provided with real-time disaster and evacuation information using established ITS traveler information systems, such as Dynamic Message Signs and Highway Advisory Radio. This Market Package keeps the public informed about damage to the transportation system, detours and closures in effect, traffic restrictions, real-time information on traffic conditions, and transit schedules, expanding the Traveler Information Market Packages that provide information on a day-to-day basis. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8. Maintenance and Construction Operations

5.5.8.1. Maintenance & Construction Vehicle and Equipment Tracking (MC01)

Maintenance and Construction Vehicle and Equipment Tracking monitors the location of maintenance and construction vehicles and other equipment to determine the progress of their activities, as well as ensuring the correct roads are being plowed or repaired. Automatic Vehicle Location technology is proven and in use by many agencies and as such, this Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8.2. Maintenance & Construction Vehicle Maintenance (MC02)

Maintenance and Construction Vehicle Maintenance supports automatic vehicle maintenance scheduling and monitoring via on-board condition sensors and provides for automatic scheduling of preventive and corrective maintenance. In a simple sense this Market Package already exists in vehicles in the form of vehicle warning lights on the dashboard. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8.3. Road Weather Data Collection (MC03)

Road Weather Data Collection collects current road and weather conditions using data from sensors deployed on and near the roadway, or on maintenance or construction vehicles. This Market Package is in place in many northern climates and is usually known as Road Weather Information Systems (RWIS) and has been identified as an **early deployment** candidate from a national perspective.

5.5.8.4. Weather Information Processing and Distribution (MC04)

Weather Information Processing and Distribution builds upon the Road Weather Data Collection Market Package by processing and distributing the weather data and hazard information such as snowy or icy road conditions so corrective actions can be implemented. The road condition and current temperature updates can be used by system operators to more effectively deploy road plowing / salting resources, issue general traveler advisories, and issue location-specific warnings to drivers using the Traffic Information Dissemination Market Package. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8.5. Roadway Automated Treatment (MC05)

Roadway Automated Treatment automatically treats a roadway or bridge segment with anti-icing chemicals based on weather conditions. This Market Package includes the detecting sensors, the treatment, and Traveler Information Systems devices such as Dynamic Message Signs.

5.5.8.6. Winter Maintenance (MC06)

Winter Maintenance supports winter road maintenance including snow plow operations and salt / anti-icing treatments by monitoring weather forecasts and conditions to schedule the appropriate winter maintenance activities and monitor these activities. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8.7. Roadway Maintenance and Construction (MC07)

Roadway Maintenance and Construction supports many services for scheduled and unscheduled routine maintenance and construction on a roadway, such as pothole and guardrail repair, crack sealing, repair and maintenance of traffic control devices, sweeping, mowing, debris removal, etc. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8.8. Work Zone Management (MC08)

Work Zone Management directs the activity in work zones and supports the control of traffic in the work zone with Portable Dynamic Message Signs. Work zone speeds and delays are provided to motorists and to assist in providing a safe work environment for the crew. This Market Package has been identified as an **early deployment** candidate from a national perspective.

5.5.8.9. Work Zone Safety Monitoring (MC09)

Work Zone Safety Monitoring includes systems that improve stationary and moving work zone crew safety and reduce crashes in work zones by detecting vehicle intrusions and warns crew workers and drivers of imminent hazards. Crew movements are also monitored so the crew can be warned of movement beyond the safe zone.

5.5.8.10. Maintenance & Construction Activity Coordination (MC10)

Maintenance and Construction Activity Coordination supports coordinating activities to reduce the impact to the transportation system, coupled with the dissemination of maintenance and construction information to motorists and centers. This Market Package has been identified as an **early deployment** candidate from a national perspective.

CHAPTER 6 – MARKET PACKAGE RECOMMENDATIONS

6.1. EVALUATION AND RECOMMENDATION OF ITS MARKET PACKAGES

Evaluating the ITS Market Packages is not the main focus of this document (the *Indiana Statewide ITS Architecture* was completed in 2005). Nevertheless, comparing the Market Packages and their applicability to INDOT is still relevant to provide general direction to future Traffic Management / ITS deployments in Indiana. This analysis takes place in the sections to follow in terms of the Market Package's ability to support the six ITS goals as identified by the USDOT, its potential to be an early deployment, its applicability to urban or rural areas, its ability to address congestion and crash problems, and its overall benefits. **The basis for this analysis is the *National ITS Architecture Market Packages* document; dated October 2003 and prepared for the FHWA, as well as the National ITS Architecture, Version 5.1.**

As stated in Chapter One, the USDOT has stated that the six goals of National ITS Program are Increase Transportation System Efficiency and Capacity, Enhance Mobility, Improve Safety, Reduce Energy Consumption and Environmental Costs, Increase Economic Productivity, and Create an Environment for an ITS Market. These goals are generally consistent with the INDOT goals of Safety, Mobility, Economic Development, Customer Service, Resource Management, and Training. The Market Packages are ranked according to their ability to support the six USDOT ITS goals, with "1" indicating the goal is marginally satisfied, "2" indicating the goal is mostly satisfied, and "3' indicating the goal is completely satisfied. These rankings are then totaled, with a maximum score of 18.

Of the 85 Market Packages, 50 have been identified as an early deployment candidate from a national perspective based upon the Market Package's ability to meet three general criteria. First, the Market Package should perform an enabling function, i.e. it should be the foundation or basis of more advanced Market Packages. Secondly, the Market Package should be feasible, i.e. it can be implemented with existing technology. Finally, it should have an established benefit, having been successfully implemented in other locations with tangible benefits. Put another way, a Market Package is an Early Deployment candidate from a national perspective due to a promising combination of low-risk implementation characteristics, developing public or private markets for the package, and tangible system or user benefits.

There are 36 Market Packages that are more applicable as an urban area deployment and 31 Market Packages that are more applicable as a rural area deployment. These are indicated with a "Y" for yes in the tables to follow.

A Market Package will address a variety of transportation problems. The two problems that INDOT can most effectively address are traffic congestion and crashes and their associated injuries and fatalities. Market Packages that have the greatest ability to address these two transportation problems are indicated with a "Y" for yes in the tables.

The Market Package benefits listed are generalized projected benefits. It should be noted that many Market Packages depend upon the deployment of other Market Packages and the implementation of several related Market Packages usually generates greater benefits than those deployed in isolation.

It should also be noted that just because a Market Package appears to score well in terms of meeting ITS goals, is an early deployment candidate, can address congestion or safety needs, or has many benefits, it does not necessarily mean that it would be deployed by INDOT. Every state has its own unique transportation characteristics and challenges; one size does not fit all. Furthermore, the reality of organizational constraints (funding and staffing) simply does not allow ITS to be all things to all people and result in a large-scale deployment of the 85 Market Packages, nor is that approach desirable from a resource allocation perspective. The philosophy of concentrating on the key Market Packages will prevail.

Many of the 85 Market Packages are in varying stages of deployment in Indiana by a variety of jurisdictions. Some are deployed, others are scheduled for deployment. Some are deployed by the Traffic Management Business Unit at INDOT, others are deployed by other functions at INDOT or other public agencies, while some are more a function of the private sector.

Market Package recommendations are grouped based on three deployment time frames (Current or Near Term, Medium Term, Long Term or Future) and then by implementer:

[Time Frame] Market Packages (Implementation Primarily by Traffic Management)

[Time Frame] Market Packages (Implementation by Traffic Management and Others at INDOT)

[Time Frame] Market Packages (Implementation by Traffic Management and Others Outside of INDOT)

[Time Frame] Market Packages (Implementation by Primarily by Others at INDOT, with Traffic Management Support)

[Time Frame] Market Packages (Implementation Primarily by Others Outside of INDOT, with Traffic Management Info / Support)

[Time Frame] Market Packages (Implementation by Others at INDOT)

[Time Frame] Market Packages (Implementation by Others Outside of INDOT)

Unlikely / Unneeded Market Packages

Please note that since technology changes and future needs and resources are difficult to predict, it is possible that some of the Medium and Long Term / Future deployments may not come to fruition.

6.1.1. Archived Data Management

MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	BENEFITS
	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
ITS Data Mart	2	2	2	2	2	3	13	Y					-Improved planning and traffic data -Reduced data collection effort required
ITS Data Warehouse	2	2	2	2	2	3	13						-Improved planning and traffic data -Reduced data collection effort required -Improved data sharing between agencies
ITS Virtual Data Warehouse	2	2	2	2	2	3	13						-Improved planning and traffic data -Reduced data collection effort required -Improved data sharing between agencies

Current / Near Term Market Packages (Implementation by Traffic Management and Others at INDOT): The **ITS Data Mart** houses data collected and owned by a single jurisdiction and is the key to better utilizing the information collected during operation of ITS systems to enhance the quantitative support for transportation planning, research, and other analyses. This is especially critical in urban areas on high-volume, multi-lane freeways where traffic data collection is very difficult. The Traffic Monitoring Section would benefit greatly from this information, as would others in INDOT who utilize traffic data.

Long Term / Future Market Packages (Implementation by ITS and Others Outside of INDOT): The **ITS Data Warehouse** includes all the data collection and management features provided by the ITS Data Mart while adding the opportunity for the collection of data from multiple agencies and data sources across modal and jurisdictional boundaries. The **ITS Virtual Data Warehouse** provides the same wide access to the multimodal data from varied sources as in the ITS Data Warehouse but provides this access using enhanced interoperability between physically distributed ITS archives that are each locally managed. Both are embellishments of the base, single jurisdiction ITS Data Mart Market Package.

6.1.2. Public Transportation

	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Transit Vehicle Tracking	1	2		1	1	1	6	Y	Y	Y			-Improvement in on-time performance -Reduced in-field supervision
Transit Fixed-Route Operations	1	2		1	1	1	6	Y	Y	Y	Y		-Improved productivity
Demand Response Transit Operations	1	2		1	1	1	6	Y	Y	Y	Y		-Improved productivity -More efficient routing and scheduling
Transit Passenger and Fare Management					2	1	3	Y	Y				-Improved customer convenience -Improved data collection and fare processing -Reduced cash handling losses
Transit Security			2			1	3	Y	Y				-Improved response time to incidents -Improved record of incidents
Transit Maintenance					1	1	2	Y	Y				-Improved scheduling -Reduction in repair costs
Multi-modal Coordination	1	1			1		3	Y	Y		Y		-Improved travel times with signal priority
Transit Traveler Information	1	2	1		1	1	6	Y		Y	Y		-Improved mobility -Enhanced attractiveness of transit as alternative mode of transportation -Improved traveler experience with knowledge of real-time schedules

<u>Market Packages (Implementation by Others Outside of INDOT)</u>: While the **Transit Vehicle Tracking, Transit Fixed-Route Operations, Demand Response Transit Operations, Transit Passenger and Fare Management, Transit Security, Transit Maintenance, Transit Traveler Information,** and **Multi-modal Coordination** Market Packages may be desirable and have tangible benefits, deployment is not the responsibility of INDOT. INDOT's Public Transit Section within the Multi-Modal Transportation Division provides federal and state transit funding administration and technical assistance to the numerous public transportation agencies across Indiana. It is these agencies who would have the responsibility of implementing these Market Packages, with the cooperation and support of INDOT. Thus, no recommendation is made in terms of time frame for deployment.

6.1.3. Traveler Information

	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Broadcast Traveler Information	1	2		1		3	7	Y	Y				-Reduced travel time for user -Increased speed of trip for user -Some benefits for non-user
Interactive Traveler Information	2	3		1		3	9	Y	Y				-Reduced travel time for user -Increased speed of trip for user -Some benefits for non-user -Greater benefits for long trip and unfamiliar traveler
Autonomous Route Guidance	2	3				3	8	Y		Y			-Reduced travel time for user -Increased speed of trip for user -Some benefits for non-user -Greater benefits for long trip and unfamiliar traveler
Dynamic Route Guidance	2	3	1	1		3	10				Y		-Reduced travel time for user -Increased speed of trip for user -Some benefits for non-user -Greater benefits for long trip and unfamiliar traveler
ISP Based Route Guidance	2	3	1	1		3	10				Y		-Reduced travel time for user -Increased speed of trip for user -Some benefits for non-user -Greater benefits for long trip and unfamiliar traveler
Integrated Transportation Management / Route Guidance	3	3	1	2		2	11						-Reduced travel time for user -Increased speed of trip for user -Some benefits for non-user -Greater benefits for long trip and unfamiliar traveler
Yellow Pages and Reservation	1					2	3			Y			-Reduced trip length as a result of not searching for destination -Greater benefits for unfamiliar traveler
Dynamic Ridesharing	2	1		1		1	5				Y		-Increased vehicle occupancy -Improved mobility
In-Vehicle Signing		1	1			3	5			Y		Y	-Improved safety

Current / Near Term Market Packages (Implementation Primarily by Traffic Management): **Interactive Traveler Information** provides real-time information such as traffic conditions, road construction and detours, etc. in response to a traveler request via a personal computer, kiosk, or phone (511). Real-Time traffic information is currently available to the public on the TrafficWise Web site, www.trafficwise.in.gov, for I-65 and I-80/94 (the Borman Expressway) in Northwest Indiana and in the Indianapolis area; the Indianapolis site will add more features over the next few years. In addition, INDOT will implement the 511 traveler information phone service in the next few years, initially concentrating on the Interstate System.

Current / Near Term Market Packages (Implementation by Traffic Management and Others Outside of INDOT): **Broadcast Traveler Information** collects a wide variety of information from many sources, such as traffic conditions, advisories, incidents, roadway maintenance and construction, weather, etc. and disseminates this information over a wide area via existing infrastructure and low cost user equipment such as radio or cell phones. This is the most basic of the Traveler Information Market Packages and is currently in place with traffic and weather reports on the radio, television, etc., and ATIS traffic incident information being relayed from INDOT to local media outlets via pager. The quality of information will improve as real-time traffic becomes more readily available.

Current / Near Term Market Packages (Implementation by Others Outside of INDOT): **Autonomous Route Guidance** relies on in-vehicle equipment to enable route planning and guidance based on static information; this information is also available to the traveler by way of personal portable devices. This service is currently available on some vehicles, with greatest application to rental car fleets. **Yellow Pages and Reservation** provides pre-trip or en-route traveler service information, such as service stations, restaurants, and lodging. On-line parking reservation is currently available at Indianapolis International Airport's Tiger Lot. **Dynamic Ridesharing** provides real-time ridesharing / ride matching services to travelers, including connections to transit. This service is currently provided through Central Indiana Commuter Services at www.centralincommuter.net and at https://www.pacerideshare.com/ in the Chicago / Northwest Indiana area. Others outside of INDOT are responsible for implementation of these Market Packages.

Long Term / Future Market Packages (Implementation Primarily by Others Outside of INDOT, with Traffic Management Info / Support): **Dynamic Route Guidance** offers advanced route planning and guidance that is real-time in nature, embellishing the Autonomous Route Guidance Market Package with a digital receiver. **ISP Based Route Guidance** offers the user pre-trip route planning and en-route turn-by-turn route guidance based upon static information or real-time conditions. Unlike the Autonomous Route Guidance and Dynamic Route Guidance Market Packages where the user equipment determines the route, the route determination functions are performed by the Information Service Provider. **Integrated Transportation Management / Route Guidance** provides advanced route planning and guidance which is responsive to current conditions and supports collection of real-time information on routes from the probe-equipped vehicles in the network. Others outside of INDOT are the lead, with support of Traffic Management real-time traffic information. **In-Vehicle Signing** supports distribution of traffic and travel advisory information, including road-rail intersection status and weather information to drivers via in-vehicle devices. Others outside of INDOT are the lead with these Market Packages, with support of Traffic Management real-time traffic information.

6.1.4. Traffic Management

	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Network Surveillance	1	1		1		1	4	Y	Y			Y	-Supports other Traffic Management services (indirect benefits)
Probe Surveillance	1	1		1		2	5	Y	Y		Y		-Supports other Traffic Management services (indirect benefits)
Surface Street Control	2	3	2	2		1	10	Y	Y		Y		-Reduced travel time, VMT, fuel consumption, and emissions -Improved safety at intersections -Increase in trip speed -High B/C ratio
Freeway Control	2	3	1	2		1	9	Y	Y		Y		-Reduced travel time, fuel consumption, and emissions -Increased speeds during congested peaks and freeway throughput
HOV Lane Management	1	2		1		1	5		Y		Y		-Reduced travel time -Increased lane carrying capacity -Increased use of transit and carpooling -Greater benefits in areas with serious congestion and limited route options
Traffic Information Dissemination	2	1		1		1	5	Y	Y			Y	-Quantitative benefits difficult to measure; benefits dependent upon motorists response to information -Greater benefits where alternate routes are available
Regional Traffic Control	3	3	2	3		1	12	Y	Y		Y		-Benefits difficult to measure -Greater benefit in areas with multiple jurisdictions
Traffic Incident Management System	2	2	2	3		1	10	Y	Y		Y		-Reduced incident response times and incident related delay to motorists -High B/C ratio -Greater benefit in areas with high number of incidents and delays
Traffic Forecast and Demand Management	2	2				1	5				Y		-Reduced data collection cost
Electronic Toll Collection					2	1	3	Y	Y		Y		-Reduced peak hour congestion at toll plazas, toll plaza operation costs, and incidents and emissions -Traffic surveillance capabilities
Emissions Monitoring and Management				3		2	5						-Improved air quality -Greater benefit in non-attainment areas

1 = Goal marginally satisfied	Max	Y = Yes

	2 = Goal mostly satisfied 3 = Goal completely satisfied						=18						
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Virtual TMC and Smart Probe Data	1	1		1	1	1	5			Y	Y		-Reduced incident notification time and infrastructure operating costs -Supports other Traffic Management services
Standard Railroad Grade Crossing			3			1	4	Y	Y	Y		Y	-Reduced RR grade crossing crashes -RR trackside equipment can be monitored
Advanced Railroad Grade Crossing			3			1	4		Y	Y		Y	-Reduced RR grade crossing crashes -RR trackside equipment can be monitored
Railroad Operations Coordination	1	1		1		1	4		Y	Y	Y		-Reduced travel time, VMT, fuel consumption, and emissions -Improved safety at RR crossings -Increase in trip speed -Greater benefits in large areas with significant train activity
Parking Facility Management	2			1	1		4		Y				-Reduced administrative costs and queues at entrances and exits
Regional Parking Management	2	1		1			4						-Reduced travel time, fuel consumption, and emissions related to search of parking facilities
Reversible Lane Management	2	1		1			4		Y		Y		-Improved safety -Increased lane carrying capacity -Reduced travel time -Greater benefits in areas with a large directional split in traffic
Speed Monitoring	2	1	3			1	7	Y	Y	Y		Y	-Improved safety -Reduced speeding violations -Greater benefits in areas with steep grades and approaching work zones
Drawbridge Management	2	2	1		1		6	Y		Y	Y		-Improved traveler information
Roadway Closure Management	1	2		1		1	5	Y		Y		Y	-Reduced secondary crashes and travel time -Greater benefits in hurricane-prone areas and high population areas

Current / Near Term Market Packages (Implementation Primarily by Traffic Management): **Network Surveillance** includes vehicle detection and other surveillance equipment such as video (CCTV), the supporting field equipment, and the communications to transmit the collected data to monitor traffic and road conditions, as well as identify and verify incidents. Network Surveillance is one of the most vital Traffic Management / ITS deployments and provides the basic elements for traffic management. This Market Package has been implemented in Northwest Indiana, is being implemented in the Indianapolis area and as part of the TRIMARC deployment in Southern Indiana near Louisville. **Traffic Information Dissemination** provides driver information using roadway devices such as Dynamic Message Signs (DMS) or Highway Advisory Radio (HAR) stations. A wide range of information can be disseminated such as incident, traffic, and road information, emergency alerts, and other driver advisories at specific locations on the road network. This Market Package has been deployed statewide: Forty-Four Permanent Overhead DMSs are located in Indianapolis, Northwest Indiana, Evansville, Fort Wayne, and Kokomo, as well as four additional DMSs as part of TRIMARC in Southern Indiana near Louisville. Approximately 15 Portable DMSs are deployed statewide (not including approximately 25 on the Indiana Toll Road that are integrated into the Gary Traffic Management Center Automated Traveler Information System (ATIS)). Twenty-three HAR stations (plus the TRIMARC HAR) are located statewide to supplement the DMSs, especially in rural areas. A **Traffic Incident Management System** manages both unplanned incidents and planned events to minimize the impact to the transportation network and improve motorist safety via video (CCTV) surveillance devices and coordination with road maintenance activities, emergency response personnel, and event promoters. Incidents are detected and verified, followed by the appropriate response and notification to motorists. Since incidents are a significant cause of congestion, this Market Package is actively being implemented in many large metropolitan areas in the Nation. This Market Package has been implemented in Northwest Indiana, and is being implemented in the Indianapolis area, as well as the TRIMARC deployment in Southern Indiana near Louisville.

Current / Near Term Market Packages (Implementation Primarily by Traffic Management): **Freeway Control** provides the roadway vehicle detection and video devices and communications to support ramp control (ramp metering) and lane controls for freeways, incorporating the instrumentation included in the Network Surveillance Market Package. This is a well established Market Package in other parts of the country and its applicability in Indiana is going to be studied in 2007, with portions of I-69 and I-465 in the northeastern portion of Indianapolis strong candidates.

Current / Near Term Market Packages (Implementation by Primarily by Others at INDOT, with Traffic Management Support): **Probe Surveillance** provides the potential for a less expensive (but less comprehensive) alternative approach to Network Surveillance for monitoring conditions and identifying incidents and making the information available to travelers. **Surface Street Control** provides the central control and monitoring equipment, communications devices, and the signal control equipment for surface street control and/or arterial traffic management, generally within a single jurisdiction. This is a well established Market Package. INDOT District Traffic Sections, with strong support of Traffic Management's Traffic Control Systems Division, as well as several municipalities, have implemented this technology.

Current / Near Term Market Packages (Implementation by Others Outside of INDOT): **Electronic Toll Collection** provides toll operators with the ability to collect tolls electronically and detect and process violations. The devices can also be used to collect road usage statistics for toll authorities. Electronic Toll Collection provides tangible time-saving benefits to users and is generally well accepted and widely deployed; it is currently being deployed on the Indiana Toll Road by the Indiana Toll Road Concession Company, LLC (ITRCC). **Standard Railroad Grade Crossing** manages highway traffic at highway-rail intersections where train speeds are 79 miles per hour or less. The equipment may also be interconnected with adjacent signalized intersections for more efficient management of highway traffic at highway-rail intersections; this occurs on many INDOT and local arterials that parallel railroads. **Parking Facility Management** provides enhanced monitoring and management of parking facilities. This Market Package collects and shares current parking lot / garage status with Information Service Providers and collects parking fees; this exists at Indianapolis International Airport.

Medium Term Market Packages (Implementation Primarily by Traffic Management): **Speed Monitoring** checks the speed of vehicles traveling through a segment of roadway that has potentially hazardous geometrics, with roadside equipment suggesting a safe driving speed if excessive speed is detected. This Market Package could be utilized in high crash areas where excessive speed is often a contributing factor to a crash.

Medium Term Market Packages (Implementation by Traffic Management and Others at INDOT): **Traffic Forecast and Demand Management** includes advanced algorithms and data processing and storage capabilities that support real-time travel conditions, as well as transportation planning functions such as historic and projected traffic evaluation and analysis. The data in this Market Package would be beneficial to INDOT's Modeling and Forecasting Section, as well as the Traffic Monitoring Section.

Medium Term Market Packages (Implementation by Traffic Management and Others Outside of INDOT): **Regional Traffic Control** provides for the sharing of traffic information and control among different jurisdiction's Traffic Management Centers (TMC) to support regional traffic control, especially in terms of major travel corridors. This Market Package has been implemented in Northwest Indiana between the Gary TMC and the Indiana Toll Road, and could be pursued in other areas between a TMC and surface street control centers, as no other agencies operate separate TMCs at this time. However, coordination between INDOT-controlled traffic signals and locally-controlled signals exist in many locations statewide.

Long Term / Future Market Packages (Implementation by Others Outside of INDOT): **Emissions Monitoring and Management** monitors individual (point) vehicle emissions and provides general (area-wide) air quality monitoring by way of sensors. This Market Package would be applicable in air quality non-attainment areas. **Advanced Railroad Grade Crossing** manages highway traffic at highway-rail intersections where train speeds are greater than 79 miles per hour. This Market Package includes all of the features of Standard Railroad Grade Crossing Market Package, supplemented with additional safety features to mitigate the risks associated with higher train speeds. This would only be implemented if non-grade separated High Speed Rail were to be implemented in Indiana. **Regional Parking Management** supports coordination between different parking facilities to enable regional parking management strategies.

Unlikely / Unneeded Market Packages: **HOV Lane Management** controls HOV lanes by coordinating freeway ramp meters and signals with HOV lane usage signals. There are no existing or planned HOV lanes on the Interstate System in Indiana. **Virtual TMC and Smart Probe Data** uses vehicles as probes that are capable of measuring road conditions and providing this information to the roadway for relay to these decentralized "TMCs" and potentially relayed to automated road signing equipment or in-vehicle signing. Since the base Probe Surveillance Market Package is not anticipated on the INDOT system; thus the need for this advanced Market Package does not exist. **Railroad Operations Coordination** provides for coordination between rail operations and TMCs. Rail operators provide train and maintenance schedules that will result in highway-rail intersection closures. Deployment of this Market Package is unlikely as the focus of INDOT's ITS investment will be on full access control facilities that do not have a direct interface with railroad operations. **Reversible Lane Management** provides for the management of reversible lane facilities via video (CCTV) surveillance, sensors that detect wrong-way vehicles, and other equipment that mitigate safety hazards associated with reversible lanes. There are no existing or planned reversible lanes on the Interstate System in Indiana. However, there are reversible lanes on local arterials with electronic lane indicators, but none of the advanced elements of this Market Package. **Drawbridge Management** supports systems that manage drawbridges at rivers, canals, and other grade separated multimodal crossings via the use of control devices such as gates and warning lights, and traveler information devices such as Dynamic Message Signs at or in advance of the drawbridge. There are no drawbridges on freeways in Indiana, the focus of INDOT's ITS investment. **Roadway Closure Management** closes roadways to traffic by means of automatic or remotely controlled barriers when driving conditions are unsafe due to weather conditions, significant maintenance must be performed, and other scenarios where access to the roadway must be prohibited. Surveillance (CCTV) is needed to verify the safe activation of the closure system and traveler information systems such as Dynamic Message Signs are often included to provide closure information to motorists in the vicinity of the closure. Roadway Closure Management is currently being used on reversible lanes and HOV Lanes. As there are no existing or planned HOV lanes on the Interstate System in Indiana, and complete closures due to weather are somewhat isolated occurrences, there is limited need for this Market Package.

6.1.5. Advanced Vehicle Safety Systems

	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Vehicle Safety Monitoring			3			3	6	Y				Y	-Reduced vehicle maintenance cost -Reduced breakdown and crash rates
Driver Safety Monitoring			3			3	6			Y		Y	-Reduced crash rates
Longitudinal Safety Warning			3			3	6			Y		Y	-Reduced backing and rear-end crashes
Lateral Safety Warning			3			3	6			Y		Y	-Reduced lane / roadway departure crashes
Intersection Safety Warning			3			3	6					Y	-Reduced intersection crashes
Pre-Crash Restraint Deployment			3			3	6			Y		Y	-Reduced crash severity
Driver Visibility Improvement			3			3	6					Y	-Reduced night and impaired visibility-related crashes
Advanced Vehicle Longitudinal Control	2	1	3			3	9					Y	-Improved lane capacity -Reduced rear-end and backing crashes
Advanced Vehicle Lateral Control	2	1	3			3	9			Y	Y	Y	-Reduced lane / roadway departure crashes
Intersection Collision Avoidance			3			3	6					Y	-Reduced intersection crashes
Automated Highway System	3	3	3			3	12				Y	Y	-Significant improvement in lane capacity -Improved safety and environmental benefits

Current / Near Term Market Packages (Implementation by Others Outside of INDOT):
Vehicle Safety Monitoring diagnoses critical components of a vehicle and warns the driver of potential dangers. In a simple sense this Market Package already exists in vehicles in the form of vehicle warning lights on the dashboard. The vehicle manufacturers are the lead on this Market Package. While **Driver Safety Monitoring, Longitudinal Safety Warning,** and **Lateral Safety Warning** are desirable Market Packages and have tangible benefits, deployment is not the responsibility of INDOT. The vehicle manufacturers are the lead on these Market Packages.

Long Term / Future Market Packages (Implementation by Others Outside of INDOT): While **Intersection Safety Warning, Pre-Crash Restraint Deployment, Driver Visibility Improvement, Advanced Vehicle Longitudinal Control, Advanced Vehicle Lateral Control, Intersection Collision Avoidance,** and **Automated Highway System** are desirable Market Packages and have tangible benefits (the more sophisticated ones have very significant benefits), deployment is not the responsibility of INDOT. The vehicle manufacturers are the lead on these Market Packages.

6.1.6. Commercial Vehicle Operations

	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Fleet Administration		3	1		3	2	9	Y				Y	-Improved CV productivity and loaded miles
Freight Administration		3			3	2	8					Y	-Difficult to measure, but benefits most likely for HAZMAT carriers
Electronic Clearance	2	3			3	2	10	Y					-Improved weigh station clearance time and CV productivity -Reduced public and private administrative costs
CV Administrative Processes					2	1	3	Y					-Significant reduction in public and private administrative costs -Reduced tax evasion and HAZMAT incidents
International Border Electronic Clearance	2	3			3	2	10						-Improved border clearance time and CV productivity -Reduced public and private administrative costs
Weigh-In-Motion	2	3			3	2	10						-Improved weighing time and CV productivity -Reduced public and private administrative costs
Roadside CVO Safety	1	2	2		2	2	9	Y					-Reduced inspection times and CV crashes
On-Board CVO and Freight Safety and Security			3		2	2	7					Y	-Reduced CV crashes
CVO Fleet Maintenance	1		2		2	1	6						-Improved vehicle productivity -Reduced CV crashes
HAZMAT Management	1		2		2	1	6	Y	Y				-Improved response to HAZMAT incidents -Reduced CV crashes
Roadside HAZMAT Security Detection and Mitigation			1			1	2	Y					-Improved detection of security-related HAZMAT
CV Driver Security Authentication			1			1	2						-Quick detection of unauthorized operator of a CV
Freight Assignment Tracking			1			1	2	Y					-Improved freight tracking and routing

Current / Near Term Market Packages (Implementation Primarily by Others at INDOT, with Traffic Management Support): **Weigh-In-Motion** provides for high-speed weigh-in-motion with or without Automated Vehicle Identification (AVI) capabilities, providing the equipment that can be used as a stand-alone system or to enhance the Electronic Clearance Market Package. Weigh-in-Motion exists in Indiana, implemented at approximately 50 locations by INDOT's Traffic Monitoring Section. It also exists as a key component of three Virtual Weigh Station sites in Indiana (I-65 in Lake County, US 24 in Allen County, and SR 1 in Dearborn County) and will be expanded across Indiana as a new tool to enforce commercial vehicle legal weight limits and help preserve INDOT's investment in pavements.

Current / Near Term Market Packages (Implementation Primarily by Others Outside of INDOT, with Traffic Management Info / Support): **Electronic Clearance** provides for automated clearance at weigh stations, allowing a pre-approved vehicle with a transponder to bypass weigh stations on the mainline of the highway, providing time and operational cost savings to participating carriers. The Pre-Pass system is implemented in Indiana, but the critical Weigh-in-Motion scales Market Package is a key missing element; it only exists at two weigh stations: eastbound I-70 near Terre Haute and westbound I-70 near Richmond. **HAZMAT Management** currently exists in a basic sense and combines Incident Management with commercial vehicle tracking to assure a coordinated response and proper treatment of HAZMAT material and incidents. This Market Package addresses a significant public safety issue associated with commercial vehicle operations and INDOT / Traffic Management would be involved in the response.

Current / Near Term Market Packages (Implementation by Others Outside of INDOT): While **Fleet Administration, CV Administrative Processes, Roadside CVO Safety,** and **Freight Assignment Tracking** are desirable Market Packages and have tangible benefits, deployment is not the responsibility of INDOT. The Commercial Vehicle Enforcement Division of the Indiana State Police, the Indiana Department of Revenue, and the Commercial Vehicle industry are the lead on these Market Packages.

Medium Term Market Packages (Implementation by Others Outside of INDOT): While **Freight Administration, On-Board CVO and Freight Safety and Security, CVO Fleet Maintenance, Roadside HAZMAT Security Detection and Mitigation,** and **CV Driver Security Authentication** are desirable Market Packages and have tangible benefits, deployment is not the responsibility of INDOT. The Commercial Vehicle Enforcement Division of the Indiana State Police, the Indiana Department of Revenue, and the Commercial Vehicle industry are the lead on these Market Packages.

Unlikely / Unneeded Market Packages: **International Border Electronic Clearance** provides for automated clearance at international border crossings at Canada and Mexico. As Indiana is not on an international border, this Market Package is not needed.

6.1.7. Emergency Management

MARKET PACKAGE	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	Max =18 TOTAL FOR THE SIX ITS GOALS	Y = Yes National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	BENEFITS
Emergency Call-Taking and Dispatch	1		3	1	2	1	8	Y	Y	Y			-Reduced response times -Greater benefits in areas with multiple jurisdictions
Emergency Routing	1		3	1	2	1	8	Y	Y				-Difficult to measure, but benefits greater with signal preemption
Mayday Support			3		1	2	6	Y		Y		Y	-Improved call routing and response times -Greater benefits in rural areas
Roadway Service Patrols	1		3	1	2	1	8	Y	Y	Y			-Reduced incident response times and incident related delay to motorists -High B/C ratio -Greater benefit in areas with high number of incidents and delays
Transportation Infrastructure Protection			1			1	2	Y	Y				-Reduced potential for attacks on critical infrastructure -Reduced response times -Greater benefit in areas with long bridges and tunnels
Wide-Area Alert		1				1	2	Y	Y			Y	-Increased public awareness of particular alert -Reduced response time in locating abducted children
Early Warning System		1				1	2	Y	Y			Y	-Improved detection of security threats -Greater benefit in areas vulnerable to attacks
Disaster Response and Recovery	1		1	1			3	Y	Y		Y		-Reduced response times -Improved transportation network restoration time -Greater benefit in areas vulnerable to attacks
Evacuation and Reentry Management	1	1					2	Y	Y	Y		Y	-Improved mobility during an evacuation -Reduced deaths as a result of evacuating unsafe areas -Greater benefit in areas vulnerable to attacks
Disaster Traveler Information	1	1					2	Y	Y			Y	-Improved motorist information to assist with route selection -Greater benefits where alternate routes are available

<u>**Current / Near Term** Market Packages (Implementation Primarily by Traffic Management)</u>: **Roadway (Freeway) Service Patrols** monitor roads and provide aid to

motorists, rapid response to incidents (flat tire, fuel, crashes, etc.) to minimize disruption to the flow of traffic, and play a key role in identifying problems on highways that frequently have incidents. This Market Package has been implemented in many areas nationwide including Indiana. The Hoosier Helper Freeway Service Patrol has been implemented in three areas of the state. The first program began in Northwest Indiana in August 1991 as a daytime program that expanded to 24 hour / 7 days a week service in May 1996. In Northwest Indiana, on-board computers give the Hoosier Helpers direct access to the Traffic Management Center, enabling them to give travelers immediate information about traffic conditions. The second Hoosier Helper deployment began in August 1997 in the Indianapolis area and operates during peak travel periods and special events. The third Hoosier Helper deployment began serving the Indiana portion of metropolitan Louisville in May 1999 and operates during peak travel periods and special events. **Transportation Infrastructure Protection** includes the monitoring of critical transportation infrastructure such as bridges, tunnels, and Traffic Management Centers for potential threats using surveillance, sensors, and barriers to prevent and mitigate impact of an incident. Incidents can be natural disasters, terrorist attacks, or other incidents such as a barge hitting the superstructure of a bridge. This Market Package has more potential as additional video surveillance is deployed. A **Wide-Area Alert** uses Traveler Information Systems to alert the public in emergency situations such as child abductions (AMBER Alerts), severe weather events, and civil emergencies, supplementing other alert systems. Alert information is disseminated to the traveling public using ITS technologies such as Dynamic Message Signs, Highway Advisory Radio, in-vehicle displays, 511, and Web sites. This Market Package has already been implemented in Indiana by use of DMSs. **Disaster Traveler Information** is the information component of Evacuation and Reentry Management Market Package, providing disaster-related traveler information to the general public. Information from multiple sources is provided with real-time disaster and evacuation information using established ITS traveler information systems, keeping the public informed about damage to the transportation system, detours and closures in effect, traffic restrictions, and real-time information on traffic conditions. This Market Package could be implemented if need be via the use of custom messages on Dynamic Message Signs.

Current / Near Term Market Packages (Implementation Primarily by Others Outside of INDOT, with Traffic Management Info / Support): **Emergency Call-Taking and**

Dispatch provides basic public safety call-taking and dispatch services that enable rapid deployment of appropriate responders to an emergency and notification between agencies. This Market Package is the foundation of coordinated emergency management amongst the emergency service agencies and traffic management personnel and has been implemented in Indiana. A prime example is the co-location of Indiana State Police District 52 dispatch personnel and Indianapolis TMC System Operators side by side in the Communications Center. **Emergency Routing** supports Automated Vehicle Location and routing of emergency vehicles in light of changing traffic and road conditions, in addition to traffic signal preemption priority to improve the safety and response time of emergency vehicles. Signal preemption is common statewide. This Market Package has more potential as additional vehicle detection and video surveillance is deployed. An **Early Warning System** monitors, detects, and reports potential and actual emergencies including natural disasters, man-made disasters, and acts of terrorism by monitoring alert systems, emergency call-taking dispatch centers, and ITS sensors and surveillance devices. This Market Package exists in a basic sense and has more potential as additional vehicle detection and video surveillance is deployed. **Disaster Response and Recovery** enhances the ability of the surface transportation system to address the most severe incidents such as natural disasters, man-made disasters, and national security emergencies or terrorist attacks that require response and resources from outside the local affected area by supporting coordination of emergency response plans and information about the transportation system in the vicinity of the disaster for response personnel with traffic control strategies, detours, and restrictions to manage traffic in and around the disaster are provided. INDOT actively participates in disaster planning and response with the Indiana Department of Homeland Security. Furthermore, the Purdue University Joint Transportation Research Program (JTRP) conducted a study entitled *Emergency Earthquake Routes* that will address the emergency assistance routes in Southwest Indiana, a support function in this Market Package.

Current / Near Term Market Packages (Implementation by Others Outside of INDOT): **Mayday Support** allows a traveler to request emergency assistance and help the emergency center locate the user, gather information about the incident, and determine the appropriate response. The deployment of this Market Package is led by vehicle manufacturers and supported by emergency response personnel.

Medium Term Market Packages (Implementation Primarily by Others Outside of INDOT, with Traffic Management Info / Support): **Evacuation and Reentry Management** supports evacuation and reentry of the general public from and back into a disaster area for anticipated or unanticipated disasters by coordinating plans among key emergency and transportation agencies, with transportation agencies implementing special traffic control strategies to maximize capacity, such as reversible lanes, shoulder use, closures, signal priority, etc. This Market Package has more potential as additional vehicle detection and video surveillance is deployed.

6.1.8. Maintenance and Construction Operations

	1 = Goal marginally satisfied 2 = Goal mostly satisfied 3 = Goal completely satisfied						Max =18	Y = Yes					
MARKET PACKAGE	Increase Transp Sys Efficiency & Capacity	Enhance Mobility	Improve Safety	Reduce Energy Consump & Environ Costs	Increase Economic Productivity	Create Environment for an ITS Market	TOTAL FOR THE SIX ITS GOALS	National Early Deployment Candidate	Applicable for Urban Deployment	Applicable for Rural Deployment	Addresses Traffic Congestion Problems	Addresses Crash Problems	**BENEFITS**
Maintenance and Construction Vehicle and Equipment Tracking		1	2		2	1	6	Y		Y	Y		-Accurate vehicle location and verification of location of work to be performed
Maintenance and Construction Vehicle Maintenance			2	1	2		5	Y		Y			-Reduced vehicle maintenance costs -Reduced crash and vehicle breakdown rates
Road Weather Data Collection	2	1	3		2	1	9	Y		Y		Y	-Improved safety by providing pre-trip and en-route information -Improved road maintenance efficiency
Weather Information Processing and Distribution	2	1	3		2	2	10	Y		Y		Y	-Improved safety by providing pre-trip and en-route information -Improved road maintenance efficiency
Roadway Automated Treatment	1	1	3			1	6			Y		Y	-Improved safety on bridges -Reduced crashes
Winter Maintenance	2	3	3	1	2		11	Y		Y	Y		-Increased throughput on roadway -Reduced crashes
Roadway Maintenance and Construction	1	1	1	1			4	Y	Y	Y			-Reduced ITS device failures -Improved safety by removing debris from roadway
Work Zone Management	1			1	1		3	Y	Y	Y			-Reduced crashes -Reduced congestion with traffic diversion
Work Zone Safety Monitoring	1		3	1	1	2	8			Y		Y	-Improved work crew safety -Reduced crashes in work zones
Maintenance and Construction Activity Coordination	1	1		1	1		4	Y		Y	Y		-Reduced impact to the roadway network -Improved traveler information

Current / Near Term Market Packages (Implementation Primarily by Others at INDOT, with Traffic Management Info / Support): **Work Zone Management** directs the activity in work zones and supports the control of traffic in the work zone with Portable Dynamic Message Signs. Work zone speeds and delays are provided to motorists and to assist in providing a safe work environment for the crew. This Market Package has been implemented in a basic sense with work zone information provided via Portable DMSs and will have more potential as additional vehicle detection and video surveillance is deployed. The Work Zone Safety Section is the lead on this Market Package.

Current / Near Term Market Packages (Implementation by Primarily by Others at INDOT, with Traffic Management Support): **Road Weather Data Collection** collects current road and weather conditions using data from sensors deployed on and near the roadway, or on maintenance vehicles. This will be deployed on Hoosier Helper Freeway Service Patrol vehicles in the near future. **Weather Information Processing and Distribution** builds upon the Road Weather Data Collection Market Package by processing and distributing the weather data and hazard information such as snowy or icy road conditions so corrective actions can be implemented. The road condition and current temperature updates can be used by system operators to more effectively deploy road plowing / salting resources, issue general traveler advisories, and issue location-specific warnings to drivers using the Traffic Information Dissemination Market Package. This Market Package is in place in many northern climates, including 35 Road Weather Information Systems (RWIS) sites in Indiana, with this information available to the public via the Internet. **Winter Maintenance** supports winter road maintenance including snow plow operations and salt / anti-icing treatments by monitoring weather forecasts and conditions to schedule the appropriate winter maintenance activities and monitor these activities. This Market Package is currently in use in Indiana with the RWIS sites and INDOT's subscription to a transportation-oriented weather forecasting service during winter weather months. **Roadway Maintenance and Construction** supports many services for scheduled and unscheduled routine maintenance and construction on a roadway, such as pothole and guardrail repair, crack sealing, repair and maintenance of traffic control devices, sweeping, mowing, debris removal, etc. This Market Package has been implemented in a basic sense with the use of routine maintenance schedules. **Maintenance & Construction Activity Coordination** supports coordinating activities to reduce the impact to the transportation system, coupled with the dissemination of maintenance and construction information to motorists and centers. This Market Package has been implemented in a basic sense and will have more potential as additional vehicle detection and video surveillance is deployed.

Current / Near Term Market Packages (Implementation by Others at INDOT): **Maintenance & Construction Vehicle and Equipment Tracking** monitors the location of maintenance and construction vehicles and other equipment to determine the progress of their activities, as well as ensuring the correct roads are being plowed or repaired.

Current / Near Term Market Packages (Implementation by Others Outside of INDOT): **Maintenance & Construction Vehicle Maintenance** supports automatic vehicle maintenance scheduling and monitoring via on-board condition sensors and provides for automatic scheduling of preventive and corrective maintenance. In a simple sense this Market Package already exists in vehicles in the form of vehicle warning lights on the dashboard. Vehicle manufacturers are the lead on this Market Package.

Medium Term Market Packages (Implementation by Primarily by Others at INDOT, with Traffic Management Support): **Roadway Automated Treatment** automatically treats a roadway or bridge segment with anti-icing chemicals based on weather conditions. This Market Package includes the detecting sensors, the treatment, and Traveler Information Systems devices such as Dynamic Message Signs. This system has been tested by the LaPorte District but is not currently being pursued due to cost issues.

Long Term / Future Market Packages (Implementation by Others at INDOT): **Work Zone Safety Monitoring** includes systems that improve stationary and moving work zone crew safety and reduce crashes in work zones by detecting vehicle intrusions and warns crew workers and drivers of imminent hazards. Crew movements are also monitored so the crew can be warned of movement beyond the safe zone.

CHAPTER 7 – ITS DEPLOYMENT RECOMMENDATIONS – **BY DEPLOYMENT TYPE**

7.1. INTRODUCTION

The data and analysis in the previous six chapters of the INDOT Traffic Management Strategic Deployment Plan have laid the foundation for the recommendations made in this chapter. Several key fundamentals guide and are the crux of these recommendations:

- ITS deployments will support INDOT's Vision, Mission, Values, and Goals, USDOT's Strategic Plan, FHWA's Strategic Plan, and USDOT's six goals for ITS (Chapter 1).
- The focus of INDOT's ITS investment will be on the Interstate System and other freeways due to the significant proportion and composition of traffic on the System coupled with the limited ability to divert in case of incidents on an Interstate or any other freeway. Furthermore, the Interstate System and freeways in Indiana provide the main "trunk line" of ITS field devices statewide while serving the major population centers of the state, with the option of expansion, if needed in the future, of additional ITS deployments statewide. (Chapter 2).
- The geometric design criteria from the *Indiana Design Manual* dictate what is considered desirable and minimum Levels of Service on Indiana freeways. This will serve as a basis for investment in Traffic Management / ITS field devices on Indiana's Interstates and freeways (Chapters 2 and 3).
- Major Capital Improvements (Expansion Projects and major 3R / 4R Pavement Projects) on INDOT Interstates and freeways and select high volume arterials intersecting the Interstate System provide an opportunity to implement ITS field devices in a coordinated fashion with a larger project (Chapter 3).
- The ongoing ATMS deployment of ITS field devices on the Interstate System in Marion and portions of surrounding counties in the Indianapolis area is a main focus of the INDOT ITS deployment through 2010, essentially the near-term component of INDOT's ITS deployment priorities (Chapter 4).
- Although evaluating the ITS Market Packages was not the main focus of this document, the analysis provided general direction to future ITS deployments in Indiana (Chapters 5 and 6).
- Organizational constraints (funding and staffing) simply do not allow ITS to be all things to all people and result in a large-scale Statewide ITS deployment. The philosophy of concentrating on the key Market Packages will prevail (Chapter 6).

It is important to note that the **recommendations in this chapter are grouped by <u>individual deployment type</u>.** *Chapter 8 lists all deployments chronologically by Fiscal Year.* Note that a **Fiscal Year** covers the period from **July 1 through June 30.** For example, Fiscal Year 2010 covers the period from July 1, 2009 through June 30, 2010; Fiscal Year 2011 covers the period from July 1, 2010 through June 30, 2011, and so on.

It should be noted that the recommendations in this Version 2.4 Final Report are significantly different that what was presented in the Version 2.3 Intermediate Report dated December 2007, primarily as a result of high fuel prices and the deterioration of national economic conditions over the past year. Revenues to INDOT by way of gasoline and diesel fuel taxes declined as a result of fuel prices exceeding $4 per gallon in 2008 and the associated reduction in vehicle miles traveled. Although fuel prices have declined markedly, the national recession has continued the trend of fewer vehicle miles being traveled, thus the reduction in motor fuel taxes continues. INDOT has proactively adjusted its construction budget over the next biennium (Fiscal Years 2010 and 2011) and some projects have been delayed. This fact, coupled with uncertainty of future traditional fuel tax revenues, especially on the federal level with the federal Highway Trust Fund and the 2009 reauthorization of the federal transportation program, has had a ripple effect on many projects in future years. As such, most the "rural" Traffic Management / ITS deployments that were recommended in the Version 2.3 Intermediate Report are not recommended at this time.

As with any highway project, the deployment dates are subject to change due to a variety of circumstances, including but not limited to funding constraints, staffing and workload constraints, delays to the larger projects that some of these ITS deployments are a component of, technology changes, etc. Similarly, the estimated costs are subject to change due to changes in technology and the fact that they are very preliminary in nature. Furthermore, some components will likely go up in cost over time, while some components, particularly the technological ones, are likely to go down in the future.

To assist the reader in locating projects by road, the following colors will be used to identify roads in this chapter and Chapter 8:

I-64
I-65
I-69
I-70
I-74
I-80/94 (Borman Expwy)
I-94
I-265 / SR 265
I-465
I-865
US 30
US 31
US 36
SR 37
SR 912

7.2. FULL ADVANCED TRAFFIC MANAGEMENT SYSTEMS (ATMS)

The Interstate Highway System and freeways are the backbone of the Indiana surface transportation network and a critical element in the state and national economy. Current conditions aside, traffic volumes are increasing on Indiana's Interstates and freeways, resulting in increased exposure to the potential for crashes. Due to its full access controlled nature and volume of traffic it serves, a crash or incident that results in lane closures or complete closure of an Interstate or freeway in one or both directions has the greatest detrimental effect on the motoring public in terms of delay and user cost.

The key to providing real-time, accurate information is the ability to detect and verify incidents. While it is not practical to fully instrument the entire Interstate System and freeways in Indiana with a full Advanced Traffic Management System (ATMS), it is logical and possible to expand the ATMS in and adjacent to the three metropolitan areas that have a Traffic Management Center and have deployed or are currently deploying an ATMS: Northwest Indiana (Chicago), Indianapolis, and Louisville. These areas are Indiana's most populated and have the highest freeway AADT and congestion.

Furthermore, Northwest Indiana and Indianapolis area real-time traffic condition information is available on the Internet at the TrafficWise Web site, www.trafficwise.in.gov, a key pre-trip motorist information tool. Similar information is available in the Louisville area at www.trimarc.org. Motorists can utilize this information to divert, delay, or even cancel their trip and avoid the delays. **A full ATMS deployment, defined as vehicle detection every ½ - 1 mile, Closed Circuit Television (CCTV) Cameras, and communications,** serves these functions, as well as provides surveillance at important locations along these highways to support winter operations (snow and ice removal) and overall security surveillance.

Northwest Indiana is part of the Chicago Metropolitan Area (2000 population of 9,098,316; 3rd in the Nation); Lake County (the core of INDOT's ITS investment in Northwest Indiana) had a 2000 population of 484,564; the 118th most populous county in the Nation). The Indianapolis Metropolitan Area had a population of 1,525,104 in 2000 (34th in the Nation); Marion County (the core of INDOT's ITS investment in Central Indiana) had a 2000 population of 860,454, the 50th most populous county in the Nation. Clark and Floyd Counties in Southern Indiana are part of the Louisville Metropolitan Area (2000 population of 1,161,975; 43rd in the Nation). This area currently is in the process of deploying a full ATMS; refer to Section 7.2.2 regarding INDOT's future intentions. It is logical to have and expand a full ATMS in these three large Metropolitan Areas. Other urbanized areas in Indiana are significantly less populated compared to Northwest Indiana (Chicago) and Indianapolis. The Fort Wayne Metropolitan Area (390,156; 116th in the Nation) with Allen County as the core (331,849; 176th in the Nation), Evansville Metropolitan Area (342,815; 133rd in the Nation) with Vanderburgh County as the core (171,922; 316th in the Nation), and South Bend-Mishawaka Metropolitan Area (316,663; 145th in the Nation) with St. Joseph County as the core (265,559; 208th in the Nation) are much less populated. Additional population details may be found in the table on the next page.

Metropolitan Area	2000 Population	U.S. Rank	Core Indiana County	2000 Population	U.S. Rank
Chicago (IL, IN, WI) 14 Counties: Illinois: Cook, DeKalb, DuPage, Grundy, Kane, Kendall, Lake, McHenry, Will Indiana: Lake, Porter, Newton, Jasper Wisconsin: Kenosha	9,098,316	3	Lake	484,564	118
Indianapolis 10 Counties: Marion, Boone, Brown, Hamilton, Hancock, Hendricks, Johnson, Morgan, Putnam, Shelby	1,525,104	34	Marion	860,454	50
Louisville (KY, IN) 13 Counties: Kentucky: Jefferson, Bullitt, Henry, Meade, Nelson, Oldham, Shelby, Spencer, Trimble Indiana: Clark, Floyd, Harrison, Washington	1,161,975	43	N/A	N/A	N/A
Fort Wayne 3 Counties: Allen, Wells, Whitley	390,156	116	Allen	331,849	176
Evansville (IN, KY) 6 Counties: Indiana: Vanderburgh, Gibson, Posey, Warrick Kentucky: Henderson, Webster	342,815	133	Vanderburgh	171,922	316
South Bend - Mishawaka (IN, MI) 2 Counties: Indiana: St. Joseph Michigan: Cass	316,663	145	St. Joseph	265,559	208
Elkhart - Goshen 1 County Elkhart	182,791	205	Elkhart	182,791	299
South Bend - Mishawaka - Elkhart - Goshen (IN, MI) * *3 Counties:* *Indiana: St. Joseph, Elkhart* *Michigan: Cass*	*499,454 **	*90 **	*St. Joseph **	*265,559 **	*208 **

N/A - While Clark and Floyd Counties are more populous than Harrison and Washington Counties, one county does not dominate the Indiana portion of the Louisville metro area in the same manner that Lake County dominates the Indiana portion of the Chicago metro area.

* - In recognition that the South Bend-Mishawaka and Elkhart-Goshen Metropolitan Areas, while divided separately for U.S. Census purposes, act as one large metropolitan area, this row illustrates this area's population and U.S. rank as a combined area for informational purposes only.

The priorities for full ATMS deployment are based on the following criteria:

1) Continuation of the Initial Indianapolis ATMS
2) ATMS Deployment in Southern Indiana near Louisville
3) Addition to the existing Northwest Indiana ATMS
4) Current (2005) Interstate or Freeway Level of Service (LOS)
5) High / moderate growth area
6) Added Travel Lanes project that replaces pavement or New Road Construction project

Upon completion of the following full ATMS projects, a total of **254 miles of Interstates and freeways will be instrumented with a full ATMS,** defined as vehicle detection every ½ - 1 mile, Closed Circuit Television (CCTV) Cameras, and communications. The Transportation Technology Innovation and Demonstration Program (TTID) vehicle detection in the Indianapolis area covers an additional 40 miles and features vehicle detection at intervals of 1 mile or greater, as well as CCTV cameras as described in Section 7.3.1.

The **estimated cost** for deployment is as follows. **The cost of a CCTV camera every mile is included in these costs:**

$150,000/mile for a **full ATMS** with **1 mile side-fire** vehicle **detection**
$225,000/mile for a **full ATMS** with **1 mile side-fire** vehicle **detection & direct burial of fiber optics**
$275,000/mile for a **full ATMS** with **1 mile side-fire** vehicle **detection & conduit**
$325,000/mile for a **full ATMS** with **1 mile side-fire** vehicle **detection, conduit & fiber**

$200,000/mile for a **full ATMS** with **½ mile side-fire** vehicle **detection**
$275,000/mile for a **full ATMS** with **½ mile side-fire** vehicle **detection & direct burial of fiber optics**
$325,000/mile for a **full ATMS** with **½ mile side-fire** vehicle **detection & conduit**
$375,000/mile for a **full ATMS** with **½ mile side-fire** vehicle **detection, conduit & fiber**

Please note that **a 10% contingency will be added to the total costs** to account for unforeseen project changes; **the reader needs to add 10% to individual projects,** except where noted (projects close to letting do not have a contingency applied).

In addition to the information below, maps showing the ATMS deployment recommendations statewide and in Indianapolis, Northwest Indiana, and Southern Indiana near Louisville may be found at the end of this chapter.

7.2.1. ATMS PRIORITY 1 (Completion of Initial Indianapolis ATMS / Northwest Indiana ATMS Communications System Upgrade)

INDOT is in the latter stages of a multi-year deployment of Traffic Management / ITS devices on the Interstate System in Marion and portions of surrounding counties in the Indianapolis area. The completion of the Indianapolis Advanced Traffic Management System (ATMS) deployment through 2010 is a primary near-term focus of ITS field device investments in Indiana, along with a currently under construction upgrade of the existing ATMS communications system in Northwest Indiana. As part of the five-phase deployment in the Indianapolis area, approximately 125 cameras will be installed. These cameras, placed approximately every mile, will supplement a system of vehicle detection either underneath the pavement (microloops) or side-fire detection that will be placed approximately every ½ mile on high-volume and one mile on lower volume Interstates in the Indianapolis area to measure the overall flow of traffic.

1. **Phases Three and Four** of the **Indianapolis area ATMS** (Des # 0200605 and 0200607) are **currently under construction** and are nearly complete. Phases 3 and 4 install the vehicle detection and additional cameras in the **northeastern, eastern, and southern** portions of the **Indianapolis** area on I-65 from Whiteland Road (CR 500N) to the I-70 South Split, I-69 from I-465 to SR 238, I-70 from I-465 (East Leg) to Mt. Comfort Road, and clockwise on I-465 from the White River (North Leg) to SR 67 / Kentucky Avenue on the South Leg. **This project has been let.**

2. **Northwest Indiana ATMS Communications System Upgrade (Lake and Porter Counties)** (Des # 0501267) is **currently under construction** and converts the existing Northwest Indiana ATMS analog technology to digital technology, as well as deploys a fiber optic cable network on I-65 from SR 2 to I-90, I-80/94 from the Illinois State Line to I-90, and I-94 from I-90 to SR 249 **in 2008 - 2009**. Other elements of the upgrade include CCTV camera lowering systems on all existing cameras, four additional CCTV cameras and the fiber communications connection to an existing CCTV camera at I-65 at SR 2, server upgrades at the Gary TMC, and **one Travel Time Sign (TTS)** on westbound I-80/94 near Mile 8.1 (Chase St); please refer to Section 7.5.1 for TTS details. **This project has been let.**

3. **The Fifth and final phase** of the Indianapolis area ATMS (Des # 0200606) deploys the vehicle detection and additional cameras **in Fiscal Year 2010** in the **northwestern and northern** portions of the **Indianapolis** area on I-65 from Cold Spring Road to SR 267, I-74 from Raceway Road to I-465 (West Leg), I-465 from 56th Street (West Leg) to the White River (North Leg) (except for devices in the 71st Street / 86th Street area that were installed as part of the 2004-2006 Added Travel Lanes / Interchange Modification project (ATMS deployment Des # 0400418, let in 2004; the cameras and communication devices will still be part of Phase 5), and I-865 from I-65 to I-465. Estimated Phase 5 cost: **$5,700,000 (no 10% contingency applied in the total below).**

7.2.1.1. Transportation Technology Innovation & Demonstration Program (TTID) *

As stated in Chapter 4, INDOT was selected by the Federal Highway Administration (FHWA) in 2006 to participate in the Transportation Technology Innovation and Demonstration Program (TTID) in the Indianapolis area. As part of the TTID Program, Traffic.com will deploy, operate, and maintain 60 vehicle detection sites in and directly adjacent to the Indianapolis ATMS deployment area with this public/private partnership, **at no cost to INDOT.**

* - Formerly the Intelligent Transportation Infrastructure Program (ITIP)

In 2007, Traffic.com constructed 57 above ground, side-fire radar vehicle detection sites on the following Interstates and US 31 in and near the Indianapolis area:

I-65 from SR 44 at Franklin to Whiteland Road (Mile 90 to Mile 95): 4 sites
I-65 from Cold Spring Road to I-465 (West Leg) (Mile 117 to 123): 5 sites ******
I-69 from SR 238 to SR 9/109 at Anderson (Mile 10 to Mile 26): 13 sites
I-70 from SR 39 to SR 267 at Plainfield (Mile 59 to Mile 66): 7 sites
I-70 from Mt. Comfort Road to SR 9 at Greenfield (Mile 96 to Mile 104): 6 sites
I-465 from I-65 (West Leg) to White River (North Leg) (Mile 20 to Mile 34): 12 sites ******
US 31 from I-465 (North Leg) to SR 32 at Westfield: 10 sites

****** *- These sites will be supplemented or replaced by more closely spaced vehicle detection as part of the Phase 5 Indianapolis ATMS deployment in 2009 - 2010. The detection is being provided for now by Traffic.com to provide continuous vehicle detection on and inside I-465, albeit at a level of detection less than INDOT intentions during Phase 5 of the Indianapolis ATMS.*

Furthermore, in 2010 near the conclusion of the Phase 5 Indianapolis ATMS deployment, Traffic.com will construct three additional above ground, side-fire radar vehicle detection sites on I-74 from SR 267 at Brownsburg to Raceway Road (Mile 66 to Mile 70).

The Transportation Technology Innovation and Demonstration Program (TTID), in conjunction with the subsequent deployment of Closed Circuit Television (CCTV) Cameras by INDOT, as described in Section 7.3 in this chapter, significantly expands the ATMS in the Indianapolis area into high-volume Interstates approaching the Indianapolis area.

ATMS Priority 1 total: **$5,700,000**

7.2.2. ATMS PRIORITY 2 (ATMS Deployment in Southern Indiana)

Since the late 1990s, INDOT has been a 25% financial partner with the Kentucky Transportation Cabinet (KYTC) for the ATMS in the Louisville area (including portions of Clark and Floyd Counties in Southern Indiana) known as TRIMARC (Traffic Response and Incident Management Assisting the River Cities). KYTC has been the lead agency and the system has been operated by Northrop Grumman Corporation (NGC). In 2007, INDOT decided to assume the lead and control of certain elements of the ATMS operations in Southern Indiana to expedite the deployment of ATMS devices on Interstates 64, 65, and 265 in Clark and Floyd Counties, and to have a greater sense of consistency in Traffic Management / ITS device deployments statewide. INDOT will continue to partner with TRIMARC / KYTC / NGC on certain key elements, such as the TRIMARC Web site, the Highway Advisory Radio (HAR) station, the cable TV government access traffic program, the highway incident management plan for the two Ohio River bridges (I-65 Kennedy Bridge and I-64 Sherman Minton Bridge), and AMBER Alert activations. However, INDOT wishes to assume the lead and control of the ATMS field device deployment in Indiana, namely vehicle detection, CCTV cameras, fiber optic cable installation, Dynamic Message Signs (DMS), and Intermediate Enhanced Reference Markers (2/10 and 1/10 Mile Reference Markers). This section will feature recommendations for a full ATMS (vehicle detection, CCTV cameras, and fiber optic cable installation), as well as Reference Markers, while later sections in this chapter will address the DMSs.

The following four segments in Southern Indiana have been programmed in INDOT's Scheduling and Project Management System (SPMS) as one project (Des # 0710370), currently with a Ready for Contracts (RFC) date of October 2010 (Fiscal Year 2011):

4. **I-65 from the Ohio River (Mile 0) to SR 311 (Exit 9) (Clark County)**
   LOS B - E, AADT = 50,750 - 121,750, six to eight lanes (plus two-lane, one-way Collector/Distributor roadways in the southern one mile and two-lane, one-way frontage roads from Stansifer Avenue to Veterans Parkway), high growth area north of I-265. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, installation of fiber optic cable in existing conduits from approximately Mile 1 to Mile 9 in the completed Revive 65 construction area) in Fiscal Year 2011.** Devices of a more temporary nature should be installed in the southern portion of the corridor from the Kennedy Bridge to the area near the L&I Railroad bridge / Stansifer Avenue near Mile 1.2, as this area will be greatly impacted by the new I-65 Ohio River bridge (Des # 0201294) and the Indiana approach construction (Des #s 0810312, 0810313, 0810314, 0810315, 0810316, and 0810317), both beginning in Fiscal Year 2014. In addition, install **1/10 Mile Reference Markers** on the six-mile segment of I-65 **from the Kentucky State Line (Mile 0) to I-265 (Mile 6).** AADT is 64,030 - 121,750. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost: **$2,200,000.**

5. **I-265 from I-64 (Exit 0) to I-65 (Exit 7) (Floyd and Clark Counties)**
   LOS C - D, AADT = 45,040 - 53,020, four lanes, high growth area. **Recommendation: Full ATMS Deployment (side-fire vehicle detection every ½ mile, CCTV every mile, direct burial of fiber optic cable) in Fiscal Year 2011.** Estimated cost: **$1,925,000.**

6. **I-64 from SR 62/64 (Exit 118) to the Ohio River (Mile 124) (Floyd County)**
   LOS C - D, AADT = 54,920 - 85,840, five lanes (six approaching the Sherman Minton Bridge over the Ohio River), high growth area west of I-265. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile) in Fiscal Year 2011.** Care shall be taken to ensure that the devices are set back from the mainline so as to not conflict with the future Added Travel Lanes project on I-64 from I-265 to SR 111 / Spring Street (Des # 0500307) in Fiscal Year 2014 (so the devices can be used to assist in monitoring traffic during this project). Estimated cost: **$1,200,000.**

7. **SR 265 (future I-265) from I-65 (Exit 7) to SR 62 (Exit 9) (Clark County)**
   LOS B, AADT = 26,450, four lanes, high growth area. While LOS B does not call for a "standalone" project of merit, it is logical to implement full detection on this segment at the same time as the rest of the Southern Indiana ATMS deployment, plus this is a short, two mile segment that is part a larger **system** that provides motorists and TMC operators with traffic information. Furthermore, traffic volumes will grow considerably once the freeway is extended to the east across the Ohio River into Kentucky (Indiana New Road Construction project (Des # 0201297) and New Bridge Construction project (Des # 0201296) beginning in Fiscal Year 2012. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, direct burial of fiber optic cable) in Fiscal Year 2011.** Estimated cost: **$750,000.**

ATMS Priority 2 total: $6,075,000 + 10% contingency = **$6,700,000**

7.2.3. ATMS PRIORITY 3 (Expansion of the Northwest Indiana ATMS)

The following four segments in Northwest Indiana have been programmed in INDOT's Scheduling and Project Management System (SPMS) as one project (Des # 0800453), currently with a Ready for Contracts (RFC) date of July 2012 (Fiscal Year 2013), although the recommendations below will move this project one year to Fiscal Year 2014:

8. **I-94 from I-90 (Indiana Toll Road) (Exit 16) to SR 49 (Exit 26) (Porter County)**
   Weekday LOS C / Summer Friday and Sunday LOS D from I-90 to US 20 (Exit 22); Weekday LOS B / Summer Friday and Sunday LOS C from US 20 to SR 49, Weekday AADT = 51,970 - 69,970 / Summer Friday and Sunday AADT = 73,760 - 91,760, six lanes, high growth area. Interstate 94 experiences significant spikes in traffic on Fridays and Sundays during the summer months, increasing traffic by approximately 22,000 vehicles per day and lowering LOS by one across the board (B deteriorates to C and C deteriorates to D). **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, direct burial of fiber optic cables from SR 249 to SR 49) in Fiscal Year 2014.** In addition, install **2/10 Mile Reference Markers** on the eight mile segment of I-94 **from SR 249 (Mile 19) to SR 49 (Mile 27).** Estimated cost: **$2,525,000.**

9. **I-65 from US 231 (Exit 247) to US 30 (Exit 253) (Lake County)**
   LOS C, AADT = 42,580, four lanes, high growth area, new interchange planned at 109th Avenue (Des # 0500468) in 2009 - 2010. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile) in Fiscal Year 2014.** Care shall be taken to ensure that the devices are set back from the mainline so as to not conflict with the future 3rd lane per direction on I-65 (the existing shoulder is in reality the future 3rd lane; an outside shoulder will need to be added to the mainline). This future 3rd lane is not yet programmed. In addition, install **1/10 Mile Reference Markers** on the six mile segment of I-65 **from US 30 (Mile 253) to I-80/94 (Borman Expwy) NW Connector Ramps (Mile 259)** (replaces the existing 2/10 Mile Reference Markers) in conjunction with this adjacent ATMS deployment. AADT is 80,120 - 87,510 from US 30 to the I-80/94 NW Connector Ramps. Estimated cost: **$1,200,000.**

10. **I-65 from I-80/94 (Borman Expwy) (Mile 260) to I-90 (Indiana Toll Road (Exit 262) (Lake County)**
LOS B, AADT = 29,620 - 33,770, four lanes. While LOS B does not call for a "standalone" project of merit, it is logical to implement full detection on this segment as this is a short, two mile segment that is part a larger **system** that provides motorists and TMC operators with traffic information; I-65 provides the access from to and from the Indiana Toll Road (I-90) and can be used by certain trips to divert from I-80/94 or I-90. A similar situation exists in Indianapolis: I-865 is not a candidate for full detection on its own, but it is a small part of a larger system and is planned for full detection. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile) in Fiscal Year 2014.** Estimated cost: **$400,000.**

11. **SR 912 (Cline Ave) from I-90 (W jct) (Exit 0) to I-80/94 (Borman Expwy) (Exit 10) (Lake County)**
LOS A - E, AADT = 24,290 - 68,530, six and four lanes. The freeway portions of SR 912 are essentially two separate roads. To the west and north it is a lower volume (AADT of 24,290 - 44,300 (the 10,490 AADT from I-90 to US 41 is not included since it is essentially the ramps to and from the Toll Road)) newer (completed in the mid-1980s) six lane freeway from its western terminus at I-90 to just north of US 12. To the south it is a higher volume (AADT of 49,820 - 68,530) older (completed in stages during the 1960s) four lane freeway from just north of US 12 to I-80/94. The lower volume, newer, six lane segment is currently operating at an acceptable LOS A and B. The higher volume, older, four lane segment is currently operating at LOS C, D, and E. While the lower volume, acceptable LOS newer six lane segment is not a "standalone" project of merit, it is logical to implement full detection on this segment as this is a small part a larger **system** that provides motorists and TMC operators with traffic information; SR 912 can be used by certain trips to divert from I-80/94 or I-90. A similar situation exists in Indianapolis: I-865 is not a candidate for full detection on its own, but it is a small part of a larger system and is planned for full detection. **Recommendation: Full ATMS deployment in Fiscal Year 2014 (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)** (conduit due to the limited Right-of-Way and the elevated nature of portions of SR 912). In addition, install **2/10 Mile Reference Markers** on the entire 11 mile segment of SR 912 **from I-90 (Indiana Toll Road) (West Jct) (Mile 0) to I-80/94 (Borman Expwy) (Mile 11).** This ATMS deployment should be coordinated with the proposed SR 912 Road Reconstruction project (Des # 0400210) from 1.66 miles west of US 12 to 0.26 mile west of US 12 in Fiscal Year 2013 and the two Bridge Deck Reconstruction projects (over Indiana Harbor Canal, Riley Road, railroads, and Ramp C (Des # 0501114) and over CSX (Conrail) RR, Dickey Road, and Dock Street (Des # 0501120) in Fiscal Year 2013. Estimated cost: **$3,750,000.**

ATMS Priority 3 total: $7,875,000 + 10% contingency = **$8,700,000**

7.2.4. ATMS Replacement / Additions with Major Capital Improvements

Interstates that currently feature a full ATMS (or are proposed for a full ATMS or are part of the Transportation Technology Innovation and Demonstration (TTID) Project in the Indianapolis area) that are reconstructed in such a manner that the pavement is replaced (Added Travel Lanes or Pavement Replacement projects) will require a replacement of ATMS field devices. While placing microloop vehicle detection under the pavement is easier to accomplish during projects where the pavement is being replaced, its cost is higher than side-fire vehicle detection and as such, the recommendations to follow feature side-fire vehicle detection; this is a notable change from the Version 2.3 Intermediate Report dated December 2007. Furthermore, conduit and fiber optic cable deployment is usually recommended, as this task is easiest to accomplish during Added Travel Lanes and Pavement Replacement projects, plus a fiber optic communications system is more reliable and desired in the urbanized areas.

Projects are listed chronologically; please note that large projects that are broken down into several smaller projects or phases may not be listed directly adjacent to another related project or phase. *These projects are listed in italics* to help differentiate them from projects that are standalone Traffic Management / ITS device deployments.

Please note that active **projects** that are currently scheduled in SPMS for construction **beyond Fiscal Year 2020**, as well as active projects that are considered funded in the *INDOT 2030 Long Range Transportation Plan* but beyond Fiscal Year 2020, **are not included in the recommendations to follow**, as their project development activities and construction are many years away. However, it should be noted that projects contiguous to these below that would impact current or proposed Traffic Management / ITS devices would feature the same level of Traffic Management / ITS device deployment as described in virtually all of the projects below, namely replacing the full ATMS with a new full ATMS (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) as part of the Major Capital Improvement.

12. ***I-80/94 (Borman Expwy) from 0.2 mile east of Georgia Street (Mile 10.6) to 0.3 mile east of Clay Street (Mile 13.4) (Lake County)***
Replace full ATMS deployment (microloop vehicle detection every ½ mile, CCTV every mile, conduit) *as part of the ongoing Interchange Modification / Added Travel Lanes projects at I-65 (Des # 0500590, 0065300, and 0500593), including devices on I-65,* ***during construction from 2007 through 2010. Install new EB DMS near Mile 12.7 (Central Ave) in 2009.*** *The DMS will provide traveler information for motorists in the current Borman ATMS area and entering the expanded ATMS deployment on I-94 from I-90 (Indiana Toll Road) to SR 49, as well as EB Toll Road incident information. The DMS is in advance of the I-90 (Indiana Toll Road) decision point. All three phases of this project have been let with Traffic Management / ITS field device components included.* ***This project was let in November 2008.***

13. ***I-465 from SR 67 / Kentucky Ave (West Leg) (Exit 8) to north of 56th St (West Leg) (Exit 19) (Marion County)***
    Replace temporary devices *placed as part of Phase 2 of the Indianapolis ATMS* ***with new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) as part of the numerous I-465 West Leg Added Travel Lanes / Interchange Modification projects*** *(Multiple Des #s) (Accelerate 465)* ***during construction from 2008 through 2012.*** *The project to install this full ATMS is programmed (Des # 0600637) and was let in October 2007.* ***Install two New DMSs,*** *providing traveler information for motorists in the Phase 2, 5, and 4 deployment areas. The* ***NB DMS at Mile 14.8*** *is before the I-74 and I-65 decision points; the* ***SB DMS at Mile 14.8*** *is before the I-70 decision point. In addition,* ***install 1/10 Mile Reference Markers*** *on this 11 mile segment of I-465. AADT is 106,220 - 137,900. This deployment replaces the existing 2/10 Mile Reference Markers on this segment.* ***This project has been let.***

14. ***I-65 from I-865 (Exit 129) to 0.5 mile north of SR 267 (Exit 133) (Boone County)***
    Replace temporary devices *placed as part of Phase 5 of the Indianapolis ATMS* ***with new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Phase 2; Des # 0200903 and 0800476)* ***in Fiscal Year 2010. Replace*** *existing Vultron DMS* ***and install on new box truss*** *at Mile 131.9 (details in Section 7.4.5). In addition,* ***install*** *(or replace the existing signs from Mile 129 to 132)* ***2/10 Mile Reference Markers.*** *Estimated cost:* ***$1,500,000.***

15. ***I-65 from 0.5 mile north of SR 267 (Exit 133) to 0.5 mile south of CR 100E (Lebanon Interchange) (Exit 138) (Boone County)***
    New full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) *as part of the Added Travel Lanes project (Phase 3; Des # 0200904)* ***in Fiscal Year 2011.*** *In addition,* ***install 2/10 Mile Reference Markers.*** *Estimated cost:* ***$1,500,000.***

16. ***I-465 from 0.35 mile east of US 31 / Meridian St (Exit 31) (North Leg) to 0.5 mile west of Allisonville Rd (Exit 35) (North Leg) (Hamilton and Marion Counties)***
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400289)* ***in Fiscal Year 2011.*** *In addition,* ***replace*** *two existing Vultron DMSs* ***and install on new box trusses <u>east</u> of Keystone Avenue <u>near Mile 34.3</u>*** *(details in Section 7.4.5) as part of a short Added Travel Lanes project within the limits of this project from Carmel Creek to White River that also widens those structures for maintenance of traffic purposes (Des # 0800421) in 2010. Finally,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$1,500,000.***

17. ***I-465 from 0.5 mile west of Allisonville Rd (North Leg) (Exit 35) to 0.5 mile west of I-69 (North Leg) (Exit 37) (Marion County)***
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400286)* ***in Fiscal Year 2011.*** *In addition,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$375,000.***

18. ***I-465 from 75th St (North Leg) (Mile 37) to the south end of bridge over Fall Creek) (East Leg) (Mile 39) (Marion County)***
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0800422)* ***in Fiscal Year 2011. Replace*** *existing Vultron DMS* ***and install on new box truss*** *at Mile 38.2 (details in Section 7.4.5). Finally,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$750,000.***

19. ***I-465 from 0.5 mile west of I-69 (North Leg) (Exit 37) to 75th St (North Leg) (Mile 37), including Interchange Modification at I-69 (Marion County)***
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400283)* ***in Fiscal Year 2012.*** *In addition,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$750,000.***

20. ***I-65* from 0.5 mile south of CR 100E (Lebanon Interchange) (Exit 138) to US 52 (Exit 141) (Boone County)**
    New full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) *as part of the Added Travel Lanes project (Phase 4; Des # 0600304, 0800484, and 0600305)* ***in Fiscal Year 2012.*** *In addition,* ***install 2/10 Mile Reference Markers.*** *Estimated cost:* ***$1,500,000.***

21. ***I-70* from 0.6 mile east of Post Rd (Exit 91) to 0.5 mile east of Mt. Comfort Rd (Exit 96) (Marion and Hancock Counties)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0200699)* ***in Fiscal Year 2013. Replace*** *existing Vultron DMS* ***and install on new box truss*** *at Mile 92.1 (details in Section 7.4.5). Estimated cost:* ***$1,875,000.***

22. ***I-69* from 0.5 mile south of I-465 (Exit 0) (75th St) to 0.5 mile south of 96th St (Exit 3) (Marion County)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400305)* ***in Fiscal Year 2013.*** *Estimated cost:* ***$750,000.***

23. ***I-70* from 0.5 mile east of Mt. Comfort Rd (Exit 96) to 0.8 mile east of SR 9 (Exit 104) (Hancock County)**
    Replace Transportation Technology Innovation and Demonstration Program (TTID) devices *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0200700)* ***in Fiscal Year 2014.*** *Estimated cost:* ***$3,000,000.***

24. ***I-64* from I-265 (Exit 121) to SR 111 / Spring St (Exit 123) (Floyd County)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0500307)* ***in Fiscal Year 2014.*** *Estimated cost:* ***$500,000.***

25. ***I-65* Ohio River Bridge (Mile 0) and Indiana approach (Clark County)**
    Replace full ATMS *deployment with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every ½ mile, conduit and fiber optic cables)*** *as part of the New Bridge Construction / Added Travel Lanes projects (Des #s 0201294, 0810312, 0810313, 0810314, 0810315, 0810316, and 0810317* ***in Fiscal Years 2014 - 2019.*** *Estimated cost:* ***$500,000.***

26. ***I-65* from 0.5 mile south of Southport Rd (Exit 103) to 0.25 mile south of I-465 (South Leg) (Exit 106) (Marion County)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400909)* ***in Fiscal Year 2015.*** *Estimated cost:* ***$1,125,000.***

27. ***I-65* from 0.5 mile south of County Line Rd (Exit 101) to 0.5 mile south of Southport Rd (Exit 103) (Johnson and Marion Counties)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0300853)* ***in Fiscal Year 2016.*** *Estimated cost:* ***$750,000.***

28. ***I-65* from 0.5 mile south of Greenwood Rd (Main St) (Exit 99) to 0.5 mile south of County Line Rd (Exit 101) (Johnson County)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0401037)* ***in Fiscal Year 2016.*** *Estimated cost:* ***$750,000.***

29. ***I-70* from I-65 (North Split) (Exit 83) to I-465 (East Leg) (Exit 90) (Marion County)**
    Add to and replace devices as needed in the full ATMS *as part of the Stage 2 Added Travel Lanes projects (Parts A, B, and C; Des #s 0400399, 0400400, and 0500550, respectively)* ***in Fiscal Year 2017.*** *Estimated cost:* ***$700,000.***

30. ***I-465* from 0.5 mile east of US 421 / Michigan Rd (North Leg) (Mile 27) to 0.65 mile west of US 31 / Meridian St (North Leg) (Exit 31) (Marion and Hamilton Counties)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400885)* ***in Fiscal Year 2018.*** *Estimated cost:* ***$1,125,000.***

31. ***I-465* from 0.65 mile north of 86th St (West Leg) (Exit 23) to 0.5 mile east of US 421 / Michigan Rd (North Leg) (Exit 27) (Marion and Boone Counties)**
    Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des #s 0400881)* ***in Fiscal Year 2019.*** *Estimated cost:* ***$1,500,000.***

ATMS Replacement / Additions total: *$20,450,000 + 10% contingency =* ***$22,500,000***

7.2.5. ATMS on New Interstates / Freeways

New Interstates or Freeways that are projected to operate at Level of Service C or worse for most of their length in their design year are strong candidates for an ATMS based on future traffic and LOS and the "once in a lifetime" opportunity to incorporate Traffic Management / ITS devices in the freeway's original construction. While placing microloop vehicle detection under the pavement is easier to accomplish during brand new Interstate or Freeway projects, its cost is higher than side-fire vehicle detection and as such, the recommendations to follow feature side-fire vehicle detection; this is a notable change from the Version 2.3 Intermediate Report dated December 2007. Furthermore, conduit and fiber optic cable deployment is recommended, as this task is easiest to accomplish during new construction, plus a fiber optic communications system is more reliable and desired in the urbanized areas. Projects are listed chronologically *and in italics* to help differentiate them from projects that are standalone Traffic Management / ITS device deployments.

I-265 Ohio River Bridge and Indiana Approach

32. ***I-265 from SR 62 (Exit 9) to the New Ohio River Bridge (Clark County)***
Design Year LOS C, Design Year AADT = 68,200, six lanes, high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the four-mile New Road Construction project (Des # 0201297) and New Bridge Construction project (Des # 0201296), (the latter a joint project with Kentucky), beginning* ***in Fiscal Year 2012.*** *In addition,* ***install 2/10 Mile Reference Markers.*** *Estimated cost:* ***1,500,000.***

US 31 Freeway Upgrade from 0.2 mile south of I-465 to 216th St

33. ***US 31 Added Travel Lanes (Freeway Upgrade) from 203rd St (Mile 135) to 216th St (Mile 136) (Hamilton County)***
Design Year LOS C, Design Year AADT = 37,980 - 39,290, four lanes, high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600424)* ***in Fiscal Year 2011.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$375,000.***

34. ***US 31 Added Travel Lanes (Freeway Upgrade) from 0.2 mile south of I-465 (North Leg) (Mile 123) to 111th St (Mile 125) (Hamilton County)***
Design Year LOS D, Design Year AADT = 90,390 six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600430)* ***in Fiscal Year 2012.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$750,000.***

35. ***US 31* Added Travel Lanes (Freeway Upgrade) from Blackburn Ave (Mile 133) to 203rd St (Mile 135) (Hamilton County)**
Design Year LOS C, Design Year AADT = 39,290 - 42,520, four lanes, high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600431)* ***in Fiscal Year 2013.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$750,000.***

36. ***US 31* Added Travel Lanes (Freeway Upgrade) from 111th St (Mile 125) to 0.75 mile north of 131st St (Mile 127) (Hamilton County)**
Design Year LOS C - D, Design Year AADT = 67,060 - 90,390, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600432)* ***in Fiscal Year 2014.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Furthermore, please refer to Section 7.4.7 for details regarding the* ***deployment of a SB Dynamic Message Sign*** *in this area. Estimated cost:* ***$750,000.***

37. ***US 31* Added Travel Lanes (Freeway Upgrade) from 0.75 mile north of 131st St (Mile 127) to 156th St (Mile 130) (Hamilton County)**
Design Year LOS C, Design Year AADT = 69,920 - 80,240, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600438)* ***in Fiscal Year 2015.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$1,125,000.***

38. ***US 31* Added Travel Lanes (Freeway Upgrade) from 156th St (Mile 130) to 0.2 mile north of 169th St (Mile 132) (Hamilton County)**
Design Year LOS B - C, Design Year AADT = 55,080 - 69,920, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600440)* ***in Fiscal Year 2016.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Furthermore, please refer to Section 7.4.7 for details regarding the* ***deployment of a SB Dynamic Message Sign*** *in this area. Estimated cost:* ***$750,000.***

39. ***US 31* Added Travel Lanes (Freeway Upgrade) from 0.2 mile north of 169th St (Mile 132) to Blackburn Ave (Mile 133) (Hamilton County)**
Design Year LOS B - C, Design Year AADT = 42,520 - 55,080, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600441)* ***in Fiscal Year 2017.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Furthermore, please refer to Section 7.5.6 for details regarding the* ***deployment of one SB Travel Time Sign*** *in this area. Estimated cost:* ***$375,000.***

<u>I-69 from SR 144 to I-465</u>

40. ***I-69* from 9.0 miles south of I-465 (South Leg) (north of SR 144) (Mile 136 (SR 37)) to I-465 (South Leg) (Mile 145 (SR 37)) (Johnson and Marion Counties)**
Specific Design Year LOS and Design Year AADT are not available at this time but will be determined during the current Tier 2 Environmental studies. However, the Tier 1 Environmental study identified eight lanes in this high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the New Road Construction (Freeway Upgrade) project (Des # 0500432)* ***in Fiscal Year 2019. The ATMS should be extended just south of SR 144 to ensure the NB DMS approaching SR 144 recommended in Section 7.4.5 is covered with this deployment*** *as part of the New Road Construction (Freeway Upgrade) project to the south (Des # 0500431). In addition,* ***install 1/10 or 2/10 Mile*** *(as appropriate)* ***Reference Markers.*** *Furthermore, please refer to Section 7.4.7 for details regarding the* ***deployment of one NB and one SB Dynamic Message Signs*** *and Section 7.5.6 for details regarding the* ***deployment of one NB Travel Time Sign*** *in this area. Estimated cost:* ***$3,750,000.***

ATMS on New Interstates/Freeways total: *$10,125,000+ 10% contingency=* ***<u>$11,150,000</u>***

91 miles of New or Expanded ATMS=$21,100,000
56 miles of Replaced / Additional ATMS during Major Capital Improvements=$22,500,000
27 miles of New ATMS on New Interstates / Freeways=$11,150,000

Total ATMS ESTIMATED COST = <u>$54,750,000</u>

7.3. CLOSED CIRCUIT TELEVISION (CCTV) CAMERAS & VEHICLE DETECTION

As previously mentioned, the Interstate Highway System is the backbone of the Indiana surface transportation network and a critical element in the state and national economy. Current conditions related to the recent spike in fuel prices and the national economic recession aside, traffic volumes continue to increase on Indiana's Interstates, including Rural Interstates approaching urban areas, with several routes carrying over 50,000 vehicles per day and operating at Level of Service D or worse at its highest volume rural segment. Increasing traffic on Indiana's Rural Interstates results in increased exposure to the potential for crashes. Due to its fully access controlled nature and volume of traffic it serves, a crash or incident that results in lane closures or even the complete closure of an Interstate highway in one or both directions has the greatest detrimental effect on the motoring public in terms of delay and user cost. Interstate closures in rural areas can be particularly problematic due to the greater distances between interchanges and lack of alternative routes compared with urban areas. Furthermore, motorists tend to anticipate free-flow traffic on Rural Interstates; sudden queues caused by an Interstate closure can create a serious safety hazard and result in secondary crashes, further compounding the problem.

The key to providing real-time, accurate information is the ability to detect and verify incidents. While it is not practical to fully instrument the entire Interstate System and freeways in Indiana with a full Advanced Traffic Management System (ATMS), it is logical and possible to deploy Closed Circuit Television (CCTV) cameras and side-fire radar vehicle detection at strategic locations on the higher volume Interstates and freeways (rural and urban) to serve this function, as well as provide surveillance to support INDOT winter operations (snow and ice removal) and overall security surveillance. These CCTV camera and vehicle detection sites would also be beneficial for traffic management purposes in case an evacuation of an area is ever required. En-route traveler information provided by Dynamic Messages Signs (DMSs) and Highway Advisory Radio (HAR) can provide motorists with real-time information regarding traffic conditions, including closures. Motorists can utilize this information to divert, delay, or even cancel their trip and avoid the closure.

It should be noted that the recommendations in this Version 2.4 Final Report are significantly different that what was presented in the Version 2.3 Intermediate Report dated December 2007, primarily as a result of high fuel prices and the deterioration of national economic conditions over the past year. Revenues to INDOT by way of gasoline and diesel fuel taxes declined as a result of fuel prices exceeding $4 per gallon in 2008 and the associated reduction in vehicle miles traveled. Although fuel prices have declined markedly, the national recession has continued the trend of fewer vehicle miles being traveled, thus the reduction in motor fuel taxes continues. INDOT has proactively adjusted its construction budget over the next biennium (fiscal years 2010 and 2011) and some projects have been delayed. This fact, coupled with uncertainty of future traditional fuel tax revenues, especially on the federal level with the federal Highway Trust Fund and the 2009 reauthorization of the federal transportation program, has had a ripple effect on many projects in future years. As such, most of the "rural" Traffic Management / ITS deployments that were recommended in the Version 2.3 Intermediate Report are not recommended at this time, especially CCTV cameras and Vehicle Detection deployments.

The priorities for Interstate and freeway CCTV camera and vehicle detection deployment are based on the following criteria, with **the ability of the device to communicate to either the Indianapolis TMC, the Gary TMC, or a communications hub located in the Seymour District** to serve the proposed Advanced Traffic Management System (ATMS) deployment in Southern Indiana near Louisville **the primary priority ranking tool.**

Primary Priority Ranking Tool:

1) **Ability of the device to communicate to a Traffic Management Center (TMC)**

If the device can communicate to an INDOT TMC, then priorities for CCTV camera / vehicle detection deployment are based on the following criteria:

2) CCTV Cameras to support the Transportation Technology Innovation and Demonstration Program (TTID) (vehicle detection) in the Indianapolis area *****
3) Proximity to an existing or proposed Advanced Traffic Management System (ATMS) area
4) Current (2005) Interstate or Freeway Level of Service (LOS)
5) AADT
6) High / moderate growth area
7) Devices to support existing or proposed Permanent Overhead DMSs
8) Unique travel conditions and characteristics of an Interstate or Freeway corridor

* - Formerly the Intelligent Transportation Infrastructure Program (ITIP)

As stated in Chapter 4 and in Section 7.2.1.1, INDOT was selected by the Federal Highway Administration (FHWA) in 2006 to participate in the Transportation Technology Innovation and Demonstration Program (TTID) (formerly the Intelligent Transportation Infrastructure Program (ITIP)) in the Indianapolis area. As part of the TTID Program, Traffic.com will deploy, operate, and maintain 60 vehicle detection sites in and directly adjacent to the Indianapolis ATMS deployment area with this public/private partnership, **at no cost to INDOT.**

In 2007, Traffic.com constructed 57 above ground, side-fire radar vehicle detection sites on the following Interstates and US 31 in and near the Indianapolis area:

I-65 from SR 44 at Franklin to Whiteland Road (Mile 90 to Mile 95): 4 sites
I-65 from Cold Spring Road to I-465 (West Leg) (Mile 117 to 123): 5 sites ******
I-69 from SR 238 to SR 9/109 at Anderson (Mile 10 to Mile 26): 13 sites
I-70 from SR 39 to SR 267 at Plainfield (Mile 59 to Mile 66): 7 sites
I-70 from Mt. Comfort Road to SR 9 at Greenfield (Mile 96 to Mile 104): 6 sites
I-465 from I-65 (West Leg) to White River (North Leg) (Mile 20 to Mile 34): 12 sites ******
US 31 from I-465 (North Leg) to SR 32 at Westfield: 10 sites

****** - *These sites will be supplemented or replaced by more closely spaced vehicle detection as part of the Phase 5 Indianapolis ATMS deployment in 2009 - 2010. The detection is being provided for now by Traffic.com to provide continuous vehicle detection on and inside I-465, albeit at a level of detection less than INDOT intentions during Phase 5 of the Indianapolis ATMS.*

Furthermore, in 2010 near the conclusion of the Phase 5 Indianapolis ATMS deployment, Traffic.com will construct three additional above ground, side-fire radar vehicle detection sites on I-74 from SR 267 at Brownsburg to Raceway Road (Mile 66 to Mile 70).

The Transportation Technology Innovation and Demonstration Program (TTID), in conjunction with the recommendations for Closed Circuit Television (CCTV) Cameras to follow, significantly expands the ATMS in the Indianapolis area into high-volume Interstates approaching the Indianapolis area.

Recommended **CCTV camera / vehicle detection spacing is** approximately every **one mile in segments that are currently LOS D** or worse (the TTID deployment area near Indianapolis), and approximately every **two miles in segments that are currently LOS C.** Camera spacing in full ATMS deployment areas is approximately every mile.

A total of <u>30 CCTV camera / vehicle detection sites</u> are recommended on 54 miles of Interstates, plus <u>33 cameras</u> on 40 miles in the Transportation Technology Innovation & Demonstration Program **(TTID) deployment area** near Indianapolis. **These 63 cameras are in addition to the multitude of cameras deployed as part of a full ATMS** (approximately 250 cameras on 254 miles). Thus, the deployment of these cameras, in conjunction with cameras in full ATMS areas, will result in **approximately 315 CCTV cameras statewide on 348 miles of Interstates and freeways.**

The recommended locations have not been field checked to verify availability of power or ideal sight lines. More detailed analysis will be required to determine optimum locations for the CCTV camera / vehicle detection sites. Nevertheless, the recommended locations have been checked with aerial photography and are generally near existing roads, bridges, and cutoff roads, as power lines are generally located along public road Right-of-Way. CCTV cameras should also be placed upstream of the proposed Overhead Dynamic Message Signs (refer to Section 7.4 for details) on Interstates and freeways to enable viewing of a DMS to verify message content and overall operation of the device for maintenance purposes.

The **estimated cost** for deployment is as follows:

$125,000 per CCTV camera / side-fire radar vehicle detection site *
$ 75,000 per CCTV camera only site *

***** - These estimates account for periodic communications towers that will be needed with a wireless microwave communications system; it is difficult to determine at this time the specific locations of communications towers.

Please note that the freeway segments of the SR 62/66 Lloyd Expressway in Evansville are currently operating at LOS C. However, these short segments are isolated in nature and as such are not an integral part of the *interstate* nature of travel that takes place on the Interstate System, nor is it connected to any other large-scale proposed CCTV / Vehicle Detection deployments. Therefore, CCTV / Vehicle Detection deployment is not recommended for the SR 62/66 Lloyd Expressway in Evansville.

In addition to the information below, maps may be found at the end of this chapter showing the CCTV / vehicle detection site deployment recommendations statewide, as well as individual route maps showing all recommended deployments on Interstates approaching Indianapolis and Northwest Indiana.

7.3.1. CCTV / VEHICLE DETECTION PRIORITY 1 (Transportation Technology Innovation & Demonstration Program (TTID) Deployment Area) (I-69 from SR 238 at Fishers / Noblesville to SR 9/109 at Anderson) (I-65 from SR 44 at Franklin to Whiteland Road) (I-70 from Mt. Comfort Road to SR 9 at Greenfield) (I-70 from SR 39 at Monrovia to SR 267 at Plainfield) (I-74 from SR 267 at Brownsburg to Raceway Rd)

As part of the Transportation Technology Innovation & Demonstration Program (TTID), Traffic.com will deploy, operate, and maintain 60 vehicle detection sites in and directly adjacent to the Indianapolis ATMS deployment area with this public/private partnership, at no cost to INDOT. Fifty-seven vehicle detection sites were deployed in 2007; the remaining three will be deployed in 2010. The CCTV camera deployment described below supplements the vehicle detection on Interstates within the TTID deployment area that is located outside of the initial Indianapolis ATMS deployment area, which already features CCTV cameras as part of Phases 3, 4 (nearly complete), and Phase 5 (construction in 2009 and 2010). Of the 40 miles covered in Priority 1, most of the areas covered are currently operating at LOS D or worse: 4 miles of LOS E (10%), 21 miles of LOS D (53%), and 15 miles of LOS C (37%).

This Priority 1 project has been programmed in INDOT's Scheduling and Project Management System (SPMS) as one project (Des # 0710371), currently with a Ready for Contracts (RFC) date of June 2010 (Fiscal Year 2011):

33 cameras (no detection) (40 miles) as follows:

1. **I-69 from SR 238 (Exit 10) to SR 9/109 (Exit 26) (Hamilton and Madison Counties) (13 cameras)**
   LOS C - E, AADT = 49,290 - 64,060, four lanes, high growth area near Fishers / Indianapolis; moderate growth area near Pendleton / Anderson. **Install cameras in Fiscal Year 2011** near ½ mile east of SR 238, ¼ mile west of Cyntheanne Road, the former crossing of Hamilton / Madison County Line Road, SR 13, the former crossing of Madison CR 800W, the former crossing of Madison CR 600W, SR 38, Old SR 132, Madison CR 400W, SR 9/67, ¼ mile west of Brown Street (Madison CR 100W), Main Street, and SR 9/109 to support the 13 TTID vehicle detection sites deployed in 2007. Estimated cost: **$975,000.**

2. **I-65 from SR 44 (Exit 90) to Whiteland Rd (CR 500N) (Exit 95) (Johnson County) (4 cameras)**
   LOS D, AADT = 55,210, four lanes, moderate growth area. **Install cameras in Fiscal Year 2011** near SR 44, ¼ mile north of Johnson CR 100N, Johnson CR 300N, and Johnson CR 300E to support the 4 TTID vehicle detection sites deployed in 2007. Estimated cost: **$300,000.**

3. **I-70 from Mt. Comfort Rd (Exit 96) to SR 9 (Exit 104) (Hancock County) (7 cameras)**
   LOS D, AADT = 53,830, four lanes, moderate growth area. **Install cameras in Fiscal Year 2011** near the former crossing of Hancock CR 500W, Hancock CR 400W, the former crossing of Hancock CR 300W, Hancock CR 200W, the former crossing of Hancock CR 100W, Fortville Pike, and SR 9 to support the 6 TTID vehicle detection sites deployed in 2007. Estimated cost: **$525,000.**

4. **I-70 from SR 39 (Exit 59) to SR 267 (Exit 66) (Hendricks and Morgan Counties) (6 cameras)**
   LOS C, AADT = 44,830, four lanes. **Install cameras in Fiscal Year 2011** near the former crossing of Hendricks CR 1000S, the former crossing of Morgan CR 150W, Hendricks CR 525E (Joppa Road), Hendricks CR 675E, Plainfield Rest Area, and Old SR 267 to support the 7 TTID vehicle detection sites deployed in 2007. Estimated cost: **$450,000.**

5. **I-74 from SR 267 (Exit 66) to Raceway Rd (Mile 70) (Hendricks County) (3 cameras)**
   LOS C, AADT = 35,850, four lanes, high growth area. **Install cameras in Fiscal Year 2011** near ½ mile west of Hendricks CR 600N (56th Street), the former crossing of Hendricks CR 900E, and Hendricks CR 1000E (Hunter Road) to support the 3 TTID vehicle detection sites deployed in 2009. Estimated cost: **$225,000.**

CCTV / Vehicle Detection Priority 1 total: $2,475,000 + 10% contingency = **$2,725,000**

7.3.2. CCTV / VEHICLE DETECTION PRIORITY 2 (CCTV Cameras and Vehicle Detection to support proposed DMSs approaching TTID areas and I-65 ATMS included in I-65 project from I-865 to US 52)
(I-69 approaching SR 9/109 at Anderson)
(I-65 approaching SR 44 at Franklin)
(I-65 approaching US 52 and SR 47 at Lebanon)
(I-70 approaching SR 9 at Greenfield)
(I-70 approaching SR 39 at Monrovia)

Of the 22 miles covered in Priority 2, all 22 miles are currently operating at LOS C (100%). More significantly, these CCTV camera and vehicle detection sites fill in the short coverage gap between the recommended Dynamic Message Signs (described in Section 7.4.3) approaching the TTID vehicle detection / CCTV camera areas and the new full ATMS included in the I-65 Added Travel Lanes project from I-865 to US 52 in 2010 - 2012 (described in Section 7.2.4), as well support the viewing of the proposed DMSs.

14 camera and side-fire radar detection sites (22 miles) as follows:

6. **I-69 approaching SR 9/109 at Anderson (Exit 26) (Madison County)**
   (2 cameras and side-fire radar detection sites (3 miles))
   LOS C, AADT = 42,410, four lanes, moderate growth area near Anderson, supports the deployment of a SB DMS near Mile 28.3 (north of Madison CR 300E). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near Rangeline Road (Madison CR 200E) and ½ mile east of Madison CR 300E. Estimated cost: **$250,000.**

7. **I-65 approaching SR 44 at Franklin (Exit 90) (Johnson County)**
   (2 cameras and side-fire radar detection sites (4 miles))
   LOS C, AADT = 44,520, four lanes, moderate growth near Franklin, supports the deployment of a NB DMS near Mile 86.4 (north of Johnson CR 250S). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near ¼ mile south of Johnson CR 250S and the former crossing of Johnson CR 75S. Estimated cost: **$250,000.**

8. **I-65 approaching US 52 & SR 47 at Lebanon (Exits 141 & 146) (Boone County)**
   (5 cameras and side-fire radar detection sites (8 miles))
   LOS C, AADT = 40,170 - 40,400, four lanes, supports the deployment of a SB DMS near Mile 148.8 (north of Boone CR 850N). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near US 52, just south of the former crossing of Boone CR 450N, Boone CR 700N, NB Lebanon Rest Area, and SB Lebanon Rest Area. Estimated cost: **$625,000.**

9. **I-70 approaching SR 9 at Greenfield (Exit 104) (Hancock County) (2 cameras and side-fire radar detection sites (3 miles)**
LOS C, AADT = 40,110, four lanes, moderate growth area near Greenfield, supports the deployment of a WB DMS near Mile 106.1 (east of Hancock CR 400E). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near the former crossing of Hancock CR 300E, and Greenfield Rest Area. Estimated cost: **$250,000.**

10. **I-70 approaching SR 39 at Monrovia (Exit 59) (Morgan & Hendricks Counties) (3 cameras and side-fire radar detection sites (4 miles))**
LOS C, AADT = 40,220, four lanes, supports the deployment of an EB DMS near Mile 55.2 (east of the former crossing of Morgan CR 675W). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near the former crossing of Morgan CR 675W, Hazelwood Road, and ½ mile west of SR 39. Estimated cost: **$375,000.**

CCTV / Vehicle Detection Priority 2 total: $1,750,000 + 10% contingency = **$1,925,000**

7.3.3. CCTV / VEHICLE DETECTION PRIORITY 3
(I-65 from SR 2 at Lowell to US 231 at Crown Point)
(I-94 from SR 49 at Chesterton to Michigan State Line at Michigan City)

Of the 12 miles covered in Priority 3 on I-65, 7 miles are currently operating at LOS C (58%), and 5 miles are at LOS B (42%), however, the LOS B area is approaching LOS C.

Of the 20 miles covered in Priority 3 on I-94, 14 miles are currently operating at LOS B (LOS C on Fridays and Sundays during summer) (70%), and seven miles are at LOS A (LOS B on Fridays and Sundays during summer) (30%).

Both of the recommendations below provide for CCTV camera coverage and vehicle detection contiguous to the proposed Northwest Indiana ATMS Expansion (described in Section 7.2.3). These two deployments below are somewhat analogous to the Transportation Technology Innovation & Demonstration Program (TTID) deployment approaching the Indianapolis area, but for somewhat different reasons. While the existing Levels of Service are not exceptionally poor, both routes experience notable spikes in traffic due to the proximity to the Chicago metropolitan area, especially I-94. Furthermore, cameras and detection will be very beneficial for traffic management and winter operations purposes during lake effect snow events; these impact I-94 greater than I-65. Furthermore, fiber optic cables are currently being deployed on the 12-mile segment of I-65 described below, thus a key communications element will be in place in that corridor.

16 camera and side-fire radar detection sites (32 miles) as follows:

11. **I-65 from south of SR 2 (Exit 240) to US 231 (Exit 247) (Lake County)**
(5 cameras and side-fire radar detection sites (12 miles))
LOS B – C, AADT = 34,850 - 37,930, four lanes, high growth area near Crown Point and moderate growth area near Lowell, supports the deployment of a NB DMS near Mile 236.0 (½ mile north of 217th Avenue). **Install cameras and side-fire vehicle detection in Fiscal Year 2015** near 217th Avenue, ½ mile south of SR 2, Lowell Weigh Station, 153rd Avenue, and 137th Avenue. Estimated cost: **$625,000.**

12. **I-94 from SR 49 (Exit 26) to Michigan State Line (Mile 46)**
    (Porter and LaPorte Counties)
    (11 cameras and side-fire radar detection sites (20 miles))
    LOS A - B (LOS B - C on Fridays and Sundays during summer), weekday AADT = 31,700 - 43,980 / Summer Friday and Sunday AADT = 53,490 - 65,770, six lanes, high growth area near Chesterton, moderate growth area near Michigan City, completes Illinois to Michigan ATMS or CCTV camera / vehicle detection deployment on I-94, and supports winter operations, especially during lake-effect snow events. **Install cameras and side-fire vehicle detection in Fiscal Year 2015** near ½ mile east of SR 49, Chesterton Weigh Station, the former crossing of Porter CR 1500N, the former crossing of Porter CR 600E, the former crossing of LaPorte CR 1100W, the former crossing of LaPorte CR 375N, Bleck Road, Warnke Road, LaPorte CR 800N, Michigan City Rest Area, and ¼ mile south of LaPorte CR 1000N. Estimated cost: **$1,375,000.**

CCTV / Vehicle Detection Priority 3 total: $2,000,000 + 10% contingency = **$2,200,000**

30 CCTV / Detection Sites & 33 CCTV Sites (94 miles)
Total CCTV / Vehicle Detection ESTIMATED COST = $6,850,000

7.4. PERMANENT OVERHEAD DYNAMIC MESSAGE SIGNS (DMS)

Dynamic Message Signs (DMS) are electronic roadway devices that provide real-time, dynamic (changing, not static) motorist information, such as incident, traffic, and road condition information, emergency alerts, and other driver advisories at strategic locations on the road network, ideally in advance of a major decision point or suitable alternate routes. Motorists can utilize this information to divert, delay, or even cancel their trip and avoid the delays. Forty-five Permanent Overhead DMSs are located in Indianapolis, Northwest Indiana, Evansville, Fort Wayne, Kokomo, and Southern Indiana near Louisville, as well as three additional DMSs in the latter area as part of the TRIMARC deployment. Furthermore, approximately 20 Portable DMSs are deployed statewide. Twenty-three Highway Advisory Radio (HAR) stations (plus the TRIMARC HAR) are located statewide to supplement the DMSs, especially in rural areas.

It should be noted that the recommendations in this Version 2.4 Final Report are significantly different that what was presented in the Version 2.3 Intermediate Report dated December 2007, primarily as a result of high fuel prices and the deterioration of national economic conditions over the past year. Revenues to INDOT by way of gasoline and diesel fuel taxes declined as a result of fuel prices exceeding $4 per gallon in 2008 and the associated reduction in vehicle miles traveled. Although fuel prices have declined markedly, the national recession has continued the trend of fewer vehicle miles being traveled, thus the reduction in motor fuel taxes continues. INDOT has proactively adjusted its construction budget over the next biennium (fiscal years 2010 and 2011) and some projects have been delayed. This fact, coupled with uncertainty of future traditional fuel tax revenues, especially on the federal level with the federal Highway Trust Fund and the 2009 reauthorization of the federal transportation program, has had a ripple effect on many projects in future years. As such, most of the “rural” Traffic Management / ITS deployments that were recommended in the Version 2.3 Intermediate Report are not recommended at this time, especially Dynamic Message Sign deployments.

The **priorities for DMS deployment are based on providing en-route motorist information in areas where a full ATMS and CCTV / Vehicle Detection deployment is in place or currently under construction, essentially an extension of the priorities and recommendations in those two sections.** Therefore, priorities for DMS deployment are as follows:

1) Statewide DMS Replacements / Additional Indianapolis DMSs
2) Support the ATMS deployment areas and CCTV / Vehicle Detection areas

Recommended urban DMS spacing is in advance of major decision points (generally intersecting Interstates and freeways). **Recommended "rural" or suburban fringe DMS placement is in advance of a CCTV / Vehicle Detection deployment area, generally spaced every 15 - 20 miles, ideally placed in advance of a suitable INDOT System roadway for diversion purposes.** "Outbound" DMSs oriented to traffic leaving a metropolitan area and entering a CCTV / Vehicle deployment area are also recommended, as these support the instrumented area as well as downstream, non-instrumented locations.

A total of 47 new Permanent Overhead Dynamic Message Signs are recommended, as well as the replacement of 26 existing DMSs and the removal of 10 DMSs. Once the recommended DMS deployment is complete, **INDOT will operate 85 Permanent Overhead DMSs**, providing extensive coverage in and adjacent to the three ATMS deployment areas (Indianapolis, Northwest Indiana, and Southern Indiana near Louisville).

The recommended locations have not been field checked to verify availability of power or ideal sight lines. More detailed analysis will be required to determine optimum locations for the DMSs. Nevertheless, the recommended locations have been checked with aerial photography are generally near existing roads, bridges and cutoff roads, as power lines are generally located along public road Right-of-Way. All DMSs shall be placed on a box truss over the travel lanes. CCTV cameras should also be placed upstream of the proposed DMSs on Interstates (refer to Section 7.3 for details) to enable viewing of a DMS to verify message content and overall operation of the device for maintenance purposes.

The **estimated cost** for deployment is as follows:

$ 75,000 per each new DMS
$375,000 per each new DMS on a new box truss

In addition to the information below, maps may be found at the end of this chapter showing the DMS deployment recommendations statewide and in the Indianapolis, Northwest Indiana, and Southern Indiana areas, as well as individual route maps showing all recommended deployments on Interstates approaching Indianapolis and Northwest Indiana.

7.4.1. DMS PRIORITY 1 (DMS Replacements / Additional Indianapolis DMSs)

This Priority 1 project has been programmed in INDOT's Scheduling and Project Management System (SPMS) (Des # 0710096), currently with a Ready for Contracts (RFC) date of November 2008 (February 2009 letting) (Fiscal Year 2009):

21 replaced and 10 new DMSs as follows:

1. **Statewide Dynamic Message Sign (DMS) Replacements / Additional Indianapolis DMSs (Marion, Hamilton, Hendricks, Lake, Porter, Clark, Floyd, and Allen Counties)**
   INDOT's first deployments of Dynamic Message Signs (DMS) use a hybrid LED (light-emitting diode) and flipper system for text. Not only does this technology have limitations, it is difficult to acquire spare parts for these devices. As such, INDOT is **replacing** 18 of these **DMSs** (17 Vultron DMSs, one 3M DMS,) statewide with new DMSs with full LED technology, as well as three TRIMARC DMSs near the end of their functional life, **in Fiscal Year 2009** (Des # 0710096). It should be noted that six of these Vultron DMSs in the Indianapolis and Northwest Indiana areas located outside of forthcoming Added Travel Lanes projects that are currently mounted on an overhead balanced cantilever (butterfly) in the median will replaced and mounted on a new box truss to improve motorist readability and maintenance access. Furthermore, **10 additional new DMSs will be deployed on new box trusses in the Indianapolis area.** DMS Replacement / Additional DMS cost: **$6,200,000 (no 10% contingency applied in the DMS Priority 1 total below).**

   Indianapolis Area DMS Replacements
   NB I-65, Mile 104.7, south of I-465 (South Leg) (Marion County)
   Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.**

   SB I-69, Mile 4.3, south of 116th St (Hamilton County)
   Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.** The DMS should be **relocated slightly downstream near Mile 3.8 (106th Street)** to provide improved readability in this high volume corridor.

   EB & WB I-70, Mile 85.8 & 85.7, west of Emerson Ave (Marion County)
   Replace two existing Vultron DMSs **in Fiscal Year 2009.**

   Northwest Indiana DMS Replacements
   NB I-65, Mile 250.3, south of US 30 (Lake County)
   Replace existing Vultron DMS **in Fiscal Year 2009.**

   NB I-65, Mile 256.0, north of 61st Ave (Lake County)
   Replace existing Vultron DMS **in Fiscal Year 2009.**

SB I-65, Mile 260.7, north of I-80/94 (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

SB I-65, Mile 256.8, north of 61st Ave (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

EB I-80/94 (Borman Expwy), Mile 1.3, east of US 41 (Calumet Ave) (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

EB I-80/94 (Borman Expwy), Mile 7.4, east of Burr St (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

WB I-80/94 (Borman Expwy), Mile 13.6 west of US 6 / SR 51 (Ripley St) (Lake County)
Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.**

WB I-80/94 (Borman Expwy), Mile 7.0, east of Burr St (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

WB I-80/94 (Borman Expwy), Mile 3.9, east of Kennedy Ave (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

WB I-94, Mile 20.7, east of SR 249 (Porter County)
Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.**

WB US 30, Mile 13.0, east of I-65 (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

Fort Wayne DMS Replacements
NB I-69, Mile 94.2, south of south jct with I-469 (Allen County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

SB I-69, Mile 117.1, north of north jct with I-469 (Allen County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

Southern Indiana near Louisville DMS Replacements
EB I-64, Mile 120.4, west of I-265 (Floyd County)
Replace existing 3M DMS **in Fiscal Year 2009.**

SB I-65, Mile 8.0, north of SR 60 (Clark County)
Replace existing TRIMARC DMS **in Fiscal Year 2009.**

SB I-65, Mile 3.2, north of Eastern Blvd (Clark County)
Replace existing TRIMARC DMS **in Fiscal Year 2009.**

EB Brown's Station Way (Old SR 62), west of I-65 (Clark County)
Replace existing TRIMARC DMS **in Fiscal Year 2009.**

Indianapolis Area New DMSs

SB I-465 (West Leg), near Mile 22.0 (south of 79th St), north of 71st St (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 2, and 4 deployment areas and in advance of the Accelerate 465 work zone, as well as before the I-65 decision point.

NB I-465 (East Leg), near Mile 42.3, south of US 36 / SR 67 (Pendleton Pike) (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 3, 5, and TTID deployment areas, as well as before the I-69 decision point.

SB I-465 (East Leg), near Mile 46.3 (north of English Ave), north of US 52 (Marion County)

Install new DMS in on new box truss Fiscal Year 2009. The new DMS will provide traveler information for motorists in the Phase 4 deployment area, as well as before the I-74 and I-65 decision points.

NB I-65, near Mile 108.6 (Southern Ave), south of Raymond St (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 4, 2, 3, and 5 deployment areas, as well as before the two I-70 decision points (South and North Splits).

EB & WB I-465 (North Leg), near Mile 28.7 (east of Township Line Rd), west of US 31 (Marion County)

Install two new DMSs on two new box trusses in Fiscal Year 2009. The DMSs will provide traveler information for motorists in the Phase 5, 3, 2, and TTID deployment areas, as well as before the I-865 / I-65 North (WB) and the future US 31 Freeway (EB) decision points.

NB I-465 (West Leg), near Mile 22.3 (north of 79th St), south of 86th St (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 3, and TTID deployment areas, as well as before the I-865 decision point.

NB I-69, near Mile 3.7 (106th St), north of 96th St (Hamilton County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 3 and TTID deployment areas, as well as before the SR 37 decision point / diversion route.

SB I-65, near Mile 125.0, north of 71st St (Marion County)
Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 2, 4 and 3 deployment areas, as well as before the I-465 decision point. This DMS will supplement the SB I-65 DMS north of SR 334 (Mile 131.9), allowing that DMS to feature less information on the West and South Legs of I-465.

EB I-74, near Mile 67.0 (CR 600N / 56th St), east of SR 267 (Hendricks County)
Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 2, 4, and TTID deployment areas, as well as before the I-465 decision point. This DMS should be placed west of Ronald Reagan Parkway in Hendricks County, providing for a local diversion route in advance of I-465.

DMS Priority 1 total: **$6,200,000**

7.4.2. DMS PRIORITY 2 (Southern Indiana ATMS near Louisville)

This Priority 2 project has been programmed in INDOT's Scheduling and Project Management System (SPMS) as one project (Des # 0710424), currently with a Ready for Contracts (RFC) date of October 2011 (Fiscal Year 2012):

5 new DMSs as follows:

2. **NB I-65, near Mile 3.3, south of US 31 / Lewis & Clark Pkwy (Clark County)**
   Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment. The DMS is in advance of the US 31 / I-265 / SR 265 diversion routes. Estimated cost: **$375,000.**

3. **WB I-265, near Mile 1.9, (Green Valley Rd), east of State St (Floyd County)**
   Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment and the existing TRIMARC ATMS. The DMS is in advance of the State Street and I-64 diversion routes. Estimated cost: **$375,000.**

4. **EB I-265, near Mile 5.1, (Jacobs Creek), west of I-65 (Floyd County)**
   Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment and the existing TRIMARC ATMS. The DMS is in advance of the I-65 / SR 62 / old SR 62 diversion routes. Estimated cost: **$375,000.**

5. **WB SR 265 (future I-265), near Mile 7.5, (east of Lick Run Creek), east of I-65 (Clark County)**
   Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment and the existing TRIMARC ATMS. The DMS is in advance of the I-65 diversion route. Estimated cost: **$375,000.**

6. **WB I-64, near Mile 122.6, (Cherry St), south of I-265 (Floyd County)**
   Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment. The DMS is in advance of the I-265 diversion route. Estimated cost: **$375,000.**

DMS Priority 2 total: $1,875,000 + 10% contingency = **$2,050,000**

7.4.3. DMS PRIORITY 3

(I-69 from SR 13 at Lapel / Fortville to SR 9/109 at Anderson)
(I-65 from SR 44 at Franklin to I-465 (South Leg) at Indianapolis)
(I-65 from SR 267 at Zionsville to SR 47 at Lebanon)
(I-70 from Post Rd at Indianapolis to SR 9 at Greenfield)
(I-70 from SR 39 at Monrovia to SR 267 at Plainfield)
(SR 37 north of I-69 at Fishers)
(I-70 C/D west of I-465 (West Leg) at Indianapolis)

As part of the Transportation Technology Innovation & Demonstration Program (TTID), Traffic.com will deploy, operate, and maintain 60 vehicle detection sites in and directly adjacent to the Indianapolis ATMS deployment area with this public/private partnership, at no cost to INDOT. Fifty-seven vehicle detection sites were deployed in 2007; the remaining three will be deployed in 2010. Section 7.3.1 describes the CCTV camera deployment that supplements the vehicle detection on Interstates within the TTID deployment area. Section 7.3.2 describes the CCTV camera and vehicle detection sites that fill in the short coverage gap between the Dynamic Message Signs recommended below and the TTID vehicle detection / CCTV camera areas and the new full ATMS included in the I-65 Added Travel Lanes project from I-865 to US 52 in 2010 - 2012 (described in Section 7.2.4).

Additionally, a DMS for motorists in the eastbound I-70 Collector / Distributor (C/D) approaching I-465 (West Leg) is also recommended in this section, as this DMS is geographically located with the other 12 recommended in this section and should be let at the same time.

13 new DMSs as follows:

7. **SB I-69, near Mile 16.9 (CR 650W), north of SR 13 (Madison County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the SR 13 and other local diversion routes. Estimated cost: **$375,000.**

8. **SB I-69, near Mile 28.3 (CR 300E), north of SR 9/109 (Madison County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the SR 109 and SR 9/67 diversion routes. Estimated cost: **$375,000.**

9. **NB I-69, near Mile 12.4 (Cyntheanne Rd), south of SR 13 (Hamilton County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area. The DMS is in advance of the SR 13 diversion route. Estimated cost: **$375,000.**

10. **NB I-65, near Mile 86.4 (CR 250S), south of SR 44 (Johnson County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 4 and TTID deployment areas. The DMS is in advance of the SR 44 / US 31 diversion routes. Estimated cost: **$375,000.**

11. **SB I-65, near Mile 104.4 (Edgewood Ave), south of I-465 (South Leg) (Marion County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 4 and TTID deployment areas. The DMS is in advance of several local roads / US 31 diversion routes. Estimated cost: **$375,000.**

12. **NB I-65, near Mile 131.9, south of SR 267 (Boone County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the deployment of the new full ATMS included in the I-65 Added Travel Lanes projects from I-865 to US 52 in Fiscal Years 2010 - 2012 (described in Section 7.2.4). The DMS is in advance of several roadways in the Lebanon area and the US 52 diversion route. Estimated cost: **$375,000.**

13. **SB I-65, near Mile 148.8 (north of CR 850N), north of SR 47 (Boone County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the deployment of the new full ATMS included in the I-65 Added Travel Lanes projects from I-865 to US 52 in Fiscal Years 2010 - 2012 (described in Section 7.2.4), as well as the Fiscal Year 2010 Indianapolis ATMS Phase 5 deployment area. The DMS is in advance of the SR 47 / US 52 diversion routes. Estimated cost: **$375,000.**

14. **EB I-70, near Mile 92.1, east of Post Rd (Marion County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the Mt. Comfort Rd / SR 9 / US 40 diversion routes. This project will need to be coordinated with the I-70 Added Travel Lanes project from 0.6 mile east of Post Road to 0.5 mile east of Mt. Comfort Road (Des # 0200699) in Fiscal Year 2013. Estimated cost: **$375,000.**

15. **WB I-70, near Mile 106.1 (east of CR 400E), east of SR 9 (Hancock County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the SR 9 / US 40 diversion routes. Estimated cost: **$375,000.**

16. **EB I-70, near Mile 55.2 (east of former CR 675W), west of SR 39 (Morgan County)**
Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area, as well as the existing Indianapolis ATMS deployment area. The DMS is in advance of the SR 39 / US 40 diversion routes. Estimated cost: **$375,000.**

17. **WB I-70, near Mile 67.3, east of SR 267 (Hendricks County)**
Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area, as well as the existing Indianapolis ATMS deployment area. The DMS is in advance of the SR 267 / US 40 diversion routes. Estimated cost: **$375,000.**

18. **SB SR 37, north of I-69 between 131st St and 141st St (Hamilton County)**
Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area, as well as the existing Indianapolis ATMS deployment area. The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 3 deployment area, as well as before the I-69 decision point. Allisonville Road and other local roadways via 131st, 126th, and 116th Streets are available as diversion routes off of I-69. Estimated cost: **$375,000.**

19. **EB I-70 C/D, near Mile 70.6 (east of Indianapolis International Airport interchange), west of I-465 (West Leg) (Marion County)**
Install new DMS on new box truss in Fiscal Year 2013. The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 2 and 4 deployment areas. The DMS is before the I-465 decision point for motorists on the eastbound I-70 Collector / Distributor (C/D). Please note that once the I-70 / I-465 interchange is modified as part of the Accelerate 465 project (Des # 9910300), motorists on the eastbound I-70 mainline will not be able to divert from I-70 to I-465 (they currently can divert to northbound I-465), thus the placement over the eastbound C/D. All traffic destined for northbound and southbound I-465 will be in the C/D; they will have the opportunity to divert to eastbound I-70 via the downstream slip ramp at Mile 71.6. This DMS is in lieu of a DMS on Indianapolis International Airport property oriented for motorists leaving the airport. Estimated cost: **$375,000.**

DMS Priority 3 total: $4,875,000 + 10% contingency = **$5,375,000**

7.4.4. DMS PRIORITY 4
(I-65 from SR 2 at Lowell to US 30 at Merrillville)
(I-94 from US 20 at Porter to Michigan State Line at Michigan City)
(SR 912 north of I-80/94 at Gary / East Chicago)
(SR 912 south of I-80/94 at Griffith / Highland)
(US 30 west of I-65 at Merrillville)

Section 7.3.3 describes the CCTV camera coverage and vehicle detection contiguous to the proposed Northwest Indiana ATMS Expansion described in Section 7.2.3. The DMS recommendations below provide motorist information for these two areas, as well as the existing Northwest Indiana ATMS area.

9 new DMSs as follows:

20. **NB I-65, near Mile 236.0 (½ mile north of 217th Ave), south of SR 2 (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the SR 2 diversion route. Estimated cost: **$375,000.**

21. **SB I-65, near Mile 250.3 (101st Ave), north of US 231 (Exit 247) and future 109th Ave (future Exit 249) (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the US 231 diversion route. Estimated cost: **$375,000.**

22. **EB I-94, near Mile 20.9 (east of former Salt Creek Rd), west of US 20 (Porter County)**
    Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the US 20 and SR 49 diversion routes. Estimated cost: **$375,000.**

23. **WB I-94, near Mile 28.1 (Brummitt Rd (CR 300E)), east of SR 49 (Porter County)**
Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the SR 49 and US 20 diversion routes. Estimated cost: **$375,000.**

24. **WB I-94, near Mile 44.4 (½ mile west of CR 1000N), east of US 20/35 (LaPorte County)**
Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the US 20 and US 421 diversion routes. Estimated cost: **$375,000.**

25. **EB I-94, near Mile 31.8 (east of the former crossing of Porter CR 600E), west of US 421 (Porter County)**
Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015. The DMS is in advance of the US 421 and US 20 diversion routes. Estimated cost: **$375,000.**

26. **SB SR 912 (Cline Ave), near Mile 5.9 (US 12 (Columbus Dr / Industrial Hwy), north of I-80/94 (Borman Expwy) and I-90 (Indiana Toll Road) (Lake County)**
Install new DMS on new box truss in Fiscal Year 2015. The DMS meets the criteria of an INDOT facility (in this case, a freeway) with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the existing Northwest Indiana ATMS and the Fiscal Year 2014 SR 912 ATMS deployment areas. The DMS is in advance of the I-90 (Indiana Toll Road) and I-80/94 (Borman Expressway) decision points, as well as other local east-west diversion routes. Estimated cost: **$375,000.**

27. **NB SR 912 (Cline Ave), near Mile 11.3, (north of Highway Ave / 35th Ave), south of I-80/94 (Borman Expwy) (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015. The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the existing Northwest Indiana ATMS and the Fiscal Year 2014 SR 912 ATMS deployment areas. The DMS is in advance of the I-80/94 (Borman Expressway) decision point, as well as other local east-west diversion routes. Estimated cost: **$375,000.**

28. **EB US 30, near Mile 9.3 (0.7 mile east of SR 55), west of I-65, (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015. The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the existing Northwest Indiana ATMS deployment area, as well as the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2014 and the Fiscal Year 2015 contiguous CCTV cameras and vehicle detection deployment areas. This DMS is in advance of the I-65 decision point and SR 53 diversion route. Estimated cost: **$375,000.**

DMS Priority 4 total: $3,375,000 + 10% contingency = **$3,700,000**

7.4.5. DMS Additions with Major Capital Improvements

Major Capital Improvements (i.e. New Road Construction, Added Travel Lanes, Pavement Replacement projects) provide a unique, "once in a lifetime" opportunity to incorporate Traffic Management / ITS devices during the construction. Some of the Dynamic Message Signs listed below are key elements of a comprehensive Advanced Traffic Management System (ATMS) and best deployed during the construction project with all of the other elements of the ATMS; other DMSs are ideally deployed as part of the construction project on select arterials that meet the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). Projects are listed chronologically *and in italics* to help differentiate them from projects that are standalone Traffic Management / ITS device deployments.

5 replaced and 10 new DMSs as follows:

29. ***EB I-80/94 (Borman Expwy), near Mile 12.7 (Central Ave) (Lake County)***
Install new DMS on new box truss in 2009 *during the I-80/94 Added Travel Lanes project from 0.2 mile east of Georgia Street to 0.3 mile east of Clay Street (Des # 0500593). The DMS will provide traveler information for motorists in the current Northwest Indiana ATMS deployment area and entering the expanded ATMS deployment area on I-94 from I-90 (Indiana Toll Road) to SR 49. The DMS is in advance of the I-90 (Indiana Toll Road) decision point.* ***The Added Travel Lanes project was let in November 2008.***

30. ***NB & SB I-465 (West Leg), near Mile 14.8 (south of 21st St), south of I-74 / US 136 (Marion County)***
Install two new DMSs on new box trusses in 2010 *during the Added Travel Lanes project from north of US 36 / Rockville Road to north of 21st Street (Des # 0800659), part of the numerous I-465 West Leg Added Travel Lanes / Interchange Modification projects (Accelerate 465). This DMS is included in the ATMS project (Des # 0600637). These DMSs provide traveler information for motorists in the Phase 2, 5, and 4 deployment areas. The NB DMS is before the I-74 and I-65 decision points; the SB DMS is before the I-70 decision point.* ***The Added Travel Lanes project was let in November 2008.***

31. ***EB & WB I-465, (North Leg) Mile 32.2, west of Keystone Ave (Marion County)***
Replace two *existing Vultron DMSs* ***and install on new box trusses <u>east</u> of Keystone Avenue <u>near Mile 34.3</u> in Fiscal Year 2010*** *during the I-465 Added Travel Lanes project from Carmel Creek to White River (Des # 0800421). These DMSs should be relocated east of Keystone Avenue to provide for a diversion route (Keystone Avenue) in advance of the proposed US 31 freeway north of I-465 (which is recommended for full ATMS deployment) (WB), and closer to the I-69 decision point (EB). Estimated cost:* ***$750,000.***

32. ***SB I-65*, Mile 131.9, north of SR 334 (Boone County)**
Replace** existing Vultron DMS **and install on new box truss in Fiscal Year 2010** during the I-65 Added Travel Lanes project from I-865 to 0.5 mile north of SR 267 (Des # 0200903). Estimated cost: **$375,000.

33. ***SB I-465* (East Leg), Mile 38.2, south of I-69 (Marion County)**
Replace** existing Vultron DMS **and install on new box truss in Fiscal Year 2011** during the I-465 Added Travel Lanes project from 75th St to the south end of the bridge over Fall Creek) (Des # 0800422). Estimated cost: **$375,000.

34. ***EB US 36*, west of I-465 (West Leg) between Girls School Rd and High School Rd (Marion County)**
Install new DMS on new box truss in Fiscal Year 2012** during the US 36 Added Travel Lanes project (Des # 0600246). The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 2, 4, and 5 deployment areas, as well as before the I-465 decision point. Rockville Road and other local roadways are available as diversion routes off of I-465. Estimated cost: **$375,000.

35. ***WB I-70*, Mile 92.1, east of Post Rd (Marion County)**
Replace** existing Vultron DMS **and install on new box truss in Fiscal Year 2013** during the I-70 Added Travel Lanes project from 0.6 mile east of Post Road to 0.5 mile east of Mt. Comfort Road (Des # 0200699). Estimated cost: **$375,000.

36. ***NB US 31*, south of I-465 (South Leg) between Banta Rd and Edgewood Ave (Marion County)**
Install new DMS on new box truss in Fiscal Year 2014** during the US 31 Pavement Replacement project (Des # 0100721). The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 4, 2, and 3 deployment areas, as well as before the I-465 decision point. East Street and other local roadways are available as diversion routes off of I-465. Estimated cost: **$375,000.

37. ***SB US 31*(Freeway), north of I-465 (North Leg), between 106th St and 116th St (Hamilton County)**
Install new DMS on new box truss in Fiscal Year 2014 *during the Added Travel Lanes (Freeway Upgrade) project on US 31 in the immediate area (Des # 0600432). The DMS will provide traveler information for motorists in the US 31 ATMS deployment area and the Indianapolis ATMS Phase 5 and 3 deployment areas, as well as before the I-465 decision point. This DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). Estimated cost:* ***$375,000.***

38. ***SB US 31*(Freeway), north of I-465 (North Leg), between 161st St and SR 32 (Hamilton County)**
Install new DMS on new box truss in Fiscal Year 2016 *during the Added Travel Lanes (Freeway Upgrade) project on US 31 in the immediate area (Des # 0600440). The DMS will provide traveler information for motorists in the US 31 ATMS deployment area and the Indianapolis ATMS Phase 5 and 3 deployment areas, as well as before the Keystone Ave decision point / diversion route and the I-465 decision point. Estimated cost:* ***$375,000.***

39. ***NB I-69, south of I-465 (South Leg), between County Line Rd and Southport Rd (Marion County)***
Install new DMS on new box truss in Fiscal Year 2020 *during the New Road Construction (Freeway Upgrade) project (Des # 0500432) on I-69. The DMS will provide traveler information for motorists in the I-69 ATMS deployment area and Indianapolis ATMS Phase 4 and 2 deployment areas, as well as before the I-465 decision point. Estimated cost:* ***$375,000.***

40. ***SB I-69, south of I-465 (South Leg), between I-465 and Southport Rd (Marion County)***
Install new DMS on new box truss in Fiscal Year 2020 *during the New Road Construction (Freeway Upgrade) project (Des # 0500432) on I-69. The DMS will provide traveler information for motorists in the I-69 ATMS deployment area, as well as before the Southport Road diversion route (only bridge over the White River between SR 144 and I-465). Estimated cost:* ***$375,000.***

41. ***NB I-69 approaching SR 144 at Waverly (Morgan County)***
Install new DMS on new box truss in Fiscal Year 2020 *during the New Road Construction (Freeway Upgrade) projects (Des #s 0500431 and 0500432) on I-69. The DMS will provide traveler information for motorists in the I-69 ATMS deployment area, as well as before the SR 144 and Johnson CR 144 diversion routes. Estimated cost:* ***$375,000.***

DMS Additions with Road Projects total: *$4,500,000 + 10% contingency =* ***$4,950,000***

7.4.6. EVANSVILLE DMSs

As stated in Chapter 2, the focus of INDOT's Traffic Management / ITS investment will be on the Interstate System and other freeways due to the significant proportion and composition of traffic on the System coupled with the limited ability to divert in case of incidents on an Interstate or any other freeway. The majority of the facilities in the Evansville area within the Areas of Influence of the eight existing Dynamic Message Signs are not full access control highways (freeways). As such, an incident on these roads can be avoided by diverting at any at-grade intersection. Furthermore, incident notification in the Evansville area relies on human, generally non-INDOT personnel, interaction with the INDOT Indianapolis Traffic Management Center (TMC); notification can be sporadic.

While the 3.8 mile, full access control portion of the SR 62/66 Lloyd Expressway in Evansville currently operates at LOS C, it is not an integral part of the *interstate* nature of travel that takes place on the Interstate System, nor is it connected to any other large-scale proposed CCTV camera / vehicle detection deployments. No other segments of freeway in the Evansville area are currently operating at LOS C or worse. Therefore, **CCTV camera / vehicle detection deployment is not recommended for the Evansville area at this time, which also precludes the installation of any additional DMSs in the Evansville area.** Furthermore, **the existing Dynamic Message Signs should be removed once they have reached the end of their functional life and should not be replaced.**

7.4.7. KOKOMO DMSs

As stated in Chapter 2 and the previous section, the focus of INDOT's Traffic Management / ITS investment will be on the Interstate System and other freeways due to the significant proportion and composition of traffic on the System coupled with the limited ability to divert in case of incidents on an Interstate or any other freeway. US 31 in Kokomo is not a full access control freeway, but is does currently feature two DMSs oriented towards traffic entering Kokomo. As such, an incident on US 31 can be avoided by diverting at any at-grade intersection. Furthermore, incident notification in the Kokomo area relies on human, generally non-INDOT personnel, interaction with the INDOT Indianapolis Traffic Management Center (TMC); notification can be sporadic.

A unique state-local partnership exists on US 31 in the Kokomo area. Emergency vehicle signal preemption / priority system exists on US 31 from SR 26 to the north junction with US 35, with local government agencies responsible for the maintenance of this system, as well as the purchase of the in-vehicle transponders for their emergency vehicles. In addition, four Closed Circuit Television (CCTV) cameras have been installed on US 31 at Alto Road, Boulevard Street, US 35 / SR 22 (Markland Avenue), and North Street. The CCTV camera images are monitored by local law enforcement dispatchers. Incidents are reported to the INDOT Indianapolis TMC for activation of the Automated Traveler Information System (ATIS) which results in messages being posted on the US 31 Dynamic Message Sign(s) and Highway Advisory Radio (HAR) in the Kokomo area so motorists can seek alternate routes.

The two Kokomo DMSs have some functional life remaining and **should remain in service at this time**. Their functionality is enhanced by the aforementioned project. Ultimately, the proposed relocation of US 31 as a freeway will result in the "state traffic" or long-distance, through trips moving to the relocated US 31, which is projected to operate at LOS A and B in 2030 and as such, does not warrant a deployment of CCTV cameras / vehicle detection. **When US 31 is relocated, the DMSs** will no longer be of great value to INDOT and **should be removed**, as the existing US 31 should be relinquished to local jurisdictions and the NB DMS will actually be located north of the relocated US 31 on what should be a local roadway; the SB DMS is located directly adjacent to the beginning of the US 31 relocation project.

DMS Estimated Cost (ITS Standalone Projects) = $17,325,000
DMS Estimated Cost (ITS with Road Projects) = $ 4,950,000

Total DMS ESTIMATED COST (26 Replaced / 47 New) = $22,275,000

7.5. TRAVEL TIME SIGNS (TTS)

Upon the completion of the Advanced Traffic Management Systems (ATMS) in Northwest Indiana (currently being upgraded) and in Indianapolis, algorithms can be developed using the vehicle detection to automatically estimate travel times to specific locations, such as major downstream interchanges or a State Line, and provide this information to the public by way of Dynamic Message Signs (DMS).

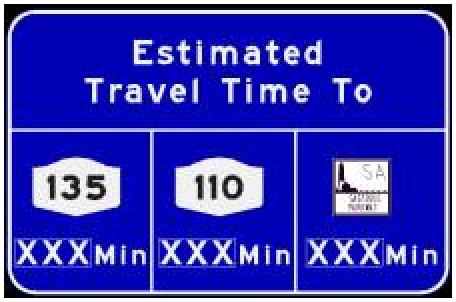
Nationally, most jurisdictions have used standard DMSs to convey travel time information; INDOT provided travel time information on I-80/94 and I-65 in Northwest Indiana in this fashion until the limitations with the communications system rendered unreliable travel times (the communications system is currently being upgraded). New York State has proposed using a static panel sign that has a small electronic, dynamic insert component for travel times along the Northern State Parkway on Long Island, and implemented such signage on the Staten Island Expressway (I-278) in July 2007. In Indiana, the Travel Time Signs will complement the deployment of DMSs and will be especially valuable during incidents, as information regarding the incident will be displayed on the DMSs.

The Travel Time Signs will provide the motorist with static shield or text referring to a downstream interchange or specific location, **accompanied by static distance to that interchange or specific location** to assist unfamiliar, non-commuter motorists, and a dynamic insert that changes according to the automated travel time data.

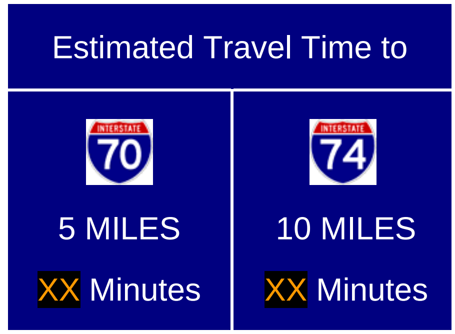
An example from New York State is presented below on the left. Please note that this sign does not feature the **distance to the interchange**; this **should be added as shown on the proposed Indiana Travel Time sign below on the right to assist the unfamiliar motorist.** Commuters or familiar motorists will know from previous experience the normal, free-flow time to reach a specific destination; an unfamiliar motorist can use the distance information and simple math; for example, a destination five miles away should be reached in approximately five or six minutes under free-flow conditions. Furthermore, the sign used in Indiana should **have a maximum of <u>two</u> destinations** to compensate for the extra mileage information provided to motorists.

The third example is a preliminary, black and white version of what will be the first Travel Time Sign deployed in Indiana, specifically on westbound I-80/94 (Borman Expressway near Mile 8.1 (Chase St). Please note that the sign will have a blue background and white legend and border, along with a variable electronic number in the "MINUTES" box.

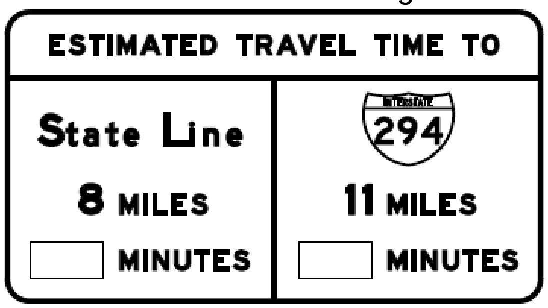
New York State Example



Proposed Indiana Example



Preliminary, black and white version of forthcoming TTS on WB I-80/94 at Mile 8.1



Just as with all ITS information presented to the public, accuracy of the travel time information is absolutely essential to maintain credibility. Deployment of these Travel Time Signs should not take place until the algorithms developed to estimate the travel times are accurate and reliable.

The priorities for Travel Time Signs are based on the following criteria:

1) Sign is within or immediately upstream from the deployment area of an **existing Full ATMS with vehicle detection generally every ½ mile**
2) ATMS vehicle detection produces accurate and reliable travel time algorithms (presumed to be devices that are in service and well calibrated)
3) Current (2005) Interstate or Freeway Level of Service (LOS)

A total of 41 new Travel Time Signs are recommended. The Travel Time Signs may be placed on an overhead balanced cantilever (“butterfly”) on the median barrier wall (similar to Interchange Sequence Signs). The recommended locations have been checked with aerial photography and street-view mapping services but have not been field checked to verify nearby signage, power, or ideal sight lines. More detailed analysis will be required to determine optimum locations for the TTSs.

The **estimated cost** for deployment is:

$100,000 each on a new overhead balanced cantilever (“butterfly”)

In addition to the information below, maps may be found at the end of this chapter showing the TTS deployment recommendations statewide and in the Indianapolis and Northwest Indiana areas

7.5.1. TRAVEL TIME SIGN (TTS) PRIORITY 1 (Northwest Indiana ATMS)

1 new TTS as follows:

1. **WB I-80/94 (Borman Expwy), near Mile 8.1 (Chase St) (Lake County)**
   Install TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: State Line 8 miles, I-294 11 miles. Sign will require data from Illinois sensors on WB I-80/94 (Kingery Expwy) in Illinois. **Included in Northwest Indiana ATMS Communications System Upgrade in Section 7.2.1 (let).**

TTS Priority 1 total: $0 (costs included in Northwest Indiana ATMS Communications System Upgrade)

7.5.2. TRAVEL TIME SIGN (TTS) PRIORITY 2 (Indianapolis ATMS - Phases 2, 3 & 4 and I-70 East (Super 70) Pavement Replacement)

This Priority 2 project has been programmed in INDOT's Scheduling and Project Management System (SPMS) as one project (Des # 0710303), currently with a Ready for Contracts (RFC) date of October 2009 (Fiscal Year 2010):

18 new TTSs as follows:

2. **SB I-69, near Mile 6.0 (Cumberland Rd) (Hamilton County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) in the median. Downstream destination: I-465 6 miles. Estimated cost: **$100,000.**

3. **NB I-69, near Mile 1.0 (just north of 82nd St) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 37 4 miles, SR 238 9 miles. Estimated cost: **$100,000.**

4. **SB I-465 (East Leg), near Mile 38.5 (north of Fall Creek Rd) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 and 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 5 miles, I-74 10 miles. Estimated cost: **$100,000.**

5. **SB I-465 (East Leg), near Mile 45.0 (10th St) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 and 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 4 miles, I-65 8 miles. Estimated cost: **$100,000.**

6. **NB I-465 (East Leg), near Mile 47.4 (US 52 / Brookville Rd) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phases 3 and 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 3 miles, I-69 10 miles. Estimated cost: **$100,000.**

7. **WB I-465 (South Leg), near Mile 50.2 (CSX RR) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 3 miles, SR 37 7 miles (in anticipation of future I-69). Estimated cost: **$100,000.**

8. **EB I-465 (South Leg), near Mile 52.6 (west of 9th Ave) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 4 miles, I-70 9 miles. Estimated cost: **$100,000.**

9. **WB I-465 (South Leg), near Mile 0.7 (Keystone Ave) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. Note that the westernmost detection station is at Mile 8.2; a slight gap will exist between this location and I-70 (Mile 9.4). TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 37 4 miles (in anticipation of future I-69), I-70 9 miles. Estimated cost: **$100,000.**

10. **EB I-465 (South Leg), near Mile 3.2 (east of Bluff Rd) (Marion County)**
    Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 3 miles, I-74 8 miles. Estimated cost: **$100,000.**

11. **EB I-465 (South Leg), near Mile 7.4 (Mann Rd) (Marion County)**
    Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 7 miles, I-74 12 miles. Estimated cost: **$100,000.**

12. **NB I-65, near Mile 100.0 (south of County Line Rd) (Johnson County)**
    Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) in the median. Downstream destinations: I-465 6 miles, I-70 10 miles. Estimated cost: **$100,000.**

13. **SB I-65, near Mile 105.4 (Thompson Rd) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: Greenwood Exit 6 miles. Sign should be designed for a second downstream destination, SR 44 16 miles; this text can be added if the TTID detection deployment provides reliable data. Estimated cost: **$100,000.**

14. **SB I-65, near Mile 109.9 (south of the I-70 South Split) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-465 4 miles, Greenwood Exit 10 miles. Estimated cost: **$100,000.**

15. **SB I-65, near Mile 116.6 (Pedestrian Overpass) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall (although this area does not have a full-width inside shoulder). Downstream destinations: I-70 4 miles, I-465 10 miles. Estimated cost: **$100,000.**

16. **WB I-70, near Mile 88.2 (CSX RR) (Marion County)**
Install TTS in Fiscal Year 2010 after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 5 miles, I-465 15 miles. Estimated cost: **$100,000.**

17. **EB I-70, near Mile 83.6 (Commerce Ave) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 3 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: I-465 6 miles. Sign should be designed for a second downstream destination, SR 9 20 miles; this text can be added if the TTID detection deployment provides reliable data. If not, this text can be added after the completion of the two Added Travel Lanes projects on I-70 from 0.6 mile east of Post Road to 0.8 mile east of SR 9 in 2013 and 2014 (Des #s 0200699 and 0200700) and the subsequent deployment and calibration of the ½ mile-spaced vehicle detection. Estimated cost: **$100,000.**

18. **WB I-70, near Mile 78.9 (west of the White River bridge) (Marion County)**
    Install TTS in Fiscal Year 2010 after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall (although this area does not have a full-width inside shoulder). Downstream destination: I-465 6 miles, SR 267 12 miles. Estimated cost: **$100,000.**

19. **EB I-70, near Mile 73.6 (west of Lynhurst Dr) (Marion County)**
    Install TTS in Fiscal Year 2010 after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall and will likely need coordination with the Fiscal Year 2010 I-70 / I-465 Interchange Modification (Des # 9910300). Downstream destinations: I-65 7 miles, I-465 16 miles. Estimated cost: **$100,000.**

TTS Priority 2 total: $1,800,000 + 10% contingency = **$2,000,000**

7.5.3. TRAVEL TIME SIGN (TTS) PRIORITY 3 (Northwest Indiana ATMS)

5 new TTSs as follows:

20. **EB I-80/94 (Borman Expwy), near Mile 0.4 (west of US 41 / Calumet Ave) (Lake County)**
    Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 912 5 miles, I-65 11 miles. Estimated cost: **$100,000.**

21. **EB I-80/94 (Borman Expwy), near Mile 5.9 (Colfax Ave) (Lake County)**
    Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 5 miles, I-90 10 miles. Estimated cost: **$100,000.**

22. **WB I-80/94 (Borman Expwy), near Mile 13.1 (Clay St) (Lake County)**
    Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 912 8 miles, State Line 13 miles. Estimated cost: **$100,000.**

23. **WB I-94, near Mile 17.0 (east of US 20 / CSX RR) (Porter County)**
    Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: State Line via I-80/94 17 miles. Estimated cost: **$100,000.**

24. **NB I-65, near Mile 257.3 (north of 49th Ave) (Lake County)**
    Install TTS in Fiscal Year 2012 after the completion of the I-80/94 Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: State Line via I-80/94 WEST 14 miles. Estimated cost: **$100,000.**

TTS Priority 3 total: $500,000 + 10% contingency = **$550,000**

7.5.4. TRAVEL TIME SIGN (TTS) PRIORITY 4 (Indianapolis ATMS - Phase 5)

7 new TTSs as follows:

25. **NB I-65, near Mile 107.2 (Keystone Ave) (Marion County)**
    Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 3 miles, I-465 16 miles. Estimated cost: **$100,000.**

26. **NB I-465 (West Leg), near Mile 16.6 (34th St) (Marion County)**
    Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 3 miles, I-865 8 miles. Estimated cost: **$100,000.**

27. **NB I-465 (West Leg), near Mile 20.2 (north of Lafayette Rd) (Marion County)**
    Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-865 4 miles, US 31 10 miles. Estimated cost: **$100,000.**

28. **EB I-465 (North Leg), near Mile 25.5 (west of 96th St) (Boone County)**
    Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. The second downstream destination (I-69) may not initially be displayed on the TTS if the Added Travel Lanes projects on I-465 east of US 31 to west of I-69 have not progressed enough to feature reliable vehicle detection. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: US 31 5 miles, I-69 11 miles. Estimated cost: **$100,000.**

29. **WB I-465 (North Leg), near Mile 30.0 (west of Spring Mill Rd) (Hamilton County)**
    Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-865 5 miles, I-65 SOUTH 10 miles. Estimated cost: **$100,000.**

30. **NB I-65, near Mile 114.6 (north of Fall Creek Pkwy) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall (although this area does not have a full-width inside shoulder). Downstream destinations: 38th St 3 miles, I-465 8 miles. Estimated cost: **$100,000.**

31. **SB I-65, near Mile 122.4 (north of 56th St) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 10 miles, I-465 16 miles. Estimated cost: **$100,000.**

TTS Priority 4 total: $700,000 + 10% contingency = **$775,000**

7.5.5. TRAVEL TIME SIGN (TTS) PRIORITY 5 (I-465 West Leg (Accelerate 465) and I-465 Northeast)

8 new TTSs as follows:

32. **WB I-465 (South Leg), near Mile 6.2 (White River) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 3 miles, I-74 10 miles. Estimated cost: **$100,000.**

33. **NB I-465 (West Leg), near Mile 11.4 (south of US 40 / Washington St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 4 miles, I-65 8 miles. Estimated cost: **$100,000.**

34. **SB I-465 (West Leg), near Mile 12.3 (north of US 40 / Washington St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 37 8 miles (in anticipation of future I-69), I-65 12 miles. Estimated cost: **$100,000.**

35. **SB I-465 (West Leg), near Mile 18.2 (46th St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 9 miles SR 37 14 miles (in anticipation of future I-69). Estimated cost: **$100,000.**

36. **SB I-465 (West Leg), near Mile 23.2 (86th St) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 7 miles, I-70 14 miles. Estimated cost: **$100,000.**

37. **WB I-465 (North Leg), near Mile 35.4 (Allisonville Rd) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the multiple I-465 Added Travel Lanes projects from east of US 31 to the Fall Creek bridge and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: US 31 5 miles, I-865 11 miles. Estimated cost: **$100,000.**

38. **NB I-465 (East Leg), near Mile 40.8 (46th St) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the multiple I-465 Added Travel Lanes projects from east of US 31 to the Fall Creek bridge and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-69 4 miles, US 31 10 miles. Estimated cost: **$100,000.**

39. **EB I-465 (North Leg), near Mile 32.4 (Westfield Blvd) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the multiple I-465 Added Travel Lanes projects from east of US 31 to the Fall Creek bridge and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-69 4 miles, I-70 11 miles. Estimated cost: **$100,000.**

TTS Priority 5 total: $800,000 + 10% contingency = **$900,000**

7.5.6. TRAVEL TIME SIGN (TTS) Additions with Major Capital Improvements

Major Capital Improvements (i.e. New Road Construction, Added Travel Lanes, Pavement Replacement projects) provide a unique, "once in a lifetime" opportunity to incorporate Traffic Management / ITS devices during the construction. The Travel Time Signs listed below are key elements of a comprehensive Advanced Traffic Management System (ATMS) and best deployed during the construction project with all of the other elements of the ATMS. Projects are listed chronologically a*nd in italics* to help differentiate them from projects that are standalone Traffic Management / ITS device deployments.

Two new TTSs as follows:

40. ***SB US 31 (Freeway), near Mile 135.0 (south of SR 38) (Hamilton County)***
Install TTS in Fiscal Year 2018 *near the conclusion of the final US 31 Added Travel Lanes (Freeway Upgrade) project (Des # 0600441) and after developing / calibrating the algorithms needed to support the TTS in 2018. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: Keystone Ave 6 miles, I-465 12 miles. Estimated cost:* ***$100,000.***

41. ***NB I-69, south of Smith Valley Rd (Johnson County)***
Install TTS in Fiscal Year 2020 *near the conclusion of the I-69 New Road Construction (Freeway Upgrade) project (Des # 0500432) from north of SR 144 to I-465 (South Leg) and after developing / calibrating the algorithms needed to support the TTS in 2020. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: County Line Rd 4 miles, I-465 8 miles. Estimated cost:* ***$100,000.***

TTS Additions with Road Projects total : *$200,000+ 10% contingency =* ***$225,000***

TTS Estimated Cost (ITS Standalone Projects)	= $ 4,225,000
TTS Estimated Cost (ITS with Road Projects)	*= $ 225,000*
Total TTS ESTIMATED COST (41 New) =	**$4,450,000**

7.6. HOOSIER HELPER FREEWAY SERVICE PATROL (FSP)

The Hoosier Helper Freeway Service Patrol (FSP) serves 157 miles of Indiana's busiest freeways, helping stranded motorists, removing debris from the road, or summoning help quickly in case of a crash, vehicle fire, or other emergency. They can change a tire, supply enough fuel to get a motorist to a service station, perhaps fix a minor mechanical problem, and summon help for the problems they can't solve. The Hoosier Helpers do more than provide an extra measure of security and safety for motorists. They also keep traffic moving, and that makes them a key element in an Advanced Traffic Management Systems (ATMS) deployment.

INDOT operates three Hoosier Helper programs statewide:

The first program began in Northwest Indiana on I-80/94 (the Borman Expressway) in August 1991 as a daytime program that expanded to 24 hour / 7 days a week service in May 1996. However, effective September 2008, no service is provided Saturday and Sunday nights from 10 p.m. to 6 a.m. The 34 mile patrol area in Northwest Indiana includes I-65 from US 231 to US 12/20 (just north of the interchange with I-90 (Indiana Toll Road), I-80/94 (the Borman Expressway) from the Illinois State Line to I-90, and I-94 from I-90 to SR 249. The coverage on the Borman Expressway actually extends 1.5 miles into Illinois on I-80/94 (the Kingery Expressway) to Illinois Route 83 (Torrence Avenue), a logical and safe turnaround that assures complete coverage in Indiana on I-80/94. These 1.5 miles are not included in the 34 mile figure above.

The second Hoosier Helper deployment began in August 1997 in the Indianapolis area and operates during peak travel periods, specifically weekdays from 6:30 a.m. to 8:30 p.m. and special events. Service is provided on 95 miles of Indianapolis area freeways: I-65 from Southport Road to 71st Street, I-69 from I-465 to 96th Street, I-70 from the West Leg of I-465 to Post Road, and all of I-465.

The third Hoosier Helper deployment began serving the Indiana portion of metropolitan Louisville (the Falls City area in Southern Indiana) in May 1999 and operates during peak travel periods, specifically weekdays from 5:30 a.m. to 7:30 p.m. and special events. Service is provided on 28 miles of freeway in this area: I-64 from SR 62/64 to the Sherman Minton Bridge over the Ohio River (Kentucky State Line), I-65 from the Kennedy Bridge over the Ohio River to Memphis Road (Exit 16), and I-265 from I-64 to I-65. Hoosier Helpers do cross the Ohio River into Kentucky to turn around to assure complete coverage in Indiana on I-64 and I-65 and to provide service to motorists on these critical river crossings.

7.6.1. Proposed Expansions of the Hoosier Helper FSP

The Hoosier Helper Freeway Service Patrol is a function of the Traffic Management Centers Division and as such is more operations-oriented versus the capital improvement / fixed device-orientation of the majority of this document. Routes and hours of the day in service are based upon need, and more significantly, availability of personnel and funding to fill the need, variables that are difficult to predict. Therefore, no specific implementation years are identified, no cost estimates are developed, and no maps are prepared. Nevertheless, guidance is provided to assure a reasonably uniform Hoosier Helper FSP deployment on a statewide basis. **The Hoosier Helper FSP may be expanded to areas that meet at least three of the following criteria:**

1) Segment is within the deployment area of an existing or proposed **full ATMS**
2) Segment is a full access control facility (**freeway**)
3) Segment currently has an **AADT greater than 75,000**
4) Segment is currently **operating at or is contiguous to** segments operating at **LOS D or worse**
5) Segment needs to be served for **system continuity** / patrol routing purposes

The following segments of freeway are not currently served by the Hoosier Helper FSP but meet at least three of the above criteria and are candidates for implementation (in road order, not necessarily priority order):

Indianapolis Area

- **I-65 from CR 500N (Whiteland Rd) (Exit 95) to Main St (Greenwood Rd) (Exit 99)** (ATMS, freeway, LOS D or worse)
- **I-65 from Main St (Greenwood Rd) (Exit 99) to County Line Rd (Exit 101)** (ATMS, freeway, AADT 75,000+, contiguous to LOS D or worse)
- **I-65 from County Line Rd (Exit 101) to Southport Rd (Exit 103)** (ATMS, freeway, AADT 75,000+, LOS D or worse)
- **I-65 from 71st St (Exit 124) to I-865 (Exit 129)** (ATMS, freeway, contiguous to LOS D or worse)
- **I-65 from I-865 (Exit 129) to SR 267 (Exit 133)** (ATMS, freeway, LOS D or worse)
- **I-69 from 96th St (Exit 3) to SR 37 / 116th St (Exit 5)** (ATMS, freeway, AADT 75,000+, LOS D or worse)
- **I-69 from SR 37 / 116th St (Exit 5) to SR 238 (Exit 10)** (ATMS, freeway, LOS D or worse)
- **I-70 from Ronald Reagan Pkwy / Ameriplex Pkwy (Exit 68) to I-465 (West Leg) (Exit 73)** (ATMS, freeway, AADT 75,000)
- **I-70 from Post Rd (Exit 91) to Mt. Comfort Road (Exit 96)** (ATMS, freeway, LOS D or worse)

Northwest Indiana

- **I-94 from SR 249 (Exit 19) to US 20 (Exit 22)** (ATMS, freeway, AADT 75,000+ (Friday and Sunday in Summer only), LOS D or worse (Friday and Sunday in Summer only)
- **I-94 from US 20 (Exit 22) to SR 49 (Exit 26)** (ATMS, freeway, contiguous to LOS D or worse (Friday and Sunday in Summer only)
- **SR 912 from US 12 / Industrial Hwy to I-90 (Toll Road) (East jct.)** (ATMS, freeway, contiguous to LOS D or worse) (turnaround at US 12 / Industrial Hwy better serves the SR 912 mainline than the SR 312 / Chicago Ave turnaround)
- **SR 912 from I-90 (Toll Road) (East jct.) to I-80/94** (ATMS, freeway, LOS D or worse)

No cost provided as this is an operations-oriented expense, not a capital improvement fixed device-oriented expense, the focus of this document

7.7. REFERENCE MARKERS (1/10, 2/10, & 1/2 MILE REFERENCE MARKERS)

The *2003 Manual on Uniform Traffic Control Devices* (MUTCD) identifies four types of Reference Markers. Reference Markers are placed on freeways to provide a means for identifying the location of incidents and crashes, assist road users in estimating their location and progress, and aid in highway maintenance. The first and most basic Reference Markers are Reference Location Signs (Mile Marker signs), which indicate a whole number reference for the location. These signs are already in place on Indiana Interstates. The next level of Reference Markers are **Intermediate Reference Location Signs (below at left),** which augment the Reference Location Signs by also showing the tenth of a mile with a decimal point. **Intermediate Reference Location Signs at ½ mile intervals** (including a ".0" at the whole number mile location signs, per the MUTCD) **are recommended for all Interstates outside of urban areas** with Intermediate Enhanced Reference Location Signs (see next paragraph). The Intermediate Reference Location Signs will enhance the ability to locate incidents, as well as provide more frequent location identification to assist road users in estimating their location and progress in rural, isolated segments of Interstate.

Intermediate Enhanced Reference Location Signs (below at right), the most detailed level of Reference Markers, indicate cardinal direction, the route, and location to the tenth of a mile with a decimal point, an augmentation of the Enhanced Reference Location Signs, which indicate cardinal direction, the route, and location by whole number only.

Intermediate Reference Location Sign

Intermediate Enhanced Reference Location Sign

Intermediate Enhanced Reference Location Signs, initially installed in 1998 (and approaching the end of their service life) in Indianapolis, Northwest Indiana, Southern Indiana near Louisville, Evansville, Fort Wayne, and Kokomo, are located every 2/10 of a mile in the median of Interstates (every 1/10 of a mile along I-80/94 and I-94 in Northwest Indiana). The 2/10 Mile Reference Markers are also placed on US 41 and some State Roads in the Evansville area and on US 31 in the Kokomo area.

The existing signs display the cardinal direction of travel, a route shield indicating the highway the motorist is traveling, and the Mile Marker location on the highway (to 2/10 or 1/10 of a mile). At interchanges, Ramp Reference Markers are positioned along the ramps indicating which ramp a motorist is traveling within an interchange. These signs provide motorists with better location information and improved roadside assistance. Incident response teams are able to more quickly arrive on the scene of crashes, clearing debris and improving traffic flow. In an emergency, these signs serve the same purpose as the “street address” on other roads, aiding motorists and emergency response vehicles in identifying their location or destination on the highway system. The Intermediate Enhanced Reference Location Signs also serve as a key component in the messages displayed on DMSs and broadcasts heard on the HAR stations. Information regarding location of an incident or heavy traffic is shown / broadcast based on a highway’s Mile Marker location (to the tenth of a mile).

The deployment of **additional** Intermediate Enhanced Reference Location Signs (1/10 or 2/10 Mile Reference Markers) is based on the following criterion:

1) Implementation of Full ATMS or Transportation Technology Innovation and Demonstration Program (TTID) deployment / CCTV Cameras on segment

To improve Reference Marker sign visibility and freeway location identification for motorists, Hoosier Helper Freeway Service Patrol (FSP) personnel, and TMC personnel, the **Intermediate Enhanced Reference Location Signs with 1/10th mile spacing should be deployed on high-volume freeways in Full ATMS areas (potentially served by the Hoosier Helper FSP).** The deployment of **additional** Intermediate Enhanced Reference Location Signs **with 1/10th mile spacing (1/10 Mile Reference Markers)** is based on the following criterion:

1) **Segments of freeway five miles in length or greater with a current (2005) AADT of 75,000 or greater in a Full ATMS area**

The **estimated cost** for deployment of Intermediate Enhanced Reference Location Signs with 1/10th mile spacing **(1/10 Mile Reference Markers) is $4,000 per mile.**

The **estimated cost** for deployment of Intermediate Enhanced Reference Location Signs with **1/10th mile spacing where the newer (2003 MUTCD-compliant) signs are in place but only at 2/10th mile spacing is $2,000 per mile.**

The **estimated cost** for deployment of Intermediate Enhanced Reference Location Signs with 2/10th mile spacing **(2/10 Mile Reference Markers) is $2,000 per mile.**

The **estimated cost** for deployment of Intermediate Reference Location Signs at **½ mile intervals** (including replacing the existing one mile signs) **is $800 per mile.**

The **deployment of Intermediate Reference Location Signs at ½ mile intervals** (with a ".0" at the whole number mile locations and ".5" placed at ½ mile locations) **on all Interstates outside of urban areas with Intermediate Enhanced Reference Location Signs should occur as part of sign replacement projects or during reconstruction projects** and thus is not prioritized.

In addition to the information below, maps may be found at the end of this chapter showing the 1/10 and 2/10 Mile Reference Marker (RM) deployment recommendations statewide and in the Indianapolis, Northwest Indiana, and Southern Indiana areas.

7.7.1. REFERENCE MARKER PRIORITY 1 (Intermediate Enhanced Reference Location Sign (1/10 and 2/10 Mile Reference Marker) Additions to Full ATMS Areas, Including TTID / CCTV Camera Areas)

This Priority 1 project has been programmed in INDOT's Scheduling and Project Management System (SPMS) as one project (Des # 0710425), currently with a Ready for Contracts (RFC) date of October 2009 (Fiscal Year 2010):

1. **I-65 from SR 44 (Mile 89) to Main St (Greenwood Rd) (Mile 99) (Johnson County)**
   Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this 10-mile segment of I-65 to support the Phase 4 ATMS and TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$20,000.**

   I-65 from Main St (Greenwood Rd) (Mile 99) to south of Southport Rd (Mile 102) (Johnson and Marion Counties)
   Install 1/10 Mile Reference Markers in Fiscal Year 2010 on this 3-mile segment of I-65 to support the Phase 4 ATMS deployment. AADT is 79,250 - 90,380. Estimated cost: **$12,000.**

   I-65 from south of Southport Rd (Mile 102) to 38th St / Kessler Blvd (Mile 118) (Marion County)
   Install 1/10 Mile Reference Markers in Fiscal Year 2010 on this 16-mile segment of I-65. AADT is 90,380 - 165,690. **This deployment supplements the existing newer** (2003 MUTCD-compliant) **2/10 Mile Reference Markers** from Mile 102 to Mile 118. Estimated cost: **$32,000.**

   I-69 from I-465 (Mile 0) to just north of SR 37 /116th St (Mile 6) (Marion and Hamilton Counties)
   Install 1/10 Mile Reference Markers in Fiscal Year 2010 on this six-mile segment of I-69. AADT is 131,120 - 167,000. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost: **$24,000.**

   I-69 from just north of SR 37 / 116th St (Mile 6) to SR 9/109 (Mile 27) (Hamilton and Madison Counties)
   Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this 21-mile segment of I-69 to support the Phase 3 ATMS and TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$42,000.**

   I-70 from SR 39 (Mile 59) to west of SR 267 (Mile 65) (Hendricks and Morgan Counties)
   Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this six-mile segment of I-70 to support the TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$12,000.**

I-70 from I-465 (West Leg) (Mile 73) to I-65 (South Split) (Mile 81) (Marion County)
I-70 from I-465 (East Leg) (Mile 90) to Post Rd (Mile 91) (Marion County)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on these eight and one mile segments of I-70, respectively. AADT is 50,050 - 112,410 and 109,150, respectively. This deployment supplements the existing newer (2003 MUTCD-compliant) 2/10 Mile Reference Markers from Mile 73 to Mile 78, replaces the existing 2/10 Mile Reference Markers from Mile 78 to Mile 81, and supplements the existing newer (2003 MUTCD-compliant) 2/10 Mile Reference Markers from Mile 90 to Mile 91. Estimated cost: **$24,000.**

I-70 from east of Post Rd (Mile 93) to SR 9 (Mile 104) (Marion and Hancock Counties)
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this 11-mile segment of I-70 to support the Phase 3 ATMS and TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$22,000.**

I-74 from SR 267 (Mile 65) to I-465 (West Leg) (Mile 73) (Hendricks and Marion Counties)
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this eight-mile segment of I-74 to support the Phase 5 ATMS and TTID / CCTV Camera deployments in 2009 - 2011. This deployment replaces the existing 2/10 Mile Reference Markers near Mile 73. Estimated cost: **$16,000.**

I-465 from I-65 (South Leg) (Mile 0) to SR 67 / Kentucky Ave (West Leg) (Exit 8) (Marion County)
I-465 from 56th St (West Leg) (Mile 19) to US 31 (North Leg) (Mile 31) (Marion, Boone, and Hamilton Counties)
I-465 from north of 56th St (East Leg) (Mile 39) to I-65 (South Leg) (Mile 53) (Marion County)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on these eight, 12, and 14 mile segments of I-465, respectively. AADT is 85,470 - 106,220, 81,060 - 116,010, and 95,500 - 157,200, respectively. This deployment replaces the existing 2/10 Mile Reference Markers on these segments. Estimated cost: **$136,000.**

Reference Marker Priority 1 total: $340,000 + 10% contingency = **$375,000**

7.7.2. REFERENCE MARKER (Intermediate Enhanced Reference Location Sign (1/10 and 2/10 Mile Reference Marker) Additions to New ATMS Deployments / ATMS Replacements)

Reference Marker deployments associated with ATMS replacements and additions during Major Capital Improvements *are listed in italics* to help differentiate them from deployments that are associated with Traffic Management / ITS ATMS deployments.

2. ***I-465 from SR 67 / Kentucky Ave (West Leg) (Exit 8) to north of 56th St (West Leg) (Exit 19) (Marion County)***
Install 1/10 Mile Reference Markers in Fiscal Years 2008 - 2012 *on this 11-mile segment of I-465 as part of the Added Travel Lanes / Interchange Modification projects on the West Leg (Accelerate 465) in 2008 - 2012. AADT is 106,220 - 137,900. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. Furthermore, the existing newer (2003 MUTCD-compliant) 2/10 Mile Reference Markers on* ***I-70*** *from Ronald Reagan Pkwy / Ameriplex Pkwy to I-465 will be supplemented with 1/10 Mile Reference Markers as part of the I-465 Added Travel Lanes / Interchange Modification projects (Des #s 0600645 and 9910300, respectively) at I-70 in Fiscal Year 2010.* ***Estimated cost is included in the ATMS project for the Accelerate 465 project in Section 7.2.4.***

I-465 from 0.35 mile east of US 31 / Meridian St (Exit 31) (North Leg) to the south end of bridge over Fall Creek) (East Leg) (Mile 39) (Marion County)
Install 1/10 Mile Reference Markers in Fiscal Years 2010 - 2013 *on this eight-mile segment of I-465 as part of the numerous Added Travel Lanes / Interchange Modification projects on I-465 in 2010 - 2013. AADT is 121,040 - 146,940. This deployment replaces the existing 2/10 Mile Reference Markers on this segment.* ***Estimated cost is included in the ATMS projects for the I-465 project in Section 7.2.4.***

I-65 from south of SR 267 (Mile 132) to US 52 (Mile 142) (Boone County)
Install 2/10 Mile Reference Markers in Fiscal Years 2010 - 2012 *as part of the multiple Added Travel Lanes projects on I-65 from I-865 to US 52 in 2010 - 2012 on this 10-mile segment of I-65 to support the ATMS in those projects.* ***Estimated cost is included in the I-65 ATMS deployment in Section 7.2.4.***

I-65 from the Ohio River (Mile 0) to I-265 (Mile 6) (Clark County)
Install 1/10 Mile Reference Markers in Fiscal Year 2011 on this six-mile segment of I-65 as part of the ATMS Deployment in Southern Indiana in 2011. AADT is 64,030 - 121,750. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. **Estimated cost is included in the Southern Indiana ATMS deployment in Section 7.2.2.**

I-265 from SR 62 (Exit 9) to the New Ohio River Bridge (Clark County)
Install 2/10 Mile Reference Markers in Fiscal Year 2012 *on this four-mile segment of I-265 as part of the New Road Construction project approaching the new Ohio River Bridge.* ***Estimated cost is included in the I-265 ATMS deployment in Section 7.2.5.***

I-94 from SR 249 (Mile 19) to SR 49 (Mile 27) (Porter County)
Install 2/10 Mile Reference Markers in Fiscal Year 2014 on this eight-mile segment of I-94 as part of the addition to the Northwest Indiana ATMS in 2014. **Estimated cost is included in the Northwest Indiana ATMS deployment in Section 7.2.3.**

I-65 from US 30 (Mile 253) to I-80/94 (Borman Expwy) NW Connector Ramps (Mile 259) (Lake County)
Install 1/10 Mile Reference Markers in Fiscal Year 2014 on this six-mile segment of I-65 in conjunction with the adjacent ATMS deployment from US 231 (Exit 247) to US 30 (Exit 253). AADT is 80,120 - 87,510. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. **Estimated cost is included in the Northwest Indiana ATMS deployment in Section 7.2.3.**

SR 912 (Cline Ave) from I-90 (Indiana Toll Road) (West Jct) (Mile 0) to I-80/94 (Borman Expwy) (Mile 11) (Lake County)
Install 2/10 Mile Reference Markers in Fiscal Year 2014 on this 11-mile segment of SR 912 as part of the addition to the Northwest Indiana ATMS in 2014. **Estimated cost is included in the Northwest Indiana ATMS deployment in Section 7.2.3.**

US 31 Added Travel Lanes (Freeway Upgrade) from 0.2 mile south of I-465 (North Leg) (Mile 123) to 216th St (Mile 136) (Hamilton County)
Install 1/10 Mile Reference Markers in Fiscal Years 2011-2017 *as part of the multiple Added Travel Lanes (Freeway Upgrade) projects in 2011-2017. AADT projected as 50,400 - 102,700.* ***Estimated cost is included in the US 31 ATMS deployments in Section 7.2.5.***

I-69 from 9.0 miles south of I-465 (South Leg) (north of SR 144) (Mile 136 (SR 37)) to I-465 (South Leg) (Mile 145 (SR 37)) (Johnson and Marion Counties)
Install 1/10 or 2/10 Mile *(as appropriate)* ***Reference Markers in Fiscal Year 2019*** *as part of the New Road Construction (Freeway Upgrade) project in 2019.* ***Estimated cost is included in the I-69 ATMS deployment in Section 7.2.5.***

Reference Marker Additions with ATMS Deployments: $0 (costs included in ATMS projects)

7.7.3. INTERMEDIATE REFERENCE LOCATION SIGNS ((½ Mile Reference Markers) on Rural Interstates)

The **deployment of Intermediate Reference Location Signs at ½ mile intervals** (with a ".0" at the whole number mile locations and ".5" placed at ½ mile locations, per the MUTCD) on all Interstates outside of urban areas with Intermediate Enhanced Reference Location Signs **should occur as part of sign replacement projects or during reconstruction projects and thus is not prioritized by year,** nor are maps prepared. The **estimated cost** for deployment of Intermediate Reference Location Signs at ½ mile intervals **includes the cost of replacing the existing one mile signs.**

***I-64* (107 of 123 miles)**
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 0 to Mile 21 and from Mile 31 to Mile 117. Estimated cost: ***$86,000.***

***I-65* (104 of 262 miles)** *(Seymour District has deployed these from Mile 9 to Mile 102)*
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 142 to Mile 246. Estimated cost: ***$83,000.***

***I-69* (107 of 157 miles)**
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 27 to Mile 94 and from Mile 117 to Mile 157. Estimated cost: ***$86,000.***

***I-70* (111 of 156 miles)**
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 0 to Mile 59 and from Mile 104 to Mile 156. Estimated cost: ***$89,000.***

***I-74* (136 of 171 miles)**
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 0 to Mile 65 and from Mile 100 to Mile 171. Estimated cost: ***$109,000.***

***I-94* (19 of 30 miles)**
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 27 to Mile 46. Estimated cost: ***$15,000.***

Rural Interstate ½ Mile Reference Markers total: *$468,000 + 10% contingency =* ***$525,000***

Reference Markers Estimated Cost (ITS Standalone Projects)	= $	375,000
Reference Markers Estimated Cost (ITS with Road Projects)	*= $*	*525,000*

Total Reference Markers (1/10, 2/10, & 1/2 Mile) ESTIMATED COST = $900,000

7.8. SUMMARY / CONCLUSION

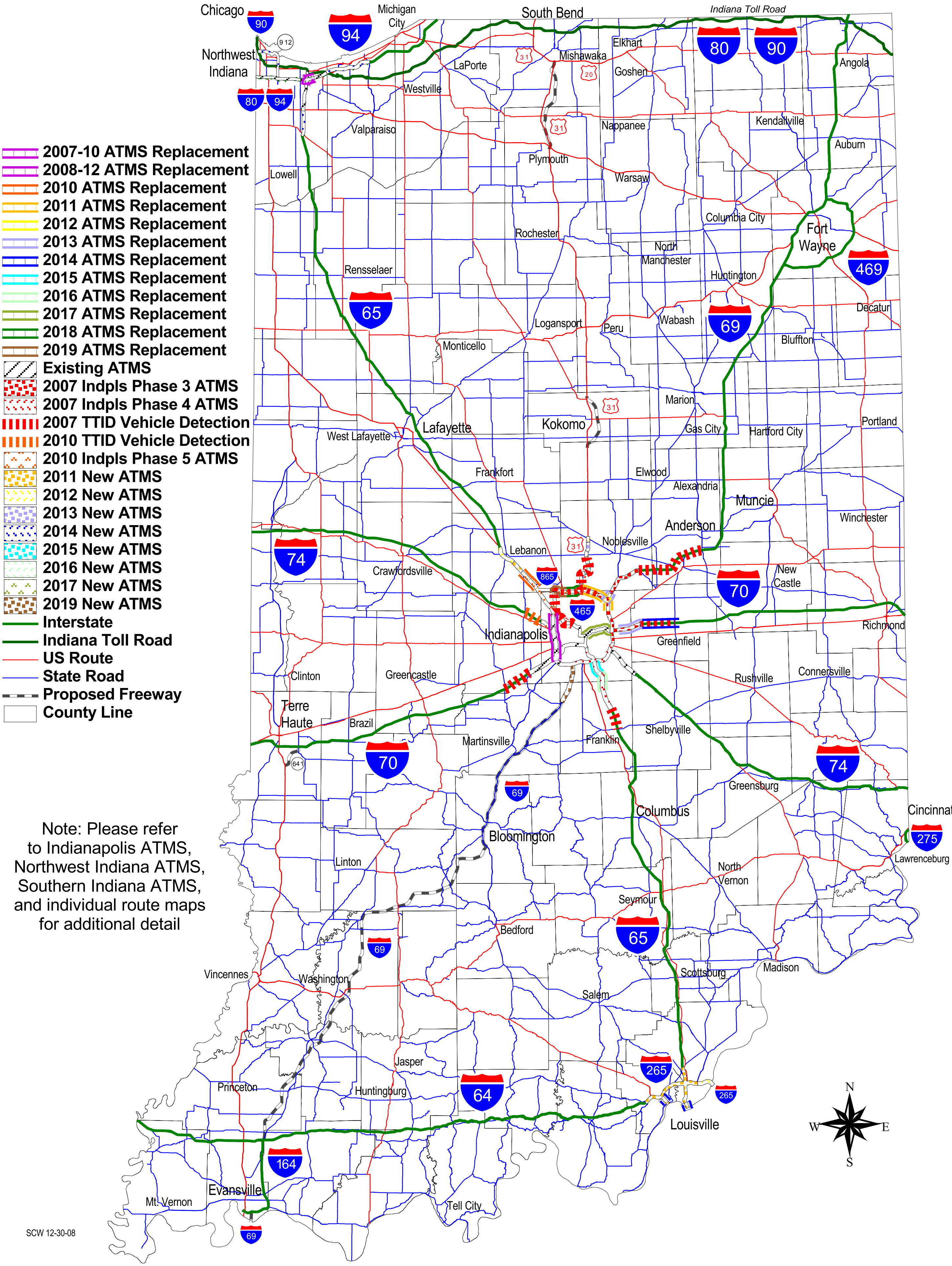
The preceding pages outlined Traffic Management / ITS recommendations and provided preliminary cost estimates for field-oriented devices through Fiscal Year 2020 grouped by individual deployment type. *Chapter 8 summarizes all deployments chronologically*. The following summarizes the estimated costs:

	Standalone ITS	+	*ITS w/ Road Projects*	=	Total
ATMS	$21,100,000		*$33,650,000*		$54,750,000
CCTV Cameras/Detection	6,850,000		*0*		6,850,000
Dynamic Message Signs	17,325,000		*4,950,000*		22,275,000
Travel Time Signs	4,225,000		*225,000*		4,450,000
Reference Markers	375,000		*525,000*		900,000
TOTAL ESTIMATED COST:	**$49,875,000**	**+**	***$39,350,000***	**=**	**$89,225,000**

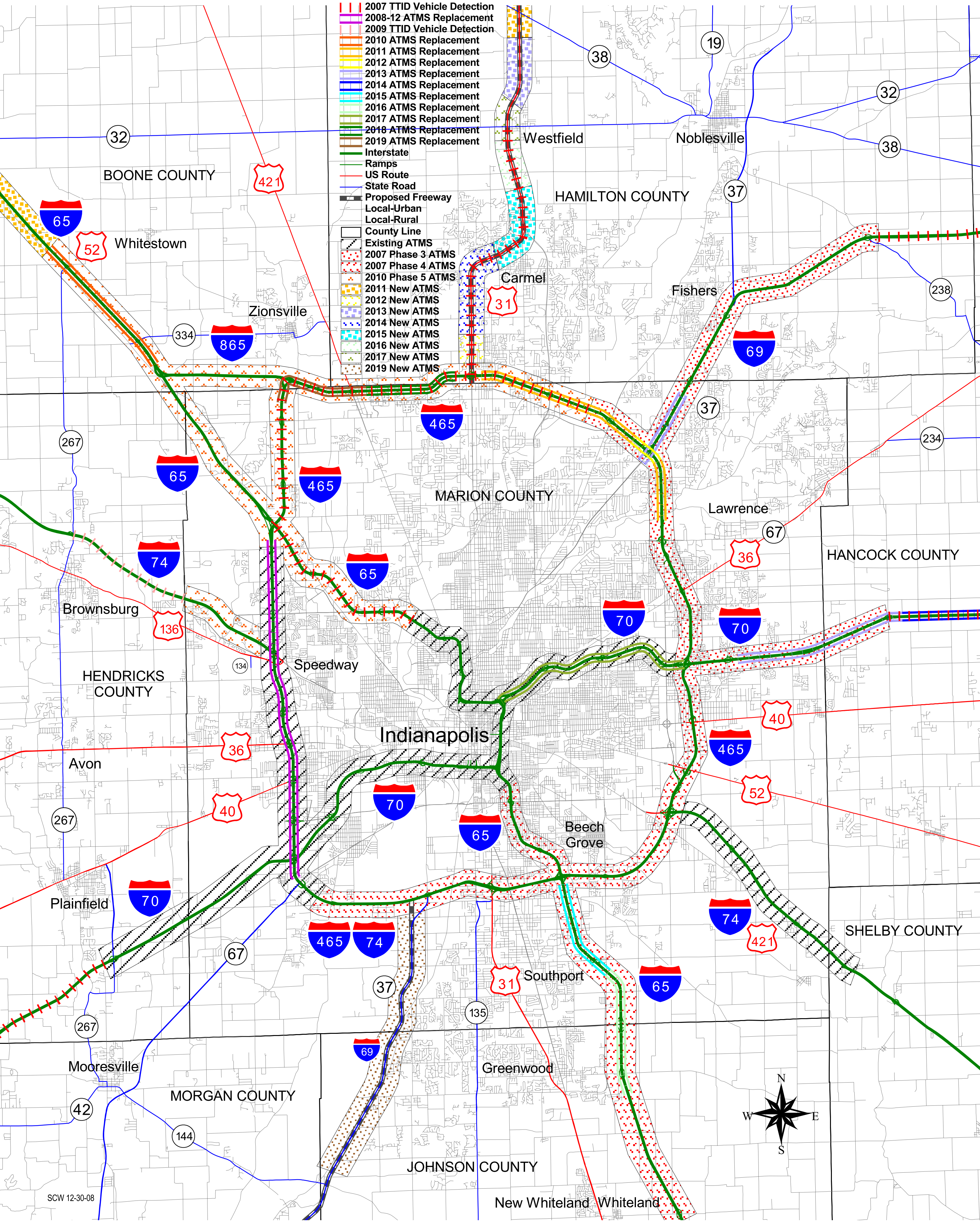
Predicting the future is a difficult task. As with any highway project, the deployment dates in this document are subject to change due to a variety of circumstances, including but not limited to funding constraints, staffing and workload constraints, delays to the larger projects that some of these ITS deployments are a component of, technology changes, etc. Similarly, the estimated costs are subject to change due to changes in technology and the fact that they are very preliminary in nature. Furthermore, some components will likely go up in cost over time, while some components, particularly the technological ones, are likely to go down in the future. As such, this INDOT Traffic Management Strategic Deployment Plan will be updated periodically to adapt to changing needs and priorities on INDOT's system, as well as the inevitable changes to the overall INDOT program of highway improvements over time.

Finally, this document focused on the deployment of the primary field-oriented devices, what might traditionally be called "projects" at INDOT. Nevertheless, there are many other Traffic Management / ITS activities underway or planned in the future at INDOT, including, but certainly not limited to, 511 travel information deployment, commercial vehicle / virtual weigh station coordination, field device maintenance, Incident Management plan development, traffic signal system coordination, and the like. Most of these activities are reasonably well-defined so as to not need direction from the INDOT Traffic Management Strategic Deployment Plan. Regardless, all are important elements of Traffic Management / ITS technologies and strategies which are utilized to save motorists lives, time, and money.

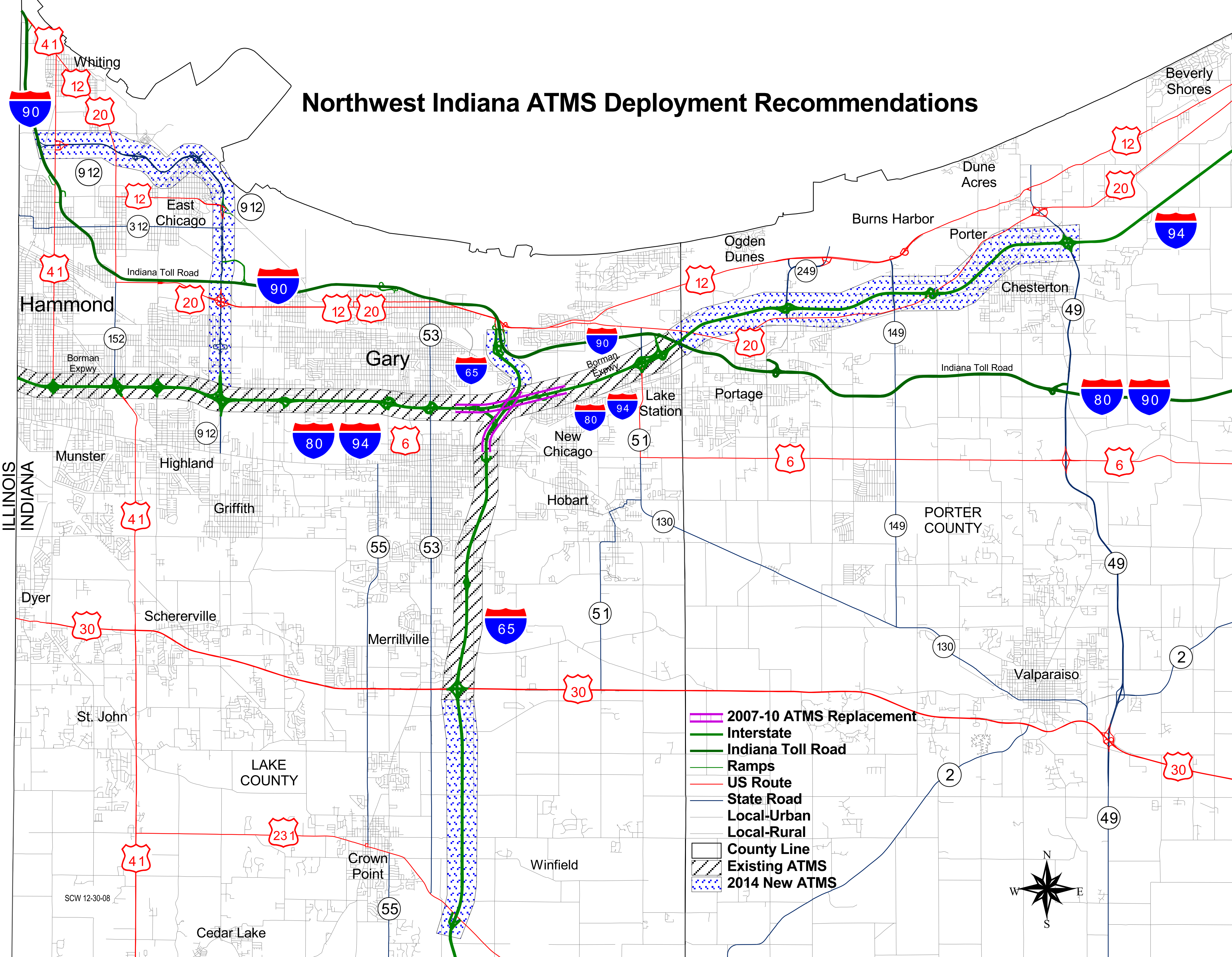
Advanced Traffic Management System (ATMS) Deployment Recommendations



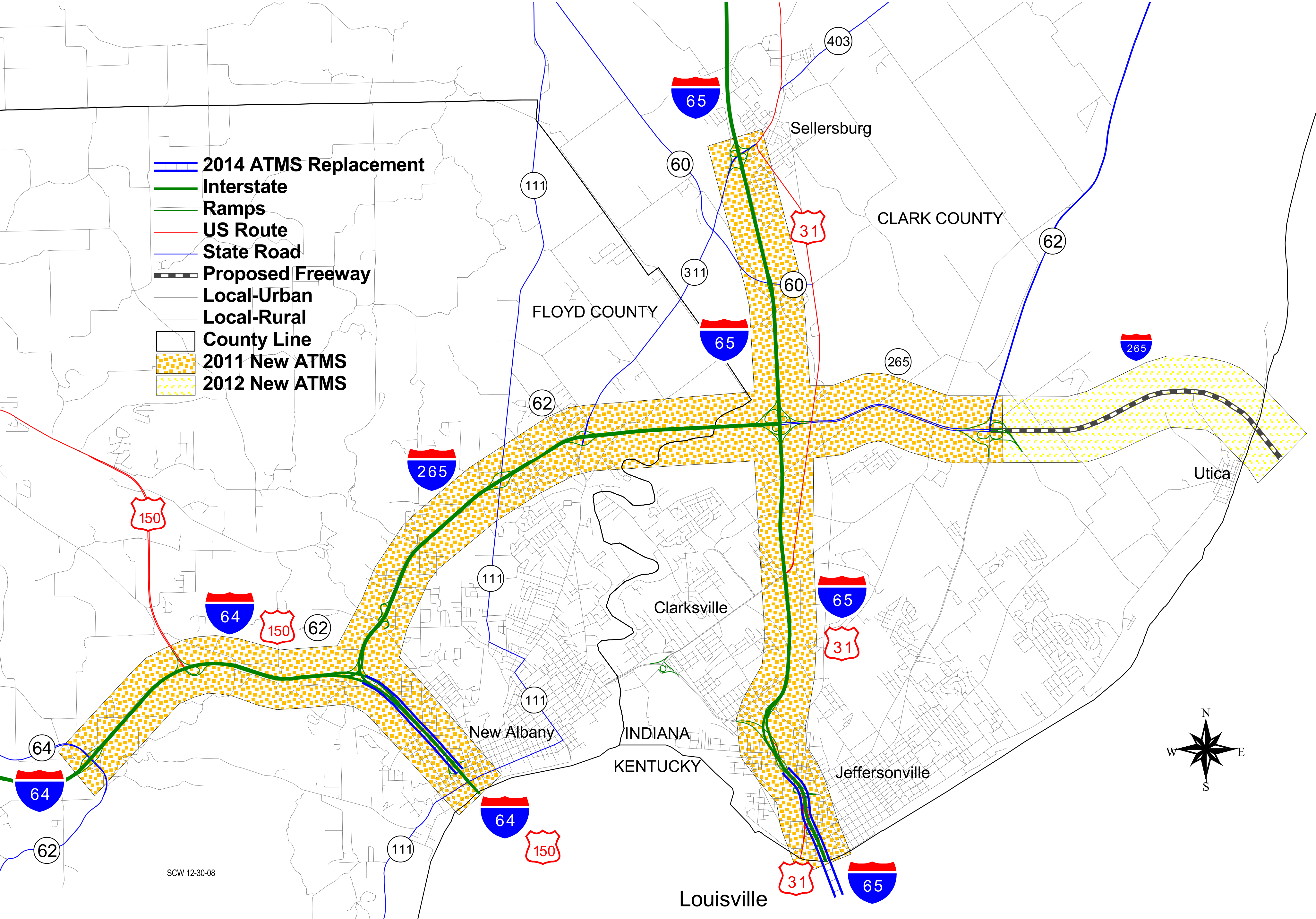
Indianapolis ATMS Deployment Recommendations



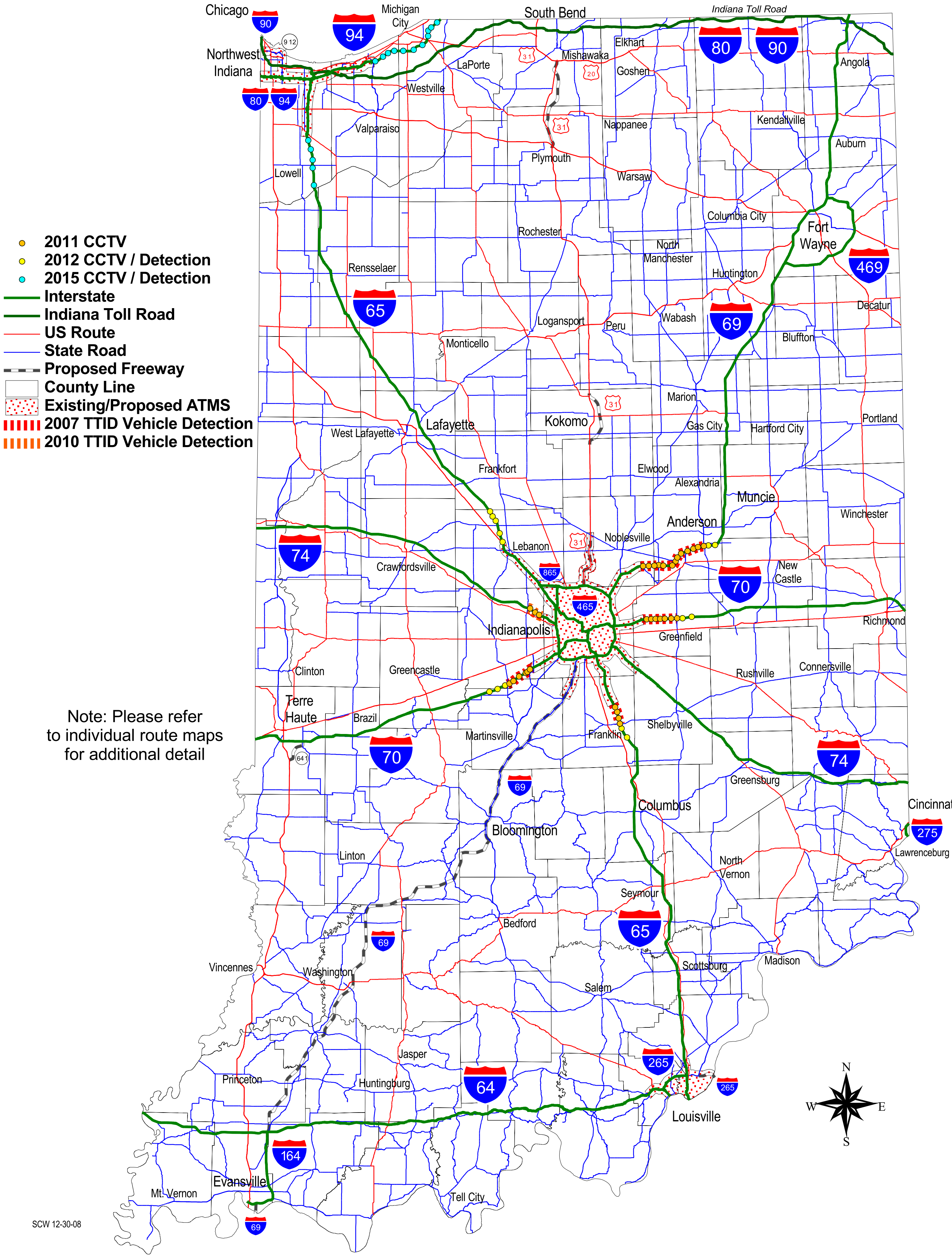
Northwest Indiana ATMS Deployment Recommendations



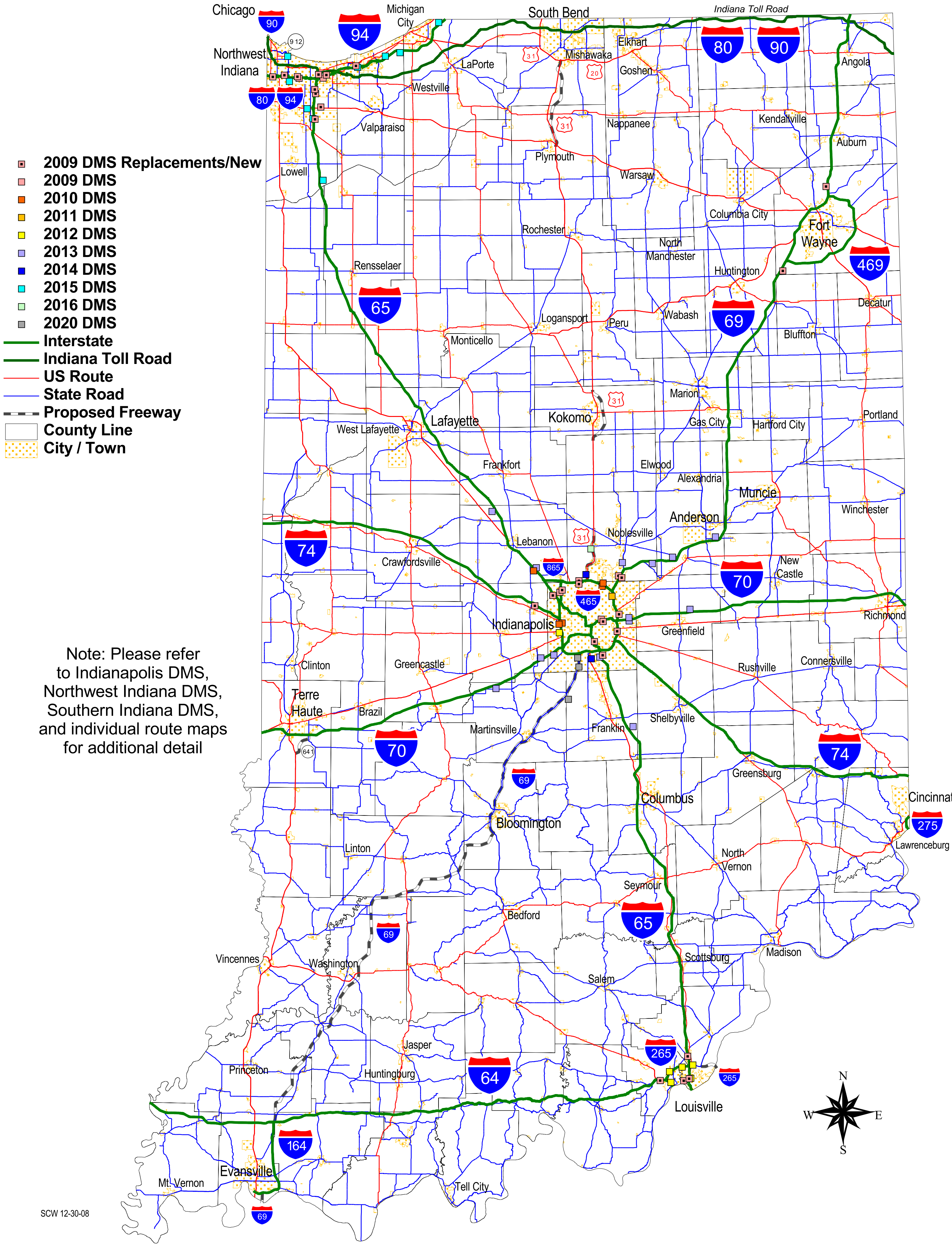
Southern Indiana ATMS Deployment Recommendations



CCTV Camera / Vehicle Detection Site Deployment Recommendations

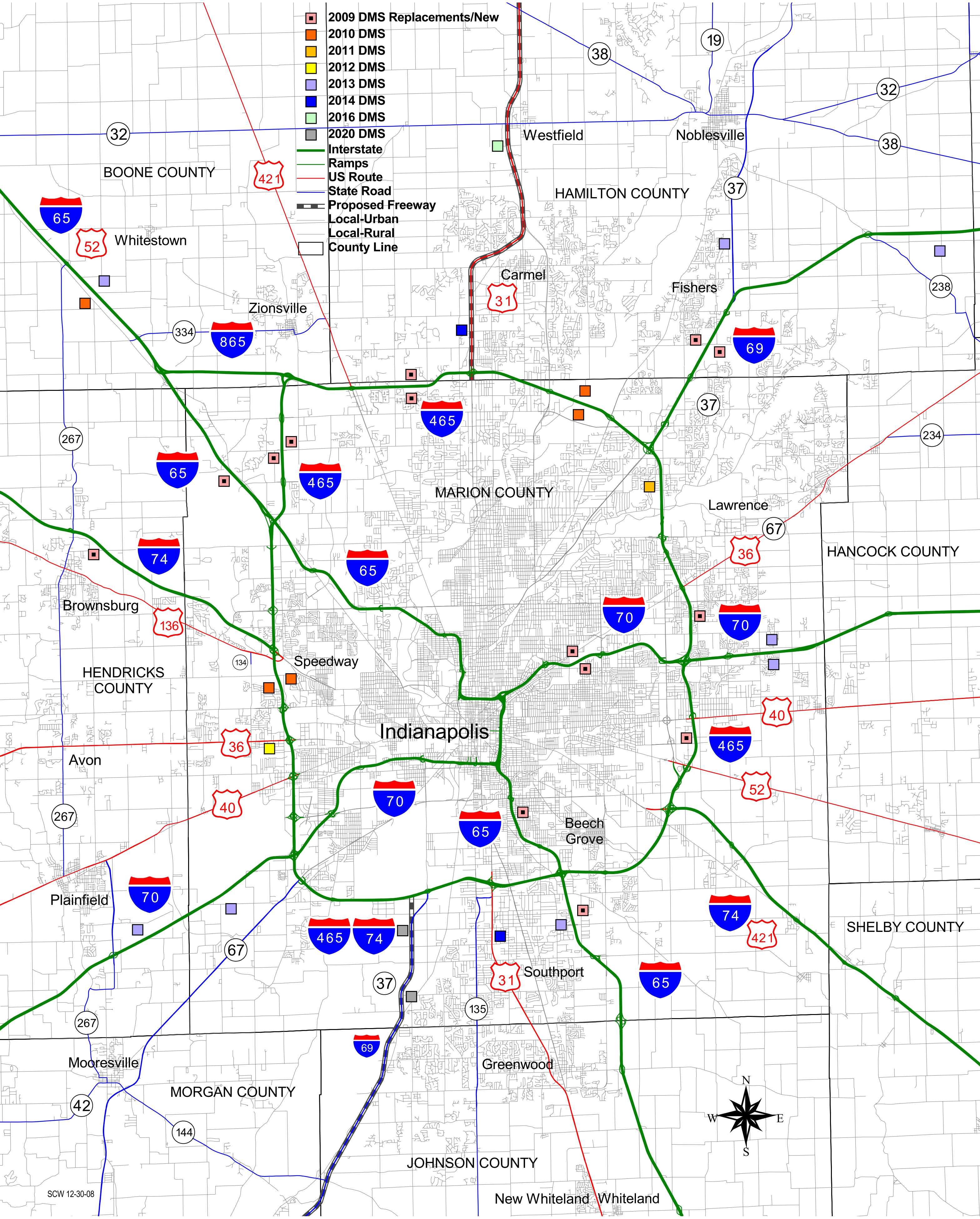


Dynamic Message Sign (DMS) Deployment Recommendations

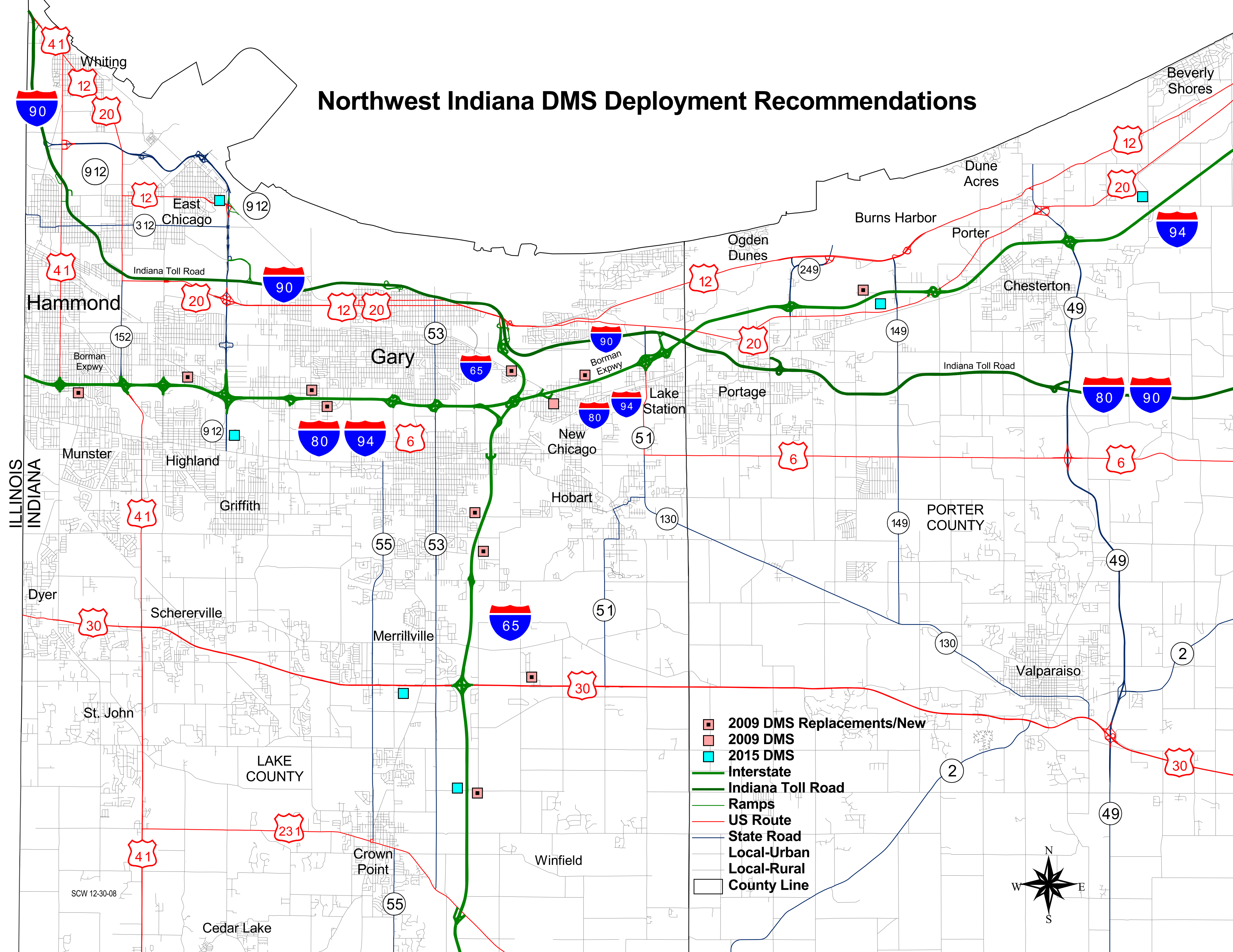


Note: Please refer to Indianapolis DMS, Northwest Indiana DMS, Southern Indiana DMS, and individual route maps for additional detail

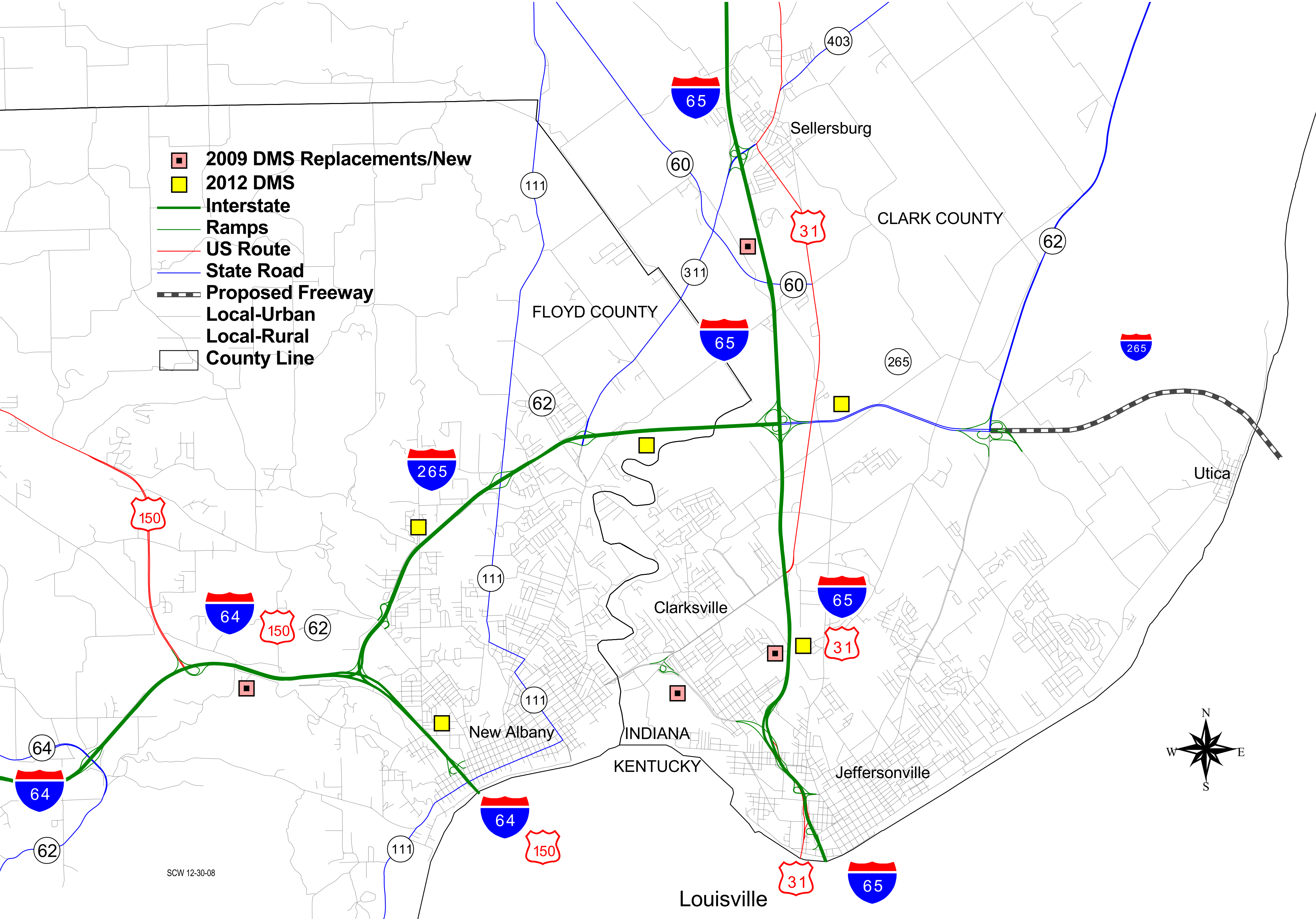
Indianapolis DMS Deployment Recommendations



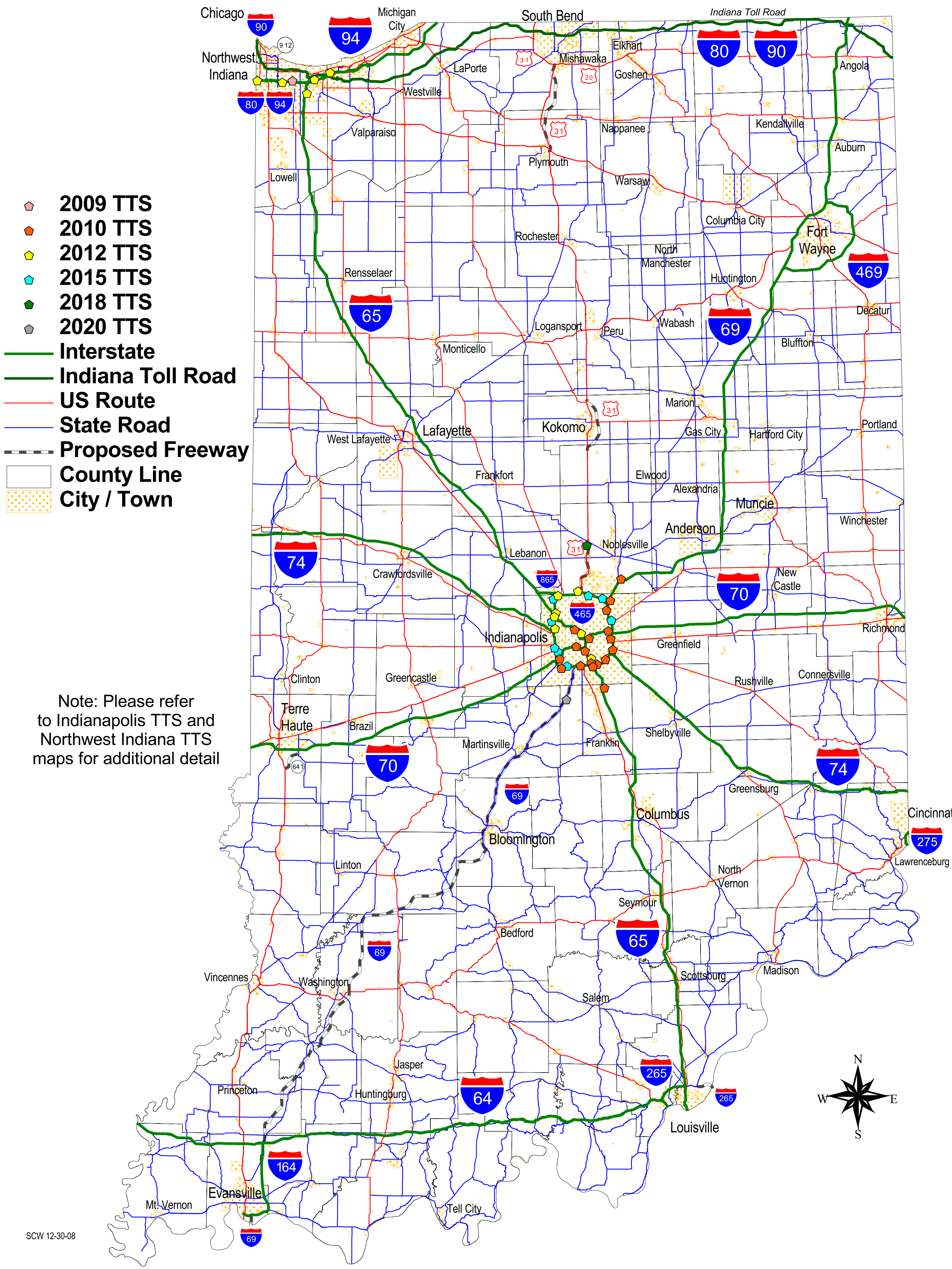
Northwest Indiana DMS Deployment Recommendations



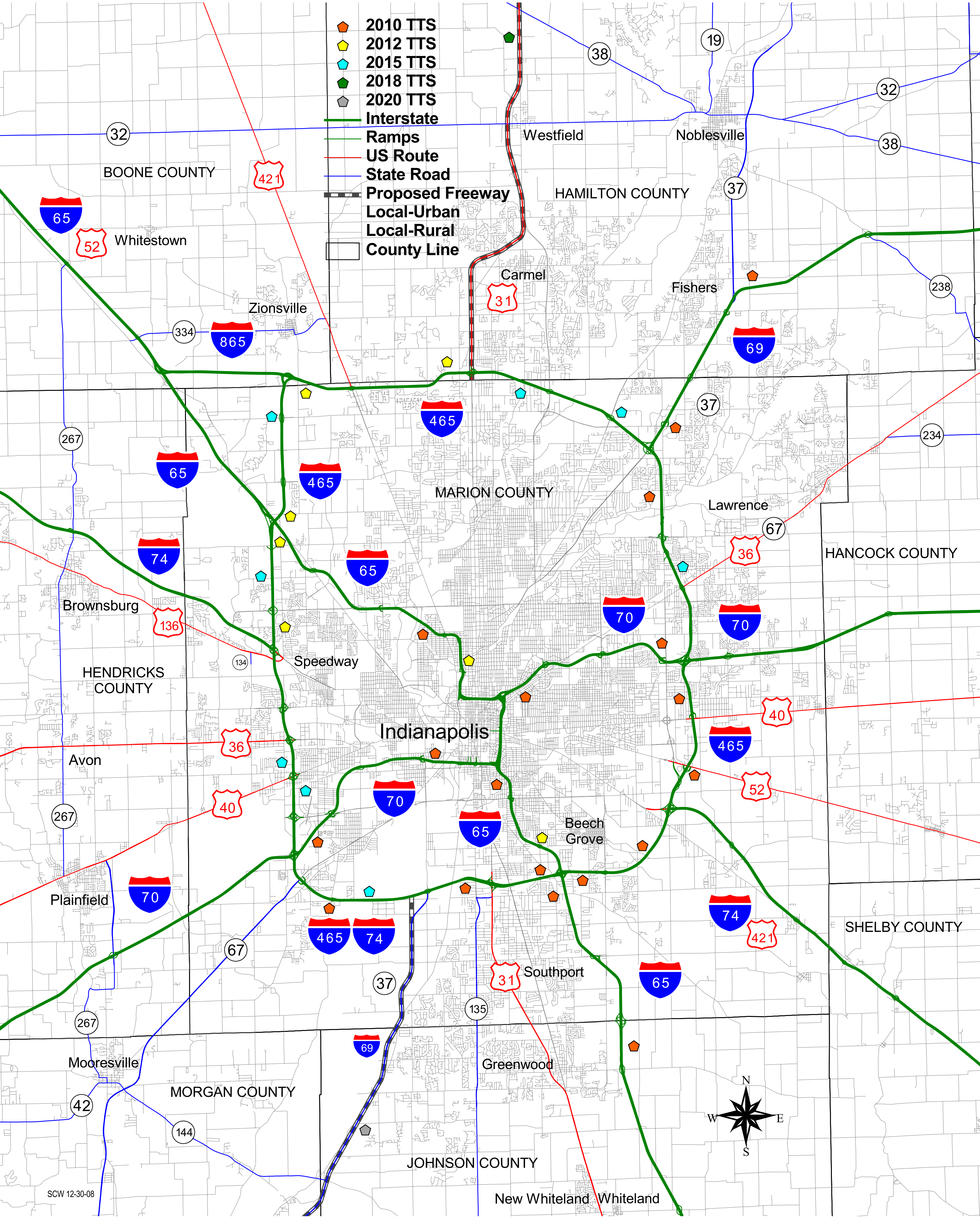
Southern Indiana DMS Deployment Recommendations

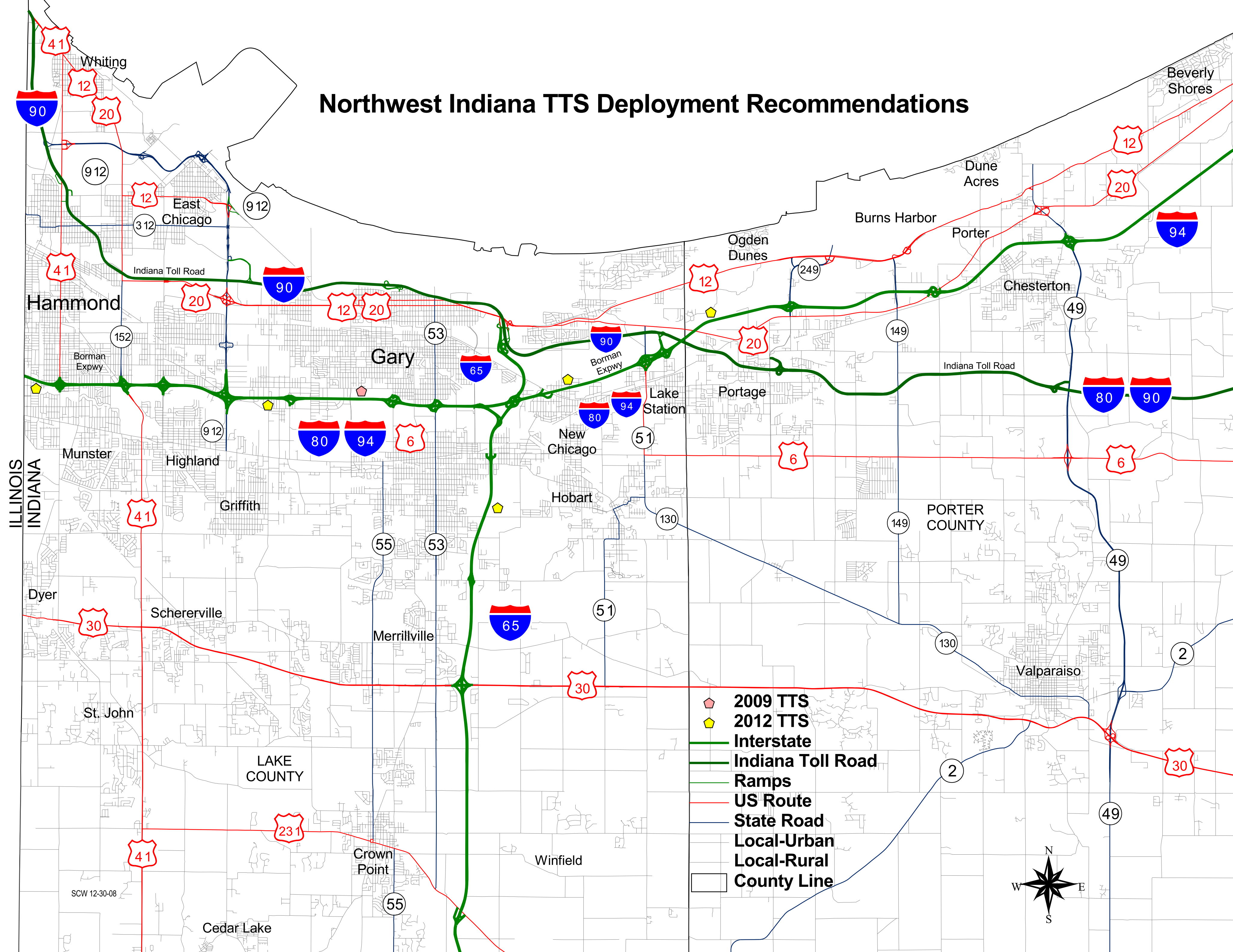


Travel Time Sign (TTS) Deployment Recommendations



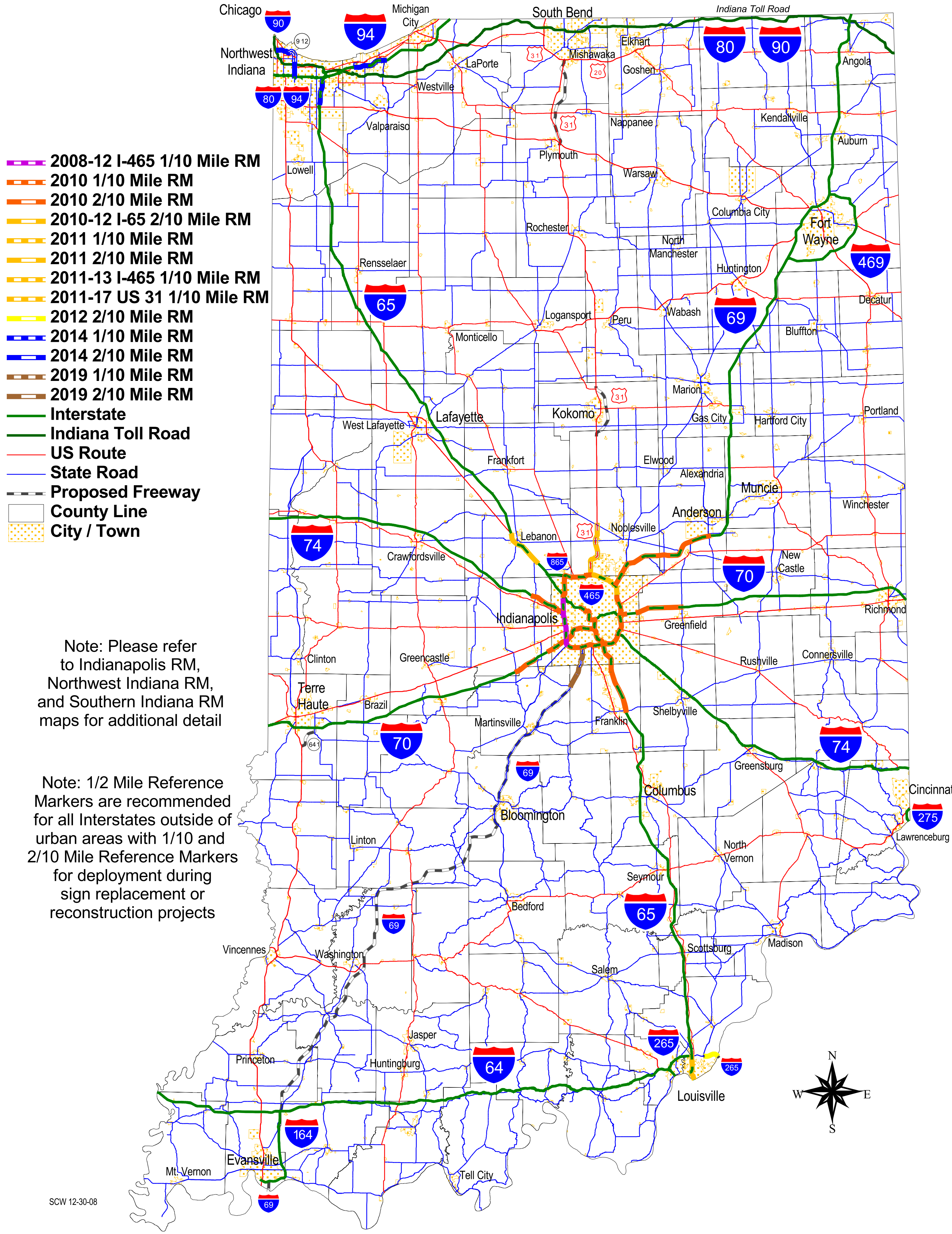
Indianapolis TTS Deployment Recommendations



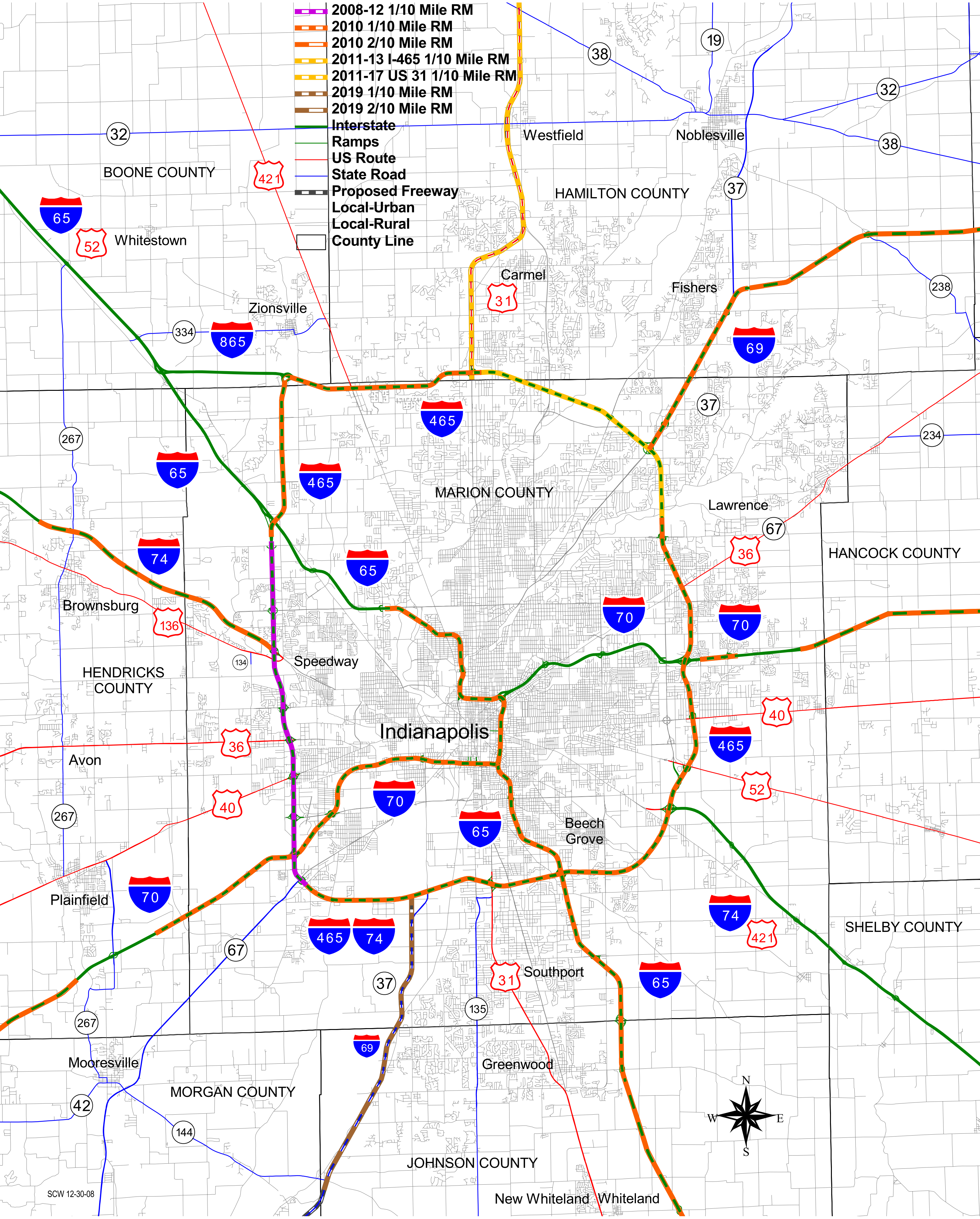


Northwest Indiana TTS Deployment Recommendations
Whiting
East Chicago
Hammond
Indiana Toll Road
Borman Expwy
Gary
Munster
Highland
Griffith
ILLINOIS
INDIANA
Dyer
Schererville
Merrillville
St. John
LAKE COUNTY
Crown Point
Winfield
Cedar Lake
New Chicago
Hobart
Lake Station
Portage
Ogden Dunes
Burns Harbor
Porter
Dune Acres
Beverly Shores
Chesterton
PORTER COUNTY
Valparaiso
2009 TTS
2012 TTS
Interstate
Indiana Toll Road
Ramps
US Route
State Road
Local-Urban
Local-Rural
County Line
SCW 12-30-08
N
S
E
W

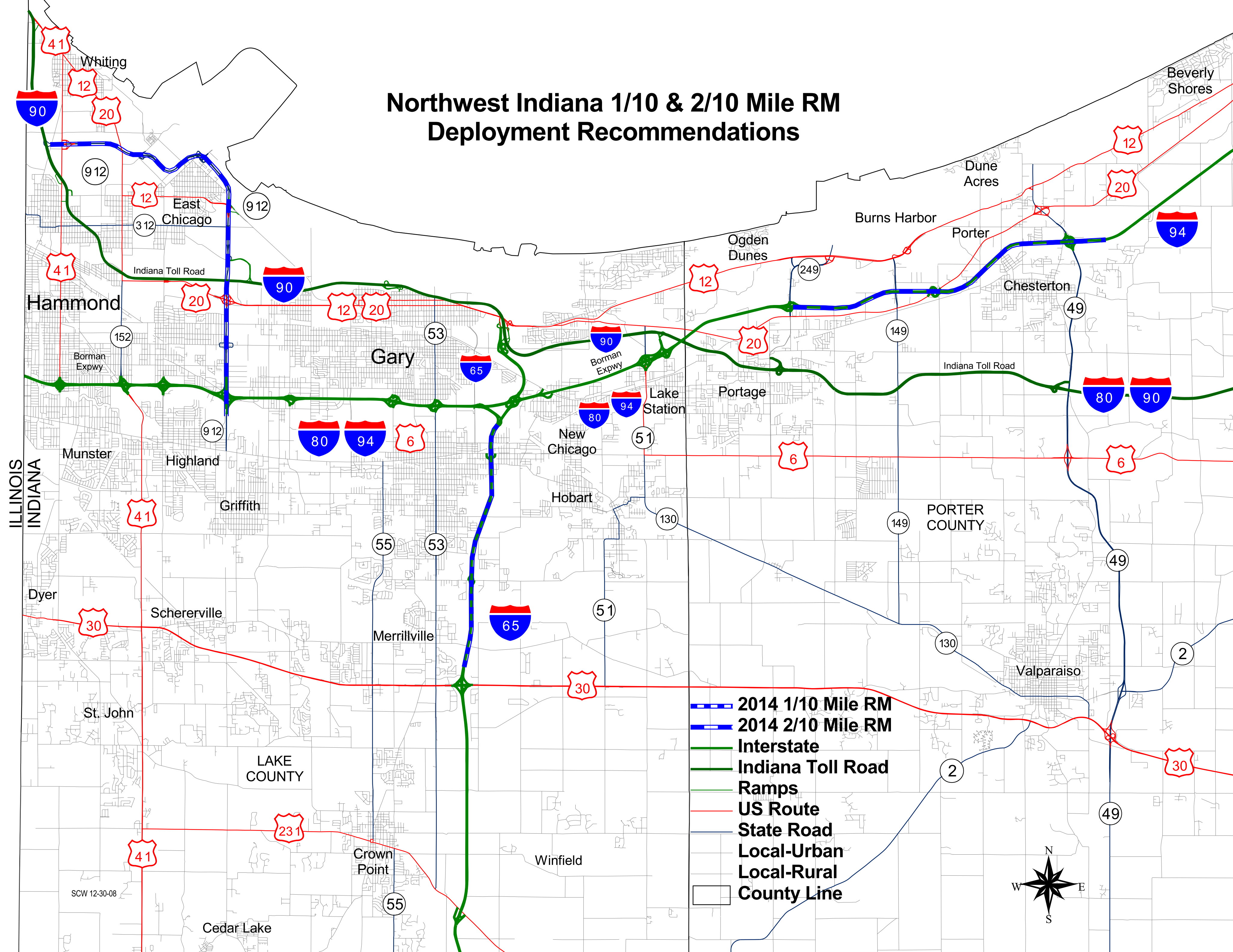
1/10 & 2/10 Mile Reference Marker (RM) Deployment Recommendations



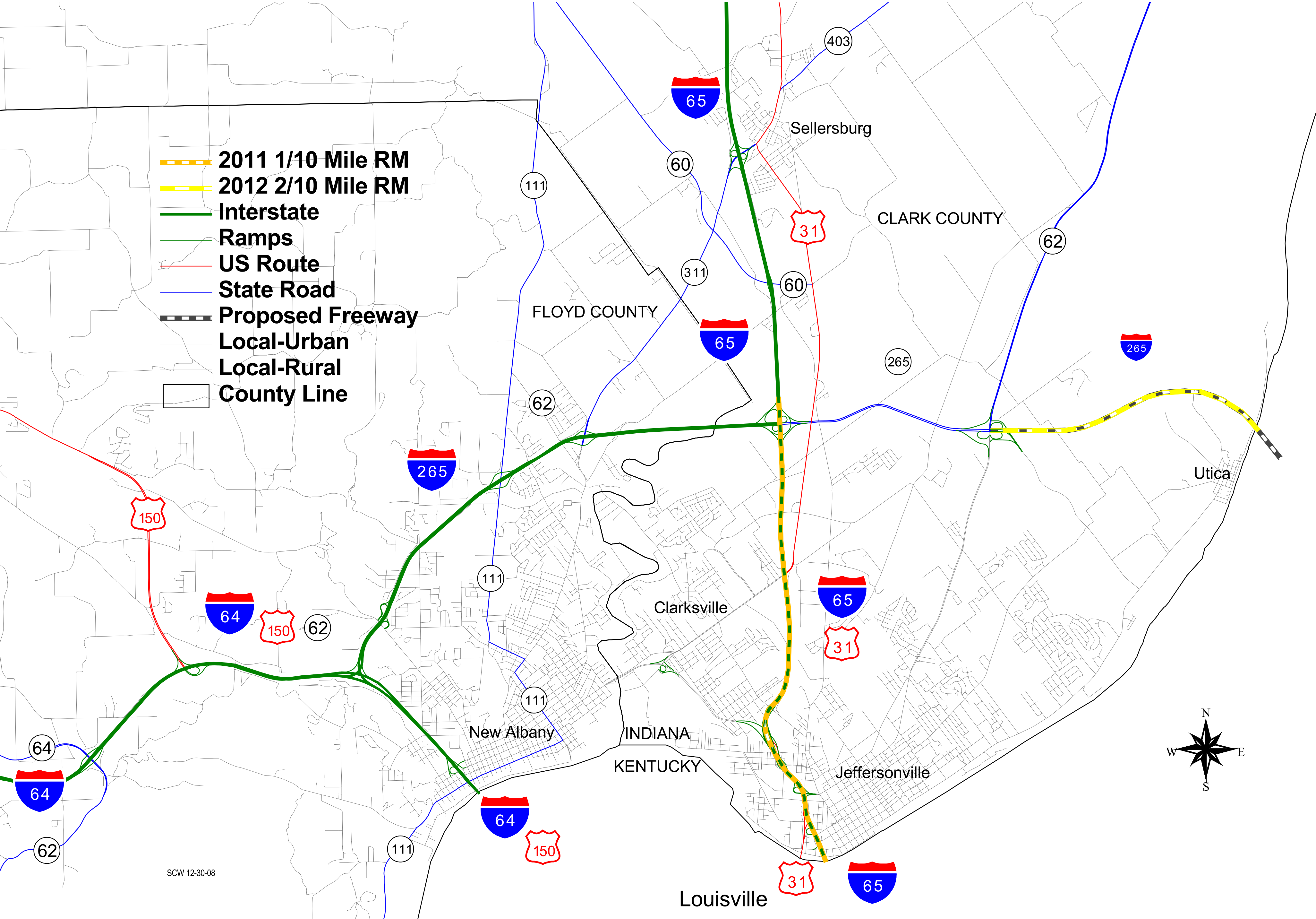
Indianapolis 1/10 & 2/10 Mile RM Deployment Recommendations



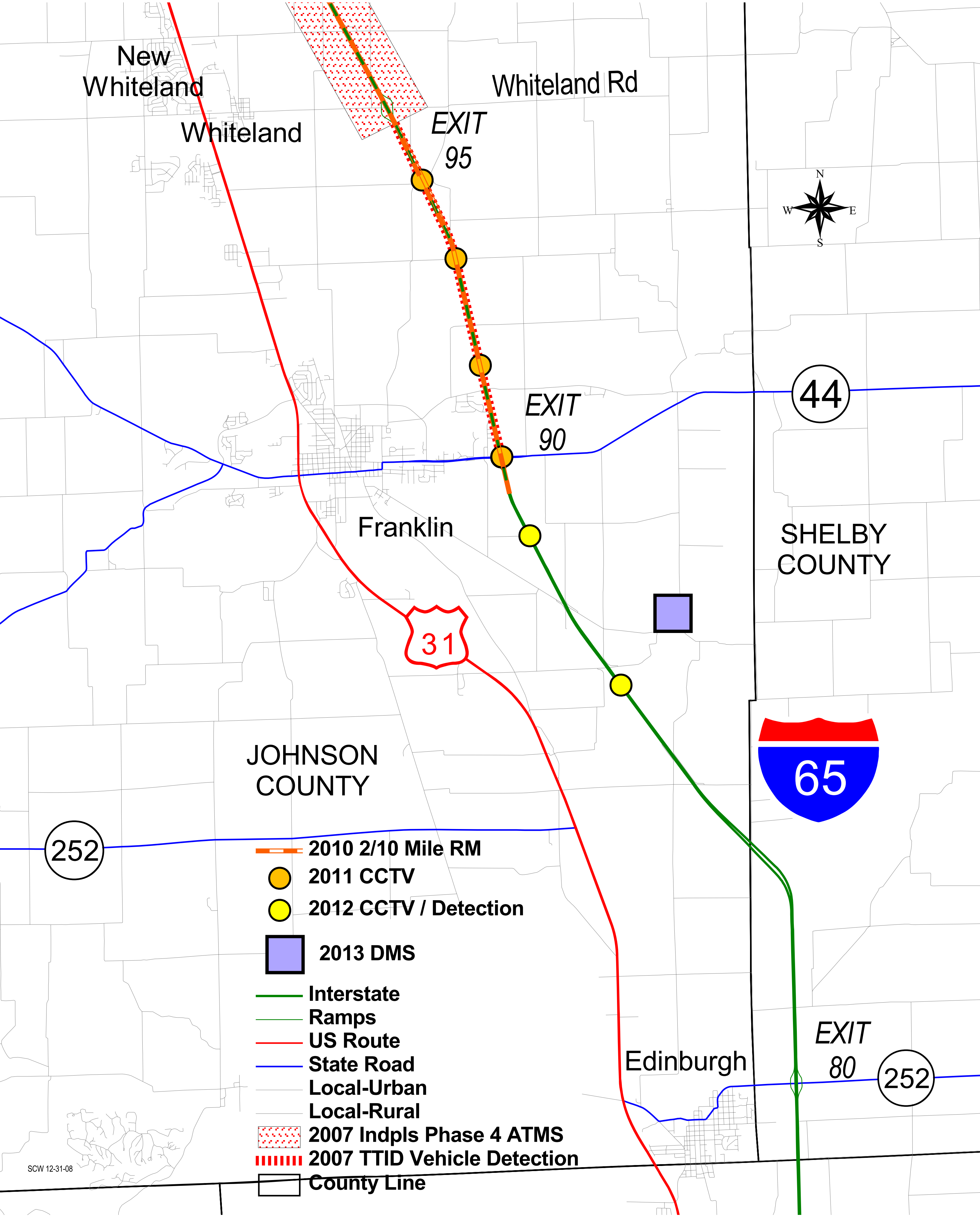
Northwest Indiana 1/10 & 2/10 Mile RM Deployment Recommendations



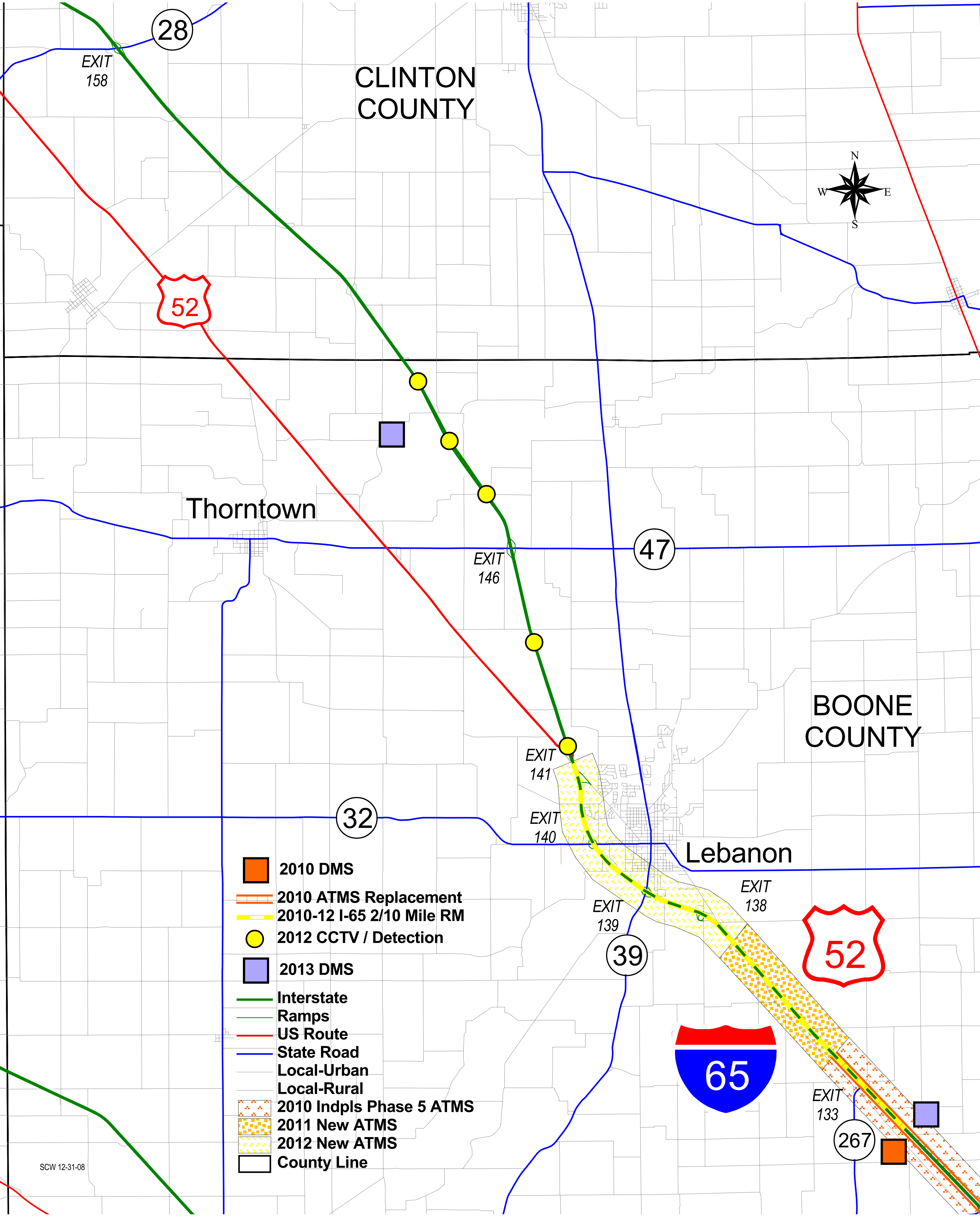
Southern Indiana 1/10 & 2/10 Mile RM Deployment Recommendations



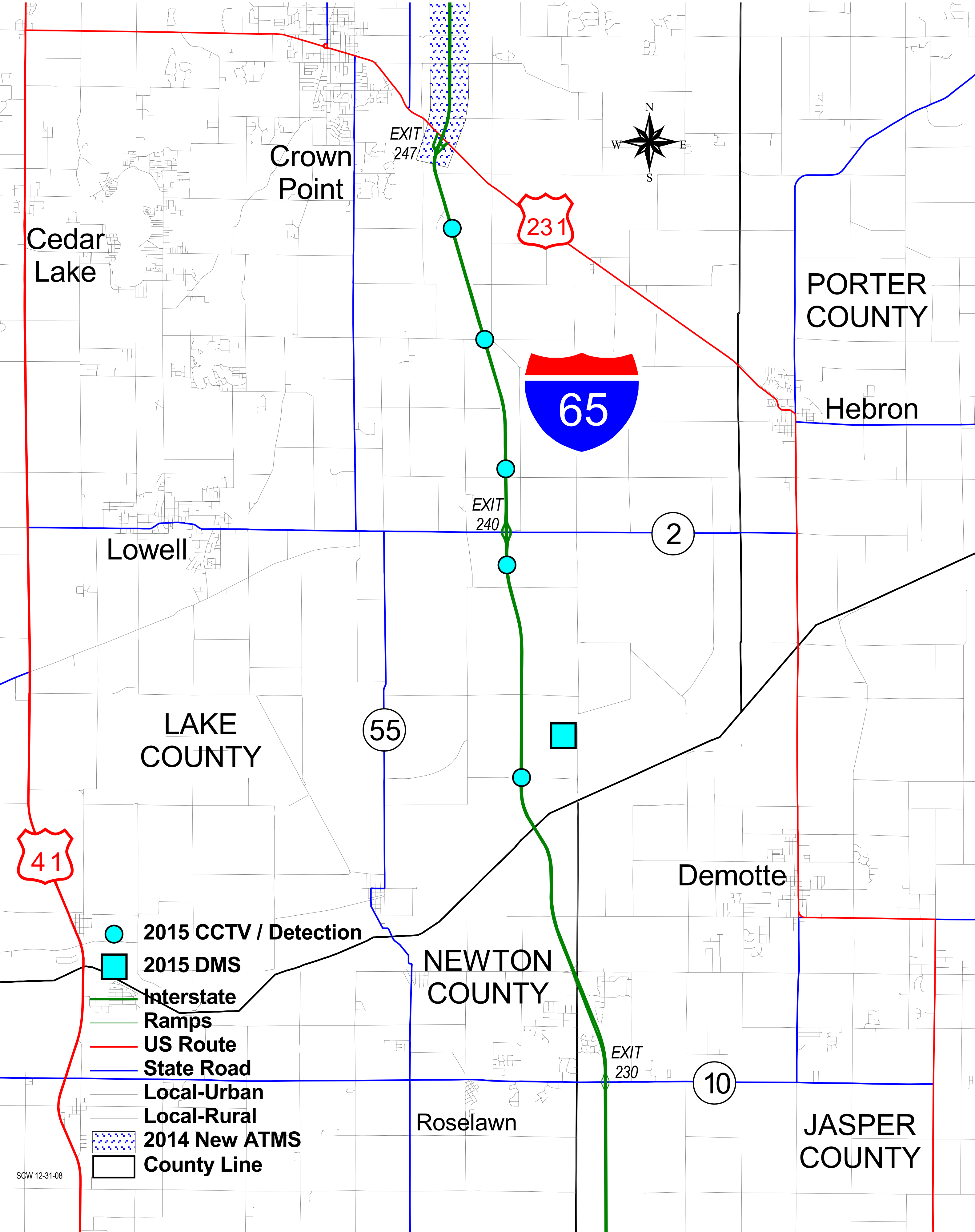
I-65 Deployment Recommendations - SR 252 to Whiteland Rd



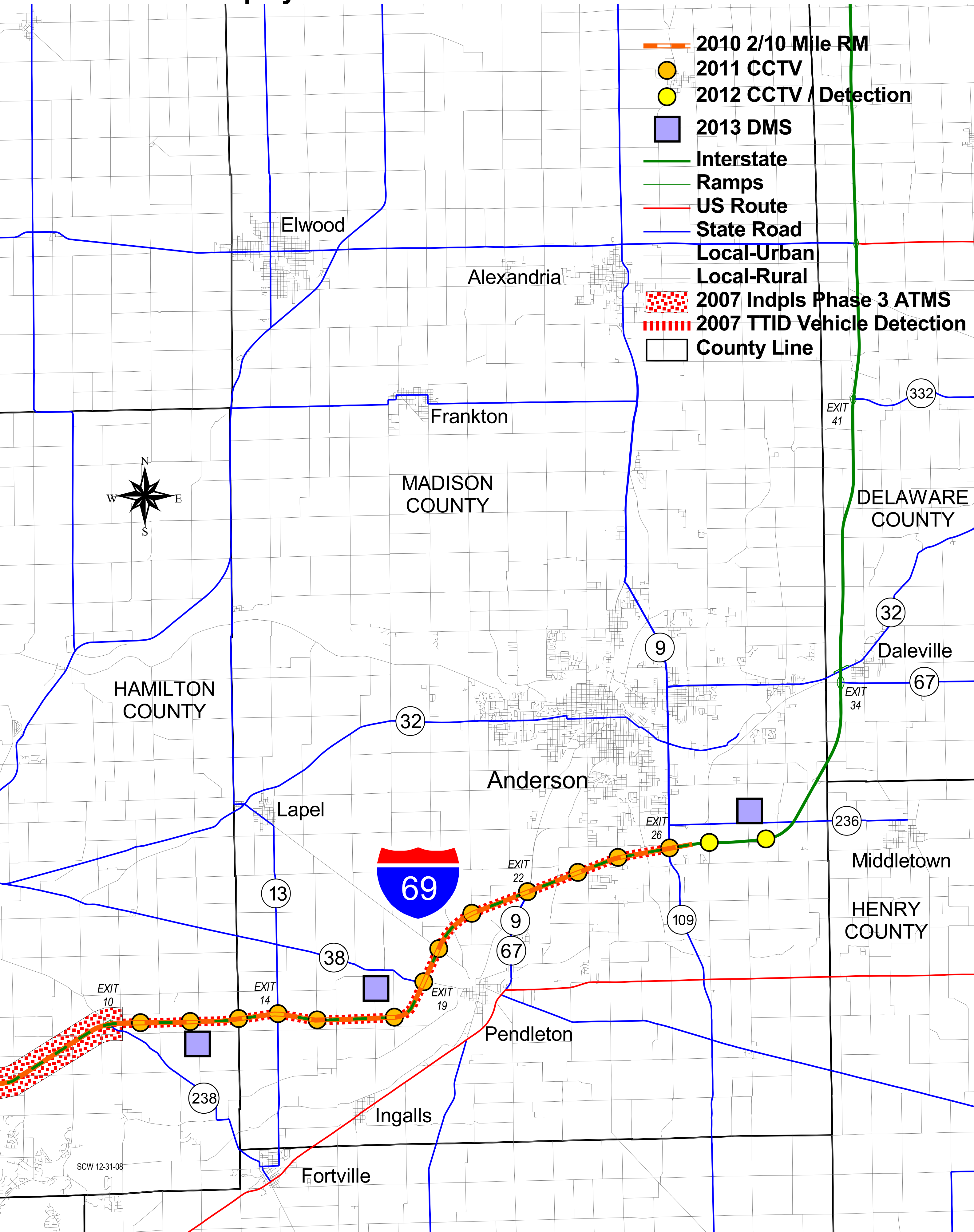
I-65 Deployment Recommendations - SR 267 to SR 28



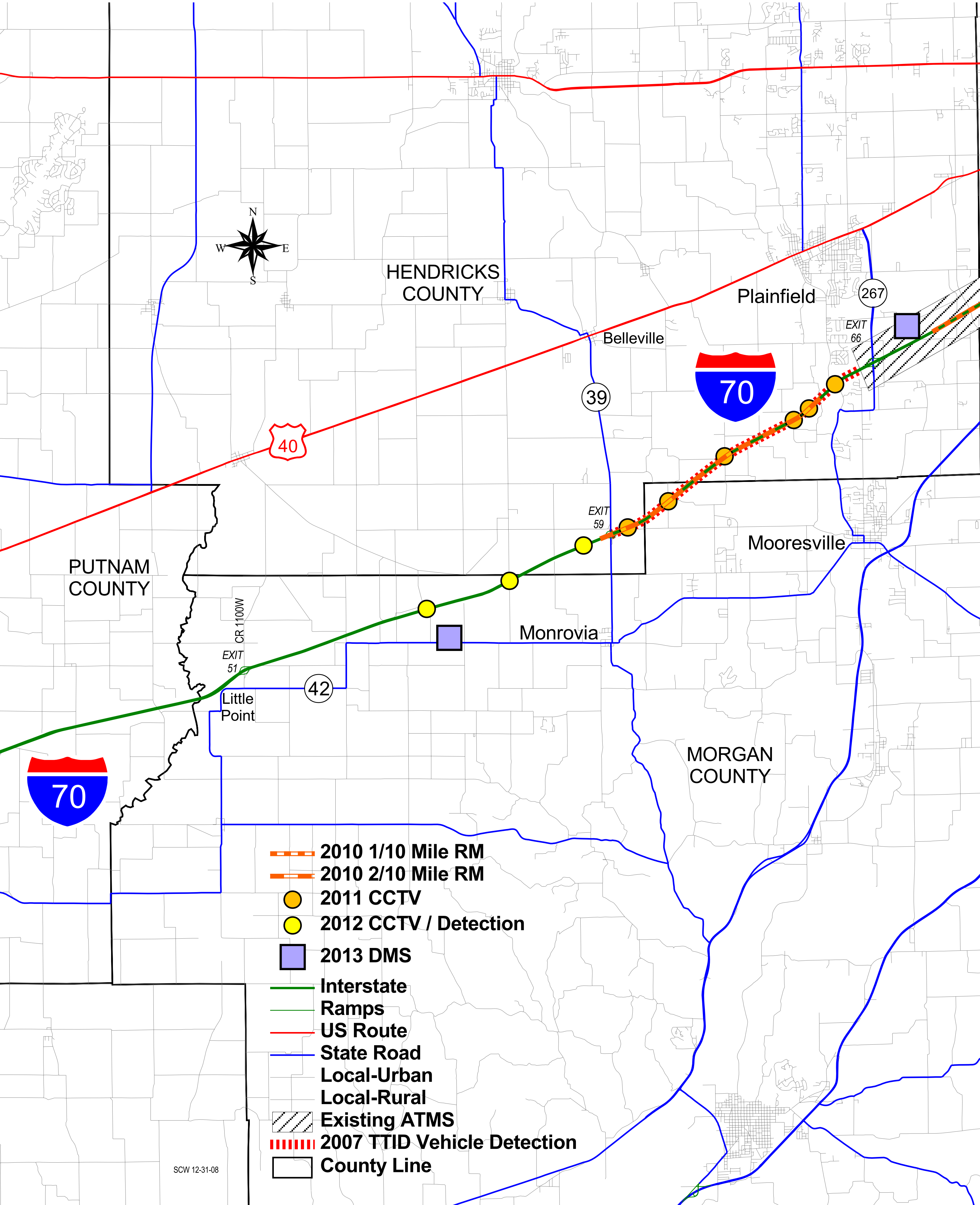
I-65 Deployment Recommendations - SR 10 to US 231



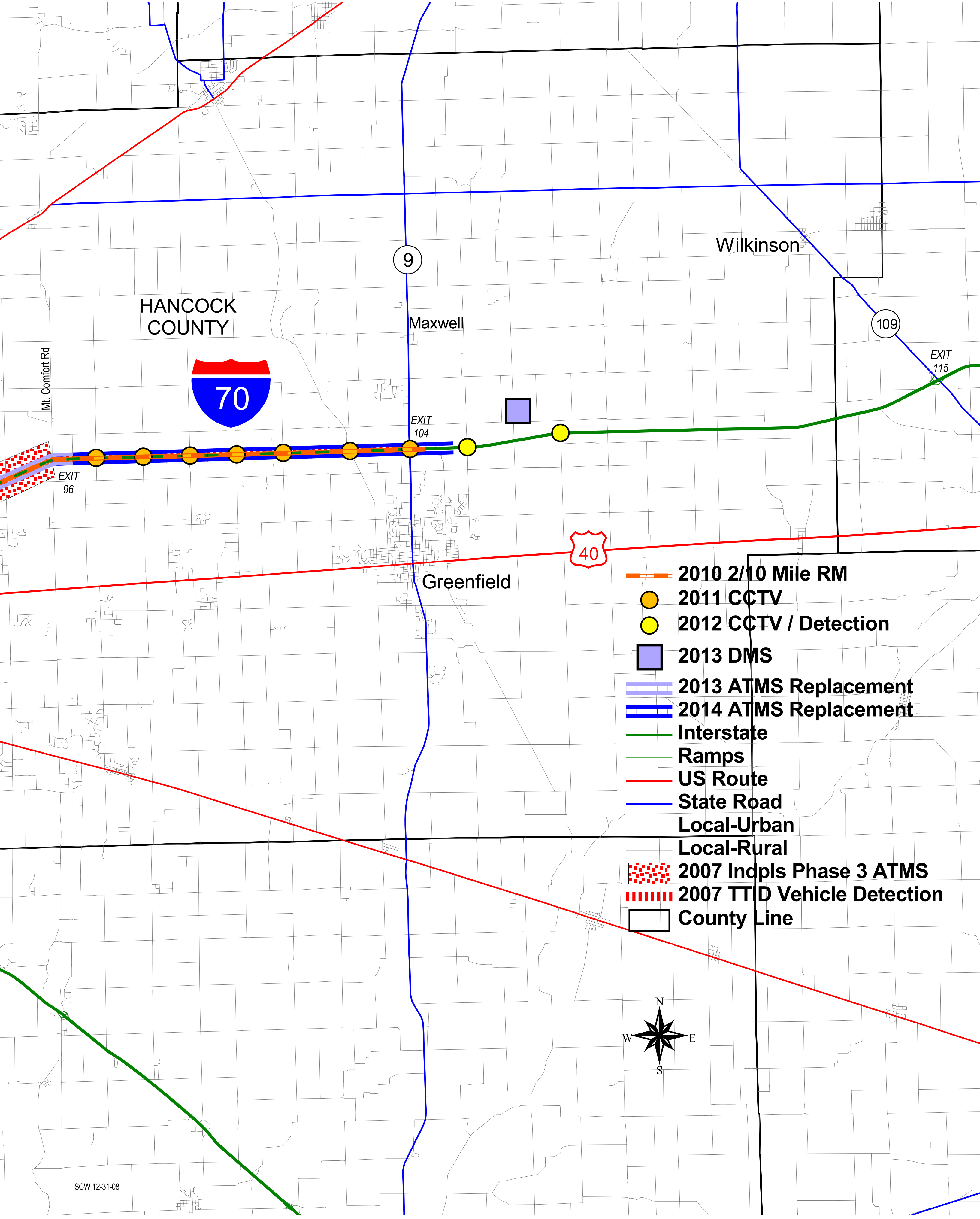
I-69 Deployment Recommendations - SR 238 to SR 32/67



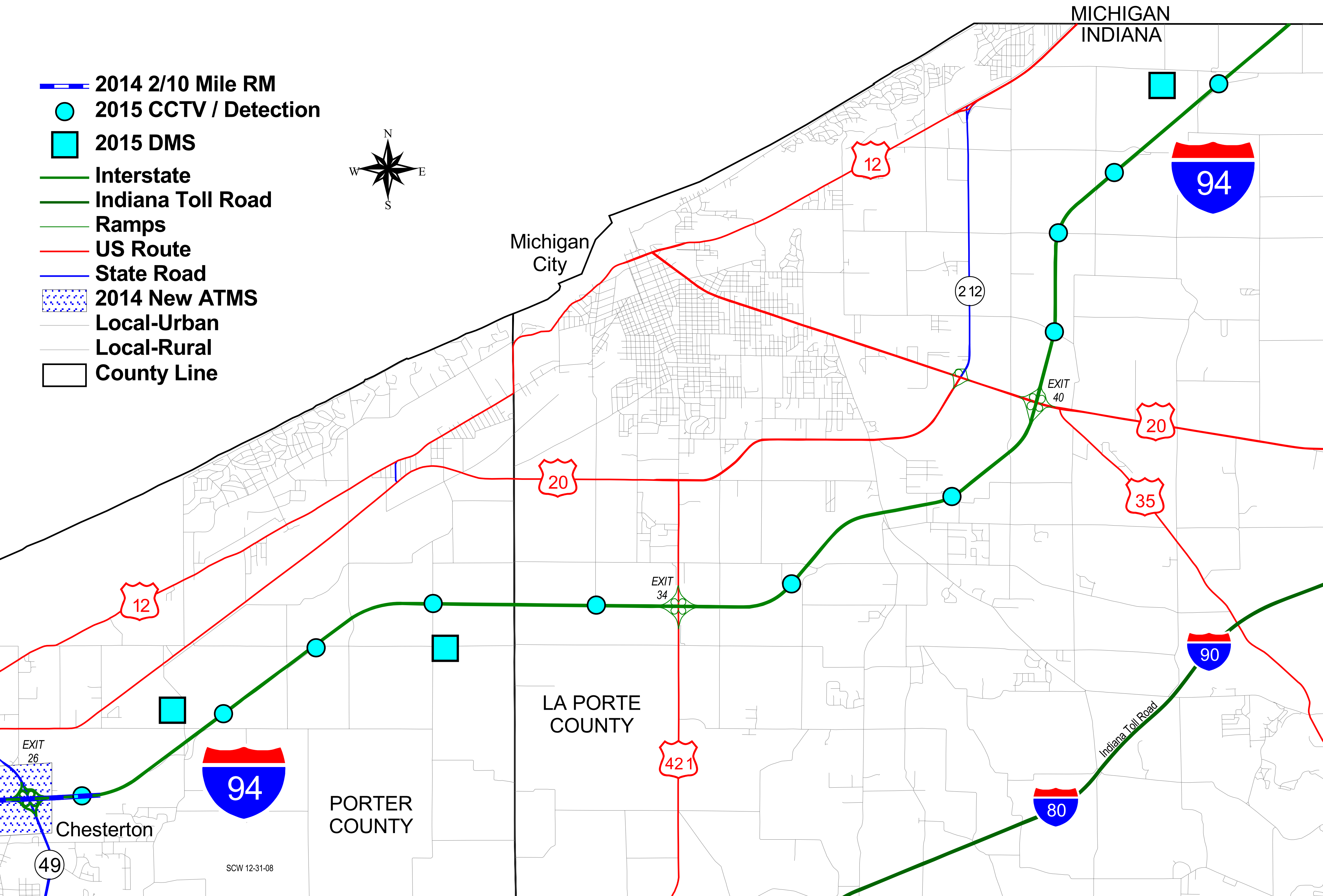
I-70 Deployment Recommendations - CR 1100W / Little Point to SR 267



I-70 Deployment Recommendations - Mt. Comfort Rd to SR 109



I-94 Deployment Recommendations - SR 49 to Michigan State Line



CHAPTER 8 – ITS DEPLOYMENT RECOMMENDATIONS – **CHRONOLOGICAL**

8.1. INTRODUCTION

The data and analysis in the first six chapters of the INDOT Traffic Management Strategic Deployment Plan have laid the foundation for the recommendations made by individual deployment type in Chapter 7. **Please refer to Chapter 7 (ITS Deployment Recommendations – by Deployment Type) for additional details regarding the recommendations, especially in regards to the determination of priority.** This chapter presents the recommendations presented in Chapter 7 **in chronological order** by Fiscal Year. Note that a **Fiscal Year** covers the period from **July 1 through June 30.** For example, Fiscal Year 2010 covers the period from July 1, 2009 through June 30, 2010; Fiscal Year 2011 covers the period from July 1, 2010 through June 30, 2011, and so on.

In addition to the information below, maps showing all deployment recommendations statewide and in Indianapolis, Northwest Indiana, and Southern Indiana may be found at the end of this chapter. Furthermore, the same individual route maps from Chapter 7 showing all recommended deployments on Rural Interstates approaching Indianapolis and Northwest Indiana may also be found at the end of this chapter.

It should be noted that the recommendations in this Version 2.4 Final Report are significantly different that what was presented in the Version 2.3 Intermediate Report dated December 2007, primarily as a result of high fuel prices and the deterioration of national economic conditions over the past year. Revenues to INDOT by way of gasoline and diesel fuel taxes declined as a result of fuel prices exceeding $4 per gallon in 2008 and the associated reduction in vehicle miles traveled. Although fuel prices have declined markedly, the national recession has continued the trend of fewer vehicle miles being traveled, thus the reduction in motor fuel taxes continues. INDOT has proactively adjusted its construction budget over the next biennium (Fiscal Years 2010 and 2011) and some projects have been delayed. This fact, coupled with uncertainty of future traditional fuel tax revenues, especially on the federal level with the federal Highway Trust Fund and the 2009 reauthorization of the federal transportation program, has had a ripple effect on many projects in future years. As such, most the “rural” Traffic Management / ITS deployments that were recommended in the Version 2.3 Intermediate Report are not recommended at this time.

As with any highway project, the deployment dates are subject to change due to a variety of circumstances, including but not limited to funding constraints, staffing and workload constraints, delays to the larger projects that some of these ITS deployments are a component of, technology changes, etc. Similarly, the estimated costs are subject to change due to changes in technology and the fact that they are very preliminary in nature. Furthermore, some components will likely go up in cost over time, while some components, particularly the technological ones, are likely to go down in the future.

Please note that **a 10% contingency is added to the total costs per year** to account for unforeseen project changes; **the reader needs to add 10% to individual projects,** except where noted.

Deployments associated with ATMS replacements and additions during Major Capital Improvements (ITS with Road Projects) are listed in italics to help differentiate them from deployments that are associated with standalone Traffic Management / ITS deployments (Standalone ITS).

To assist the reader in locating projects by road, the following colors will be used to identify roads in this chapter and Chapter 7:

I-64
I-65
I-69
I-70
I-74
I-80/94 (Borman Expwy)
I-94
I-265 / SR 265
I-465
I-865
US 30
US 31
US 36
SR 37
SR 912

8.2. ACTIVE PROJECTS / DEPLOYMENTS NOT YET COMPLETED

Advanced Traffic Management Systems (ATMS)

1. **Phases Three and Four** of the **Indianapolis area ATMS** (Des # 0200605 and 0200607) are **currently under construction** and are nearly complete. Phases 3 and 4 install the vehicle detection and additional cameras in the **northeastern, eastern, and southern** portions of the **Indianapolis** area on I-65 from Whiteland Road (CR 500N) to the I-70 South Split, I-69 from I-465 to SR 238, I-70 from I-465 (East Leg) to Mt. Comfort Road, and clockwise on I-465 from the White River (North Leg) to SR 67 / Kentucky Avenue on the South Leg. **This project has been let.**

2. **Transportation Technology Innovation & Demonstration Program (TTID)** INDOT is a participant in the Transportation Technology Innovation and Demonstration Program (TTID) in the Indianapolis area. As part of the TTID Program, Traffic.com will deploy, operate, and maintain 60 vehicle detection sites in and directly adjacent to the Indianapolis ATMS deployment area with this public/private partnership, **at no cost to INDOT.** In 2007, Traffic.com constructed 57 above ground, side-fire radar vehicle detection sites on the following Interstates and US 31 in and near the Indianapolis area:

   I-65 from SR 44 at Franklin to Whiteland Road (Mile 90 to Mile 95): 4 sites
   I-65 from Cold Spring Road to I-465 (West Leg) (Mile 117 to 123): 5 sites **
   I-69 from SR 238 to SR 9/109 at Anderson (Mile 10 to Mile 26): 13 sites
   I-70 from SR 39 to SR 267 at Plainfield (Mile 59 to Mile 66): 7 sites
   I-70 from Mt. Comfort Road to SR 9 at Greenfield (Mile 96 to Mile 104): 6 sites
   I-465 from I-65 (West Leg) to White River (North Leg) (Mile 20 to Mile 34): 12 sites **
   US 31 from I-465 (North Leg) to SR 32 at Westfield: 10 sites

   ** *- These sites will be supplemented or replaced by more closely spaced vehicle detection as part of the Phase 5 Indianapolis ATMS deployment in 2009 - 2010. The detection is being provided for now by Traffic.com to provide continuous vehicle detection on and inside I-465, albeit at a level of detection less than INDOT intentions during Phase 5 of the Indianapolis ATMS.*

   Furthermore, in 2010 near the conclusion of the Phase 5 Indianapolis ATMS deployment, Traffic.com will construct three additional above ground, side-fire radar vehicle detection sites on I-74 from SR 267 at Brownsburg to Raceway Road (Mile 66 to Mile 70).

3. **Northwest Indiana ATMS Communications System Upgrade (Lake and Porter Counties)** (Des # 0501267) is **currently under construction** and converts the existing Northwest Indiana ATMS analog technology to digital technology, as well as deploys a fiber optic cable network on I-65 from SR 2 to I-90, I-80/94 from the Illinois State Line to I-90, and I-94 from I-90 to SR 249 **in 2008 - 2009**. Other elements of the upgrade include CCTV camera lowering systems on all existing cameras, four additional CCTV cameras and the fiber communications connection to an existing CCTV camera at I-65 at SR 2, server upgrades at the Gary TMC, and **one Travel Time Sign (TTS)** on westbound I-80/94 near Mile 8.1 (Chase St). **This project has been let.**

4. ***I-80/94 (Borman Expwy) from 0.2 mile east of Georgia Street (Mile 10.6) to 0.3 mile east of Clay Street (Mile 13.4) (Lake County)***
Replace full ATMS deployment (microloop vehicle detection every ½ mile, CCTV every mile, conduit) *as part of the ongoing Interchange Modification / Added Travel Lanes projects at I-65 (Des # 0500590, 0065300, and 0500593), including devices on I-65,* ***during construction from 2007 through 2010. Install new EB DMS near Mile 12.7 (Central Ave) in 2009.*** *The DMS will provide traveler information for motorists in the current Borman ATMS area and entering the expanded ATMS deployment on I-94 from I-90 (Indiana Toll Road) to SR 49, as well as EB Toll Road incident information. The DMS is in advance of the I-90 (Indiana Toll Road) decision point. All three phases of this project have been let with Traffic Management / ITS field device components included.* ***This project was let in November 2008.***

5. ***I-465 from SR 67 / Kentucky Ave (West Leg) (Exit 8) to north of 56th St (West Leg) (Exit 19) (Marion County)***
Replace temporary devices *placed as part of Phase 2 of the Indianapolis ATMS* ***with new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) as part of the numerous I-465 West Leg Added Travel Lanes / Interchange Modification projects*** *(Multiple Des #s) (Accelerate 465)* ***during construction from 2008 through 2012.*** *The project to install this full ATMS is programmed (Des # 0600637) and was let in October 2007.* ***Install two New DMSs,*** *providing traveler information for motorists in the Phase 2, 5, and 4 deployment areas. The* ***NB DMS at Mile 14.8*** *is before the I-74 and I-65 decision points; the* ***SB DMS at Mile 14.8*** *is before the I-70 decision point. In addition,* ***install 1/10 Mile Reference Markers*** *on this 11 mile segment of I-465. AADT is 106,220 - 137,900. This deployment replaces the existing 2/10 Mile Reference Markers on this segment.* ***This project has been let.***

Dynamic Message Signs (DMS)

6. ***EB I-80/94 (Borman Expwy), near Mile 12.7 (Central Ave) (Lake County)***
   Install new DMS on new box truss in 2009 *during the I-80/94 Added Travel Lanes project from 0.2 mile east of Georgia Street to 0.3 mile east of Clay Street (Des # 0500593). The DMS will provide traveler information for motorists in the current Northwest Indiana ATMS deployment area and entering the expanded ATMS deployment area on I-94 from I-90 (Indiana Toll Road) to SR 49. The DMS is in advance of the I-90 (Indiana Toll Road) decision point.* ***The Added Travel Lanes project was let in November 2008.***

7. ***NB & SB I-465 (West Leg), near Mile 14.8 (south of 21st St), south of I-74 / US 136 (Marion County)***
   Install two new DMSs on new box trusses in 2010 *during the Added Travel Lanes project from north of US 36 / Rockville Road to north of 21st Street (Des # 0800659), part of the numerous I-465 West Leg Added Travel Lanes / Interchange Modification projects (Accelerate 465). This DMS is included in the ATMS project (Des # 0600637). These DMSs provide traveler information for motorists in the Phase 2, 5, and 4 deployment areas. The NB DMS is before the I-74 and I-65 decision points; the SB DMS is before the I-70 decision point.* ***The Added Travel Lanes project was let in November 2008.***

Travel Time Signs (TTS)

8. **WB I-80/94 (Borman Expwy), near Mile 8.1 (Chase St) (Lake County)**
   Install TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: State Line 8 miles, I-294 11 miles. Sign will require data from Illinois sensors on WB I-80/94 (Kingery Expwy) in Illinois. **Included in Northwest Indiana ATMS Communications System Upgrade (let).**

Reference Markers

9. ***I-465 from SR 67 / Kentucky Ave (West Leg) (Exit 8) to north of 56th St (West Leg) (Exit 19) (Marion County)***
   Install 1/10 Mile Reference Markers in Fiscal Years 2008 - 2012 *on this 11-mile segment of I-465 as part of the Added Travel Lanes / Interchange Modification projects on the West Leg (Accelerate 465) in 2008 - 2012. AADT is 106,220 - 137,900. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. Furthermore, the existing newer (2003 MUTCD-compliant) 2/10 Mile Reference Markers on* ***I-70*** *from Ronald Reagan Pkwy / Ameriplex Pkwy to I-465 will be supplemented with 1/10 Mile Reference Markers as part of the I-465 Added Travel Lanes / Interchange Modification projects (Des #s 0600645 and 9910300, respectively) at I-70 in Fiscal Year 2010.* ***Estimated cost is included in the ATMS project for the Accelerate 465 project above.***

No cost provided as these projects are already let and are partially completed

8.3. FISCAL YEAR 2009 DEPLOYMENTS

Dynamic Message Signs (DMS)

1. **Statewide Dynamic Message Sign (DMS) Replacements / Additional Indianapolis DMSs (Marion, Hamilton, Hendricks, Lake, Porter, Clark, Floyd, and Allen Counties)**
INDOT's first deployments of Dynamic Message Signs (DMS) use a hybrid LED (light-emitting diode) and flipper system for text. Not only does this technology have limitations, it is difficult to acquire spare parts for these devices. As such, INDOT is **replacing** 18 of these **DMSs** (17 Vultron DMSs, one 3M DMS,) statewide with new DMSs with full LED technology, as well as three TRIMARC DMSs near the end of their functional life, **in Fiscal Year 2009** (Des # 0710096). It should be noted that six of these Vultron DMSs in the Indianapolis and Northwest Indiana areas located outside of forthcoming Added Travel Lanes projects that are currently mounted on an overhead balanced cantilever (butterfly) in the median will replaced and mounted on a new box truss to improve motorist readability and maintenance access. Furthermore, **10 additional new DMSs will be deployed on new box trusses in the Indianapolis area.** DMS Replacement / Additional DMS cost: **$6,200,000 (no 10% contingency applied in the DMS Priority 1 total below).**

Indianapolis Area DMS Replacements
NB I-65, Mile 104.7, south of I-465 (South Leg) (Marion County)
Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.**

SB I-69, Mile 4.3, south of 116th St (Hamilton County)
Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.** The DMS should be **relocated slightly downstream near Mile 3.8 (106th Street)** to provide improved readability in this high volume corridor.

EB & WB I-70, Mile 85.8 & 85.7, west of Emerson Ave (Marion County)
Replace two existing Vultron DMSs **in Fiscal Year 2009.**

Northwest Indiana DMS Replacements
NB I-65, Mile 250.3, south of US 30 (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

NB I-65, Mile 256.0, north of 61st Ave (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

SB I-65, Mile 260.7, north of I-80/94 (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

SB I-65, Mile 256.8, north of 61st Ave (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

EB I-80/94 (Borman Expwy), Mile 1.3, east of US 41 (Calumet Ave) (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

EB I-80/94 (Borman Expwy), Mile 7.4, east of Burr St (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

WB I-80/94 (Borman Expwy), Mile 13.6 west of US 6 / SR 51 (Ripley St) (Lake County)
Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.**

WB I-80/94 (Borman Expwy), Mile 7.0, east of Burr St (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

WB I-80/94 (Borman Expwy), Mile 3.9, east of Kennedy Ave (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

WB I-94, Mile 20.7, east of SR 249 (Porter County)
Replace existing Vultron DMS **and install on new box truss in Fiscal Year 2009.**

WB US 30, Mile 13.0, east of I-65 (Lake County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

Fort Wayne DMS Replacements
NB I-69, Mile 94.2, south of south jct with I-469 (Allen County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

SB I-69, Mile 117.1, north of north jct with I-469 (Allen County)
Replace existing Vultron DMS **in Fiscal Year 2009.**

Southern Indiana near Louisville DMS Replacements
EB I-64, Mile 120.4, west of I-265 (Floyd County)
Replace existing 3M DMS **in Fiscal Year 2009.**

SB I-65, Mile 8.0, north of SR 60 (Clark County)
Replace existing TRIMARC DMS **in Fiscal Year 2009.**

SB I-65, Mile 3.2, north of Eastern Blvd (Clark County)
Replace existing TRIMARC DMS **in Fiscal Year 2009.**

EB Brown's Station Way (Old SR 62), west of I-65 (Clark County)
Replace existing TRIMARC DMS **in Fiscal Year 2009.**

Indianapolis Area New DMSs

SB I-465 (West Leg), near Mile 22.0 (south of 79th St), north of 71st St (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 2, and 4 deployment areas and in advance of the Accelerate 465 work zone, as well as before the I-65 decision point.

NB I-465 (East Leg), near Mile 42.3, south of US 36 / SR 67 (Pendleton Pike) (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 3, 5, and TTID deployment areas, as well as before the I-69 decision point.

SB I-465 (East Leg), near Mile 46.3 (north of English Ave), north of US 52 (Marion County)

Install new DMS in on new box truss Fiscal Year 2009. The new DMS will provide traveler information for motorists in the Phase 4 deployment area, as well as before the I-74 and I-65 decision points.

NB I-65, near Mile 108.6 (Southern Ave), south of Raymond St (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 4, 2, 3, and 5 deployment areas, as well as before the two I-70 decision points (South and North Splits).

EB & WB I-465 (North Leg), near Mile 28.7 (east of Township Line Rd), west of US 31 (Marion County)

Install two new DMSs on two new box trusses in Fiscal Year 2009. The DMSs will provide traveler information for motorists in the Phase 5, 3, 2, and TTID deployment areas, as well as before the I-865 / I-65 North (WB) and the future US 31 Freeway (EB) decision points.

NB I-465 (West Leg), near Mile 22.3 (north of 79th St), south of 86th St (Marion County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 3, and TTID deployment areas, as well as before the I-865 decision point.

NB I-69, near Mile 3.7 (106th St), north of 96th St (Hamilton County)

Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 3 and TTID deployment areas, as well as before the SR 37 decision point / diversion route.

SB I-65, near Mile 125.0, north of 71st St (Marion County)
Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 2, 4 and 3 deployment areas, as well as before the I-465 decision point. This DMS will supplement the SB I-65 DMS north of SR 334 (Mile 131.9), allowing that DMS to feature less information on the West and South Legs of I-465.

EB I-74, near Mile 67.0 (CR 600N / 56th St), east of SR 267 (Hendricks County)
Install new DMS on new box truss in Fiscal Year 2009. The DMS will provide traveler information for motorists in the Phase 5, 2, 4, and TTID deployment areas, as well as before the I-465 decision point. This DMS should be placed west of Ronald Reagan Parkway in Hendricks County, providing for a local diversion route in advance of I-465.

Standalone ITS	**= $6,200,000**
ITS with Road Projects	***= $ 0***
Total Fiscal Year 2009 Deployments ESTIMATED COST =	**$6,200,000**

8.4. FISCAL YEAR 2010 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. **The Fifth and final phase** of the Indianapolis area ATMS (Des # 0200606) deploys the vehicle detection and additional cameras **in Fiscal Year 2010** in the **northwestern and northern** portions of the **Indianapolis** area on I-65 from Cold Spring Road to SR 267, I-74 from Raceway Road to I-465 (West Leg), I-465 from 56th Street (West Leg) to the White River (North Leg) (except for devices in the 71st Street / 86th Street area that were installed as part of the 2004-2006 Added Travel Lanes / Interchange Modification project (ATMS deployment Des # 0400418, let in 2004; the cameras and communication devices will still be part of Phase 5), and I-865 from I-65 to I-465. Estimated Phase 5 cost: **$5,700,000 (no 10% contingency applied in the total below).**

2. ***I-65 from I-865 (Exit 129) to 0.5 mile north of SR 267 (Exit 133) (Boone County)***
Replace temporary devices *placed as part of Phase 5 of the Indianapolis ATMS* ***with new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Phase 2; Des # 0200903 and 0800476)* ***in Fiscal Year 2010. Replace*** *existing Vultron DMS* ***and install on new box truss*** *at Mile 131.9. In addition,* ***install*** *(or replace the existing signs from Mile 129 to 132)* ***2/10 Mile Reference Markers.*** *Estimated cost:* ***$1,500,000.***

Dynamic Message Signs (DMS)

3. ***EB & WB I-465, (North Leg) Mile 32.2, west of Keystone Ave (Marion County)***
Replace two *existing Vultron DMSs* ***and install on new box trusses <u>east</u> of Keystone Avenue <u>near Mile 34.3</u> in Fiscal Year 2010*** *during the I-465 Added Travel Lanes project from Carmel Creek to White River (Des # 0800421). These DMSs should be relocated east of Keystone Avenue to provide for a diversion route (Keystone Avenue) in advance of the proposed US 31 freeway north of I-465 (which is recommended for full ATMS deployment) (WB), and closer to the I-69 decision point (EB). Estimated cost:* ***$750,000.***

4. ***SB I-65, Mile 131.9, north of SR 334 (Boone County)***
Replace *existing Vultron DMS* ***and install on new box truss in Fiscal Year 2010*** *during the I-65 Added Travel Lanes project from I-865 to 0.5 mile north of SR 267 (Des # 0200903). Estimated cost:* ***$375,000.***

Travel Time Signs (TTS)

5. **SB I-69, near Mile 6.0 (Cumberland Rd) (Hamilton County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) in the median. Downstream destination: I-465 6 miles. Estimated cost: **$100,000.**

6. **NB I-69, near Mile 1.0 (just north of 82nd St) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 37 4 miles, SR 238 9 miles. Estimated cost: **$100,000.**

7. **SB I-465 (East Leg), near Mile 38.5 (north of Fall Creek Rd) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 and 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 5 miles, I-74 10 miles. Estimated cost: **$100,000.**

8. **SB I-465 (East Leg), near Mile 45.0 (10th St) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phase 3 and 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 4 miles, I-65 8 miles. Estimated cost: **$100,000.**

9. **NB I-465 (East Leg), near Mile 47.4 (US 52 / Brookville Rd) (Marion County)**
   Install TTS in Fiscal Year 2010 after the completion of Phases 3 and 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 3 miles, I-69 10 miles. Estimated cost: **$100,000.**

10. **WB I-465 (South Leg), near Mile 50.2 (CSX RR) (Marion County)**
    Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 3 miles, SR 37 7 miles (in anticipation of future I-69). Estimated cost: **$100,000.**

11. **EB I-465 (South Leg), near Mile 52.6 (west of 9th Ave) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 4 miles, I-70 9 miles. Estimated cost: **$100,000.**

12. **WB I-465 (South Leg), near Mile 0.7 (Keystone Ave) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. Note that the westernmost detection station is at Mile 8.2; a slight gap will exist between this location and I-70 (Mile 9.4). TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 37 4 miles (in anticipation of future I-69), I-70 9 miles. Estimated cost: **$100,000.**

13. **EB I-465 (South Leg), near Mile 3.2 (east of Bluff Rd) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 3 miles, I-74 8 miles. Estimated cost: **$100,000.**

14. **EB I-465 (South Leg), near Mile 7.4 (Mann Rd) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 7 miles, I-74 12 miles. Estimated cost: **$100,000.**

15. **NB I-65, near Mile 100.0 (south of County Line Rd) (Johnson County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) in the median. Downstream destinations: I-465 6 miles, I-70 10 miles. Estimated cost: **$100,000.**

16. **SB I-65, near Mile 105.4 (Thompson Rd) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: Greenwood Exit 6 miles. Sign should be designed for a second downstream destination, SR 44 16 miles; this text can be added if the TTID detection deployment provides reliable data. Estimated cost: **$100,000.**

17. **SB I-65, near Mile 109.9 (south of the I-70 South Split) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-465 4 miles, Greenwood Exit 10 miles. Estimated cost: **$100,000.**

18. **SB I-65, near Mile 116.6 (Pedestrian Overpass) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 4 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall (although this area does not have a full-width inside shoulder). Downstream destinations: I-70 4 miles, I-465 10 miles. Estimated cost: **$100,000.**

19. **WB I-70, near Mile 88.2 (CSX RR) (Marion County)**
Install TTS in Fiscal Year 2010 after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 5 miles, I-465 15 miles. Estimated cost: **$100,000.**

20. **EB I-70, near Mile 83.6 (Commerce Ave) (Marion County)**
Install TTS in Fiscal Year 2010 after the completion of Phase 3 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: I-465 6 miles. Sign should be designed for a second downstream destination, SR 9 20 miles; this text can be added if the TTID detection deployment provides reliable data. If not, this text can be added after the completion of the two Added Travel Lanes projects on I-70 from 0.6 mile east of Post Road to 0.8 mile east of SR 9 in 2013 and 2014 (Des #s 0200699 and 0200700) and the subsequent deployment and calibration of the ½ mile-spaced vehicle detection. Estimated cost: **$100,000.**

21. **WB I-70, near Mile 78.9 (west of the White River bridge) (Marion County)**
Install TTS in Fiscal Year 2010 after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall (although this area does not have a full-width inside shoulder). Downstream destination: I-465 6 miles, SR 267 12 miles. Estimated cost: **$100,000.**

22. **EB I-70, near Mile 73.6 (west of Lynhurst Dr) (Marion County)**
Install TTS in Fiscal Year 2010 after developing / calibrating the algorithms needed to support the TTS in 2009. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall and will likely need coordination with the Fiscal Year 2010 I-70 / I-465 Interchange Modification (Des # 9910300). Downstream destinations: I-65 7 miles, I-465 16 miles. Estimated cost: **$100,000.**

Reference Markers

23. **I-65 from SR 44 (Mile 89) to Main St (Greenwood Rd) (Mile 99) (Johnson County)**
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this 10-mile segment of I-65 to support the Phase 4 ATMS and TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$20,000.**

I-65 from Main St (Greenwood Rd) (Mile 99) to south of Southport Rd (Mile 102) (Johnson and Marion Counties)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on this 3-mile segment of I-65 to support the Phase 4 ATMS deployment. AADT is 79,250 - 90,380. Estimated cost: **$12,000.**

I-65 from south of Southport Rd (Mile 102) to 38th St / Kessler Blvd (Mile 118) (Marion County)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on this 16-mile segment of I-65. AADT is 90,380 - 165,690. **This deployment supplements the existing newer** (2003 MUTCD-compliant) **2/10 Mile Reference Markers** from Mile 102 to Mile 118. Estimated cost: **$32,000.**

I-69 from I-465 (Mile 0) to just north of SR 37 /116th St (Mile 6) (Marion and Hamilton Counties)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on this six-mile segment of I-69. AADT is 131,120 - 167,000. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost: **$24,000.**

I-69 from just north of SR 37 / 116th St (Mile 6) to SR 9/109 (Mile 27) (Hamilton and Madison Counties)
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this 21-mile segment of I-69 to support the Phase 3 ATMS and TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$42,000.**

I-70 from SR 39 (Mile 59) to west of SR 267 (Mile 65) (Hendricks and Morgan Counties)
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this six-mile segment of I-70 to support the TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$12,000.**

I-70 from I-465 (West Leg) (Mile 73) to I-65 (South Split) (Mile 81) (Marion County)
I-70 from I-465 (East Leg) (Mile 90) to Post Rd (Mile 91) (Marion County)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on these eight and one mile segments of I-70, respectively. AADT is 50,050 - 112,410 and 109,150, respectively. This deployment supplements the existing newer (2003 MUTCD-compliant) 2/10 Mile Reference Markers from Mile 73 to Mile 78, replaces the existing 2/10 Mile Reference Markers from Mile 78 to Mile 81, and supplements the existing newer (2003 MUTCD-compliant) 2/10 Mile Reference Markers from Mile 90 to Mile 91. Estimated cost: **$24,000.**

I-70 from east of Post Rd (Mile 93) to SR 9 (Mile 104) (Marion and Hancock Counties)
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this 11-mile segment of I-70 to support the Phase 3 ATMS and TTID / CCTV Camera deployments in 2007 - 2011. Estimated cost: **$22,000.**

I-74 from SR 267 (Mile 65) to I-465 (West Leg) (Mile 73) (Hendricks and Marion Counties)
Install 2/10 Mile Reference Markers in Fiscal Year 2010 on this eight-mile segment of I-74 to support the Phase 5 ATMS and TTID / CCTV Camera deployments in 2009 - 2011. This deployment replaces the existing 2/10 Mile Reference Markers near Mile 73. Estimated cost: **$16,000.**

I-465 from I-65 (South Leg) (Mile 0) to SR 67 / Kentucky Ave (West Leg) (Exit 8) (Marion County)
I-465 from 56th St (West Leg) (Mile 19) to US 31 (North Leg) (Mile 31) (Marion, Boone, and Hamilton Counties)
I-465 from north of 56th St (East Leg) (Mile 39) to I-65 (South Leg) (Mile 53) (Marion County)
Install 1/10 Mile Reference Markers in Fiscal Year 2010 on these eight, 12, and 14 mile segments of I-465, respectively. AADT is 85,470 - 106,220, 81,060 - 116,010, and 95,500 - 157,200, respectively. This deployment replaces the existing 2/10 Mile Reference Markers on these segments. Estimated cost: **$136,000.**

24. ***I-465 from 0.35 mile east of US 31 / Meridian St (Exit 31) (North Leg) to the south end of bridge over Fall Creek) (East Leg) (Mile 39) (Marion County)***
Install 1/10 Mile Reference Markers in Fiscal Years 2010 - 2013 *on this eight-mile segment of I-465 as part of the numerous Added Travel Lanes / Interchange Modification projects on I-465 in 2010 - 2013. AADT is 121,040 - 146,940. This deployment replaces the existing 2/10 Mile Reference Markers on this segment.* ***Estimated cost is included in the ATMS projects for the I-465 Added Travel Lanes projects.***

25. ***I-65* from south of SR 267 (Mile 132) to US 52 (Mile 142) (Boone County)**
Install 2/10 Mile Reference Markers in Fiscal Years 2010 - 2012 *as part of the multiple Added Travel Lanes projects on I-65 from I-865 to US 52 in 2010 - 2012 on this 10-mile segment of I-65 to support the ATMS in those projects.* ***Estimated cost is included in the ATMS deployment with the I-65 Added Travel Lanes projects.***

Standalone ITS = $8,075,000
ITS with Road Projects = $2,900,000
Total Fiscal Year 2010 Deployments ESTIMATED COST = $10,975,000

8.5. FISCAL YEAR 2011 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. **I-65 from the Ohio River (Mile 0) to SR 311 (Exit 9) (Clark County)**
   LOS B - E, AADT = 50,750 - 121,750, six to eight lanes (plus two-lane, one-way Collector/Distributor roadways in the southern one mile and two-lane, one-way frontage roads from Stansifer Avenue to Veterans Parkway), high growth area north of I-265. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, installation of fiber optic cable in existing conduits from approximately Mile 1 to Mile 9 in the completed Revive 65 construction area) in Fiscal Year 2011.** Devices of a more temporary nature should be installed in the southern portion of the corridor from the Kennedy Bridge to the area near the L&I Railroad bridge / Stansifer Avenue near Mile 1.2, as this area will be greatly impacted by the new I-65 Ohio River bridge (Des # 0201294) and the Indiana approach construction (Des #s 0810312, 0810313, 0810314, 0810315, 0810316, and 0810317), both beginning in Fiscal Year 2014. In addition, install **1/10 Mile Reference Markers** on the six-mile segment of I-65 **from the Kentucky State Line (Mile 0) to I-265 (Mile 6).** AADT is 64,030 - 121,750. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost: **$2,200,000.**

2. **I-265 from I-64 (Exit 0) to I-65 (Exit 7) (Floyd and Clark Counties)**
   LOS C - D, AADT = 45,040 - 53,020, four lanes, high growth area. **Recommendation: Full ATMS Deployment (side-fire vehicle detection every ½ mile, CCTV every mile, direct burial of fiber optic cable) in Fiscal Year 2011.** Estimated cost: **$1,925,000.**

3. **I-64 from SR 62/64 (Exit 118) to the Ohio River (Mile 124) (Floyd County)**
   LOS C - D, AADT = 54,920 - 85,840, five lanes (six approaching the Sherman Minton Bridge over the Ohio River), high growth area west of I-265. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile) in Fiscal Year 2011.** Care shall be taken to ensure that the devices are set back from the mainline so as to not conflict with the future Added Travel Lanes project on I-64 from I-265 to SR 111 / Spring Street (Des # 0500307) in Fiscal Year 2014 (so the devices can be used to assist in monitoring traffic during this project). Estimated cost: **$1,200,000.**

4. **SR 265 (future I-265) from I-65 (Exit 7) to SR 62 (Exit 9) (Clark County)**
   LOS B, AADT = 26,450, four lanes, high growth area. While LOS B does not call for a "standalone" project of merit, it is logical to implement full detection on this segment at the same time as the rest of the Southern Indiana ATMS deployment, plus this is a short, two mile segment that is part a larger **system** that provides motorists and TMC operators with traffic information. Furthermore, traffic volumes will grow considerably once the freeway is extended to the east across the Ohio River into Kentucky (Indiana New Road Construction project (Des # 0201297) and New Bridge Construction project (Des # 0201296) beginning in Fiscal Year 2012. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, direct burial of fiber optic cable) in Fiscal Year 2011.** Estimated cost: **$750,000.**

5. ***I-65 from 0.5 mile north of SR 267 (Exit 133) to 0.5 mile south of CR 100E (Lebanon Interchange) (Exit 138) (Boone County)***
   New full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) *as part of the Added Travel Lanes project (Phase 3; Des # 0200904)* ***in Fiscal Year 2011.*** *In addition,* ***install 2/10 Mile Reference Markers.*** *Estimated cost:* ***$1,500,000.***

6. ***I-465 from 0.35 mile east of US 31 / Meridian St (Exit 31) (North Leg) to 0.5 mile west of Allisonville Rd (Exit 35) (North Leg) (Hamilton and Marion Counties)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400289)* ***in Fiscal Year 2011.*** *In addition,* ***replace*** *two existing Vultron DMSs* ***and install on new box trusses east of Keystone Avenue near Mile 34.3*** *as part of a short Added Travel Lanes project within the limits of this project from Carmel Creek to White River that also widens those structures for maintenance of traffic purposes (Des # 0800421) in 2010. Finally,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$1,500,000.***

7. ***I-465 from 0.5 mile west of Allisonville Rd (North Leg) (Exit 35) to 0.5 mile west of I-69 (North Leg) (Exit 37) (Marion County)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400286)* ***in Fiscal Year 2011.*** *In addition,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$375,000.***

8. ***I-465 from 75th St (North Leg) (Mile 37) to the south end of bridge over Fall Creek) (East Leg) (Mile 39) (Marion County)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0800422)* ***in Fiscal Year 2011. Replace*** *existing Vultron DMS* ***and install on new box truss*** *at Mile 38.2. Finally,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$750,000.***

9. ***US 31 Added Travel Lanes (Freeway Upgrade) from 203rd St (Mile 135) to 216th St (Mile 136) (Hamilton County)***
   Design Year LOS C, Design Year AADT = 37,980 - 39,290, four lanes, high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600424)* ***in Fiscal Year 2011.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$375,000.***

<u>CCTV Cameras</u>

10. **I-69 from SR 238 (Exit 10) to SR 9/109 (Exit 26) (Hamilton and Madison Counties) (13 cameras)**
    LOS C - E, AADT = 49,290 - 64,060, four lanes, high growth area near Fishers / Indianapolis; moderate growth area near Pendleton / Anderson. **Install cameras in Fiscal Year 2011** near ½ mile east of SR 238, ¼ mile west of Cyntheanne Road, the former crossing of Hamilton / Madison County Line Road, SR 13, the former crossing of Madison CR 800W, the former crossing of Madison CR 600W, SR 38, Old SR 132, Madison CR 400W, SR 9/67, ¼ mile west of Brown Street (Madison CR 100W), Main Street, and SR 9/109 to support the 13 TTID vehicle detection sites deployed in 2007. Estimated cost: **$975,000.**

11. **I-65 from SR 44 (Exit 90) to Whiteland Rd (CR 500N) (Exit 95) (Johnson County) (4 cameras)**
    LOS D, AADT = 55,210, four lanes, moderate growth area. **Install cameras in Fiscal Year 2011** near SR 44, ¼ mile north of Johnson CR 100N, Johnson CR 300N, and Johnson CR 300E to support the 4 TTID vehicle detection sites deployed in 2007. Estimated cost: **$300,000.**

12. **I-70 from Mt. Comfort Rd (Exit 96) to SR 9 (Exit 104) (Hancock County) (7 cameras)**
    LOS D, AADT = 53,830, four lanes, moderate growth area. **Install cameras in Fiscal Year 2011** near the former crossing of Hancock CR 500W, Hancock CR 400W, the former crossing of Hancock CR 300W, Hancock CR 200W, the former crossing of Hancock CR 100W, Fortville Pike, and SR 9 to support the 6 TTID vehicle detection sites deployed in 2007. Estimated cost: **$525,000.**

13. **I-70 from SR 39 (Exit 59) to SR 267 (Exit 66)**
(Hendricks and Morgan Counties) (6 cameras)
LOS C, AADT = 44,830, four lanes. **Install cameras in Fiscal Year 2011** near the former crossing of Hendricks CR 1000S, the former crossing of Morgan CR 150W, Hendricks CR 525E (Joppa Road), Hendricks CR 675E, Plainfield Rest Area, and Old SR 267 to support the 7 TTID vehicle detection sites deployed in 2007. Estimated cost: **$450,000.**

14. **I-74 from SR 267 (Exit 66) to Raceway Rd (Mile 70)**
(Hendricks County) (3 cameras)
LOS C, AADT = 35,850, four lanes, high growth area. **Install cameras in Fiscal Year 2011** near ½ mile west of Hendricks CR 600N (56th Street), the former crossing of Hendricks CR 900E, and Hendricks CR 1000E (Hunter Road) to support the 3 TTID vehicle detection sites deployed in 2009. Estimated cost: **$225,000.**

Dynamic Message Signs (DMS)

15. ***SB I-465 (East Leg), Mile 38.2, south of I-69 (Marion County)***
Replace** existing Vultron DMS **and install on new box truss in Fiscal Year 2011** during the I-465 Added Travel Lanes project from 75th St to the south end of the bridge over Fall Creek) (Des # 0800422). Estimated cost: **$375,000.

Reference Markers

16. **I-65 from the Ohio River (Mile 0) to I-265 (Mile 6) (Clark County)**
Install 1/10 Mile Reference Markers in Fiscal Year 2011 on this six-mile segment of I-65 as part of the ATMS Deployment in Southern Indiana in 2011. AADT is 64,030 - 121,750. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. **Estimated cost is included in the Southern Indiana ATMS deployment in this Section.**

17. ***US 31 Added Travel Lanes (Freeway Upgrade) from 203rd St (Mile 135) to 216th St (Mile 136) (Hamilton County)***
Install 1/10 Mile Reference Markers in Fiscal Year 2011** as part of the Added Travel Lanes (Freeway Upgrade) project in 2011. AADT projected as 37,980 - 39,290. **Estimated cost is included in the US 31 ATMS deployment in this Section.

Standalone ITS = $9,425,000
ITS with Road Projects = $5,350,000
Total Fiscal Year 2011 Deployments ESTIMATED COST = $14,775,000

8.6. FISCAL YEAR 2012 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-465* from 0.5 mile west of I-69 (North Leg) (Exit 37) to 75th St (North Leg) (Mile 37), including Interchange Modification at I-69 (Marion County)**
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400283)* ***in Fiscal Year 2012.*** *In addition,* ***install 1/10 Mile Reference Markers;*** *this deployment replaces the existing 2/10 Mile Reference Markers on this segment. Estimated cost:* ***$750,000.***

2. ***I-65* from 0.5 mile south of CR 100E (Lebanon Interchange) (Exit 138) to US 52 (Exit 141) (Boone County)**
   New full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables) *as part of the Added Travel Lanes project (Phase 4; Des # 0600304, 0800484, and 0600305)* ***in Fiscal Year 2012.*** *In addition,* ***install 2/10 Mile Reference Markers.*** *Estimated cost:* ***$1,500,000.***

3. ***I-265* from SR 62 (Exit 9) to the New Ohio River Bridge (Clark County)**
   Design Year LOS C, Design Year AADT = 68,200, six lanes, high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the four-mile New Road Construction project (Des # 0201297) and New Bridge Construction project (Des # 0201296), (the latter a joint project with Kentucky), beginning* ***in Fiscal Year 2012.*** *In addition,* ***install 2/10 Mile Reference Markers.*** *Estimated cost:* ***1,500,000.***

4. ***US 31* Added Travel Lanes (Freeway Upgrade) from 0.2 mile south of I-465 (North Leg) (Mile 123) to 111th St (Mile 125) (Hamilton County)**
   Design Year LOS D, Design Year AADT = 90,390 six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600430)* ***in Fiscal Year 2012.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$750,000.***

CCTV Cameras / Vehicle Detection

5. **I-69 approaching SR 9/109 at Anderson (Exit 26) (Madison County) (2 cameras and side-fire radar detection sites (3 miles))**
   LOS C, AADT = 42,410, four lanes, moderate growth area near Anderson, supports the deployment of a SB DMS near Mile 28.3 (north of Madison CR 300E). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near Rangeline Road (Madison CR 200E) and ½ mile east of Madison CR 300E. Estimated cost: **$250,000.**

6. **I-65 approaching SR 44 at Franklin (Exit 90) (Johnson County) (2 cameras and side-fire radar detection sites (4 miles))**
   LOS C, AADT = 44,520, four lanes, moderate growth near Franklin, supports the deployment of a NB DMS near Mile 86.4 (north of Johnson CR 250S). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near ¼ mile south of Johnson CR 250S and the former crossing of Johnson CR 75S. Estimated cost: **$250,000.**

7. **I-65 approaching US 52 & SR 47 at Lebanon (Exits 141 & 146) (Boone County) (5 cameras and side-fire radar detection sites (8 miles))**
   LOS C, AADT = 40,170 - 40,400, four lanes, supports the deployment of a SB DMS near Mile 148.8 (north of Boone CR 850N). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near US 52, just south of the former crossing of Boone CR 450N, Boone CR 700N, NB Lebanon Rest Area, and SB Lebanon Rest Area. Estimated cost: **$625,000.**

8. **I-70 approaching SR 9 at Greenfield (Exit 104) (Hancock County) (2 cameras and side-fire radar detection sites (3 miles)**
   LOS C, AADT = 40,110, four lanes, moderate growth area near Greenfield, supports the deployment of a WB DMS near Mile 106.1 (east of Hancock CR 400E). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near the former crossing of Hancock CR 300E, and Greenfield Rest Area. Estimated cost: **$250,000.**

9. **I-70 approaching SR 39 at Monrovia (Exit 59) (Morgan & Hendricks Counties) (3 cameras and side-fire radar detection sites (4 miles))**
   LOS C, AADT = 40,220, four lanes, supports the deployment of an EB DMS near Mile 55.2 (east of the former crossing of Morgan CR 675W). **Install cameras and side-fire vehicle detection in Fiscal Year 2012** near the former crossing of Morgan CR 675W, Hazelwood Road, and ½ mile west of SR 39. Estimated cost: **$375,000.**

Dynamic Message Signs (DMS)

10. **NB I-65, near Mile 3.3, south of US 31 / Lewis & Clark Pkwy (Clark County)**
Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment. The DMS is in advance of the US 31 / I-265 / SR 265 diversion routes. Estimated cost: **$375,000.**

11. **WB I-265, near Mile 1.9, (Green Valley Rd), east of State St (Floyd County)**
Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment and the existing TRIMARC ATMS. The DMS is in advance of the State Street and I-64 diversion routes. Estimated cost: **$375,000.**

12. **EB I-265, near Mile 5.1, (Jacobs Creek), west of I-65 (Floyd County)**
Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment and the existing TRIMARC ATMS. The DMS is in advance of the I-65 / SR 62 / old SR 62 diversion routes. Estimated cost: **$375,000.**

13. **WB SR 265 (future I-265), near Mile 7.5, (east of Lick Run Creek), east of I-65 (Clark County)**
Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment and the existing TRIMARC ATMS. The DMS is in advance of the I-65 diversion route. Estimated cost: **$375,000.**

14. **WB I-64, near Mile 122.6, (Cherry St), south of I-265 (Floyd County)**
Install new DMS on new box truss in Fiscal Year 2012 to provide traveler information to motorists in conjunction with the Fiscal Year 2011 Southern Indiana ATMS deployment. The DMS is in advance of the I-265 diversion route. Estimated cost: **$375,000.**

15. ***EB US 36, west of I-465 (West Leg) between Girls School Rd and High School Rd (Marion County)***
Install new DMS on new box truss in Fiscal Year 2012 *during the US 36 Added Travel Lanes project (Des # 0600246). The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 2, 4, and 5 deployment areas, as well as before the I-465 decision point. Rockville Road and other local roadways are available as diversion routes off of I-465. Estimated cost:* ***$375,000.***

Travel Time Signs (TTS)

16. **EB I-80/94 (Borman Expwy), near Mile 0.4 (west of US 41 / Calumet Ave) (Lake County)**
Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 912 5 miles, I-65 11 miles. Estimated cost: **$100,000.**

17. **EB I-80/94 (Borman Expwy), near Mile 5.9 (Colfax Ave) (Lake County)**
Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 5 miles, I-90 10 miles. Estimated cost: **$100,000.**

18. **WB I-80/94 (Borman Expwy), near Mile 13.1 (Clay St) (Lake County)**
Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 912 8 miles, State Line 13 miles. Estimated cost: **$100,000.**

19. **WB I-94, near Mile 17.0 (east of US 20 / CSX RR) (Porter County)**
Install TTS in Fiscal Year 2012 after the completion of the Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: State Line via I-80/94 17 miles. Estimated cost: **$100,000.**

20. **NB I-65, near Mile 257.3 (north of 49th Ave) (Lake County)**
Install TTS in Fiscal Year 2012 after the completion of the I-80/94 Added Travel Lanes project at I-65 (Des # 0500593 (let)) and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destination: State Line via I-80/94 WEST 14 miles. Estimated cost: **$100,000.**

21. **NB I-65, near Mile 107.2 (Keystone Ave) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 3 miles, I-465 16 miles. Estimated cost: **$100,000.**

22. **NB I-465 (West Leg), near Mile 16.6 (34th St) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-65 3 miles, I-865 8 miles. Estimated cost: **$100,000.**

23. **NB I-465 (West Leg), near Mile 20.2 (north of Lafayette Rd) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-865 4 miles, US 31 10 miles. Estimated cost: **$100,000.**

24. **EB I-465 (North Leg), near Mile 25.5 (west of 96th St) (Boone County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. The second downstream destination (I-69) may not initially be displayed on the TTS if the Added Travel Lanes projects on I-465 east of US 31 to west of I-69 have not progressed enough to feature reliable vehicle detection. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: US 31 5 miles, I-69 11 miles. Estimated cost: **$100,000.**

25. **WB I-465 (North Leg), near Mile 30.0 (west of Spring Mill Rd) (Hamilton County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-865 5 miles, I-65 SOUTH 10 miles. Estimated cost: **$100,000.**

26. **NB I-65, near Mile 114.6 (north of Fall Creek Pkwy) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall (although this area does not have a full-width inside shoulder). Downstream destinations: 38th St 3 miles, I-465 8 miles. Estimated cost: **$100,000.**

27. **SB I-65, near Mile 122.4 (north of 56th St) (Marion County)**
Install TTS in Fiscal Year 2012 after the completion of Phase 5 of the Indianapolis ATMS and after developing / calibrating the algorithms needed to support the TTS in 2011. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 10 miles, I-465 16 miles. Estimated cost: **$100,000.**

Reference Markers

28. ***I-265* from SR 62 (Exit 9) to the New Ohio River Bridge (Clark County)**
Install 2/10 Mile Reference Markers in Fiscal Year 2012 *on this four-mile segment of I-265 as part of the New Road Construction project approaching the new Ohio River Bridge.* ***Estimated cost is included in the I-265 ATMS deployment in this Section.***

29. ***US 31* Added Travel Lanes (Freeway Upgrade) from 0.2 mile south of I-465 (North Leg) (Mile 123) to 111th St (Mile 125) (Hamilton County)**
Install 1/10 Mile Reference Markers in Fiscal Year 2012 *as part of the Added Travel Lanes (Freeway Upgrade) project in 2012. AADT projected as 90,390.* ***Estimated cost is included in the US 31 ATMS deployment in this Section.***

Standalone ITS = $5,300,000
ITS with Road Projects = $5,375,000
Total Fiscal Year 2012 Deployments ESTIMATED COST = $10,675,000

8.7. FISCAL YEAR 2013 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-70* from 0.6 mile east of Post Rd (Exit 91) to 0.5 mile east of Mt. Comfort Rd (Exit 96) (Marion and Hancock Counties)**
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0200699)* ***in Fiscal Year 2013. Replace*** *existing Vultron DMS* ***and install on new box truss*** *at Mile 92.1. Estimated cost:* ***$1,875,000.***

2. ***I-69* from 0.5 mile south of I-465 (Exit 0) (75th St) to 0.5 mile south of 96th St (Exit 3) (Marion County)**
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400305)* ***in Fiscal Year 2013.*** *Estimated cost:* ***$750,000.***

3. ***US 31* Added Travel Lanes (Freeway Upgrade) from Blackburn Ave (Mile 133) to 203rd St (Mile 135) (Hamilton County)**
   Design Year LOS C, Design Year AADT = 39,290 - 42,520, four lanes, high growth area. ***Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600431)* ***in Fiscal Year 2013.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$750,000.***

Dynamic Message Signs (DMS)

4. **SB I-69, near Mile 16.9 (CR 650W), north of SR 13 (Madison County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the SR 13 and other local diversion routes. Estimated cost: **$375,000.**

5. **SB I-69, near Mile 28.3 (CR 300E), north of SR 9/109 (Madison County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the SR 109 and SR 9/67 diversion routes. Estimated cost: **$375,000.**

6. **NB I-69, near Mile 12.4 (Cyntheanne Rd), south of SR 13 (Hamilton County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area. The DMS is in advance of the SR 13 diversion route. Estimated cost: **$375,000.**

7. **NB I-65, near Mile 86.4 (CR 250S), south of SR 44 (Johnson County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 4 and TTID deployment areas. The DMS is in advance of the SR 44 / US 31 diversion routes. Estimated cost: **$375,000.**

8. **SB I-65, near Mile 104.4 (Edgewood Ave), south of I-465 (South Leg) (Marion County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 4 and TTID deployment areas. The DMS is in advance of several local roads / US 31 diversion routes. Estimated cost: **$375,000.**

9. **NB I-65, near Mile 131.9, south of SR 267 (Boone County)**
   Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the deployment of the new full ATMS included in the I-65 Added Travel Lanes projects from I-865 to US 52 in Fiscal Years 2010 - 2012. The DMS is in advance of several roadways in the Lebanon area and the US 52 diversion route. Estimated cost: **$375,000.**

10. **SB I-65, near Mile 148.8 (north of CR 850N), north of SR 47 (Boone County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the deployment of the new full ATMS included in the I-65 Added Travel Lanes projects from I-865 to US 52 in Fiscal Years 2010 - 2012, as well as the Fiscal Year 2010 Indianapolis ATMS Phase 5 deployment area. The DMS is in advance of the SR 47 / US 52 diversion routes. Estimated cost: **$375,000.**

11. **EB I-70, near Mile 92.1, east of Post Rd (Marion County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the Mt. Comfort Rd / SR 9 / US 40 diversion routes. This project will need to be coordinated with the I-70 Added Travel Lanes project from 0.6 mile east of Post Road to 0.5 mile east of Mt. Comfort Road (Des # 0200699) in Fiscal Year 2013. Estimated cost: **$375,000.**

12. **WB I-70, near Mile 106.1 (east of CR 400E), east of SR 9 (Hancock County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 Indianapolis ATMS Phase 3 and TTID deployment areas. The DMS is in advance of the SR 9 / US 40 diversion routes. Estimated cost: **$375,000.**

13. **EB I-70, near Mile 55.2 (east of former CR 675W), west of SR 39 (Morgan County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area, as well as the existing Indianapolis ATMS deployment area. The DMS is in advance of the SR 39 / US 40 diversion routes. Estimated cost: **$375,000.**

14. **WB I-70, near Mile 67.3, east of SR 267 (Hendricks County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area, as well as the existing Indianapolis ATMS deployment area. The DMS is in advance of the SR 267 / US 40 diversion routes. Estimated cost: **$375,000.**

15. **SB SR 37, north of I-69 between 131st St and 141st St (Hamilton County)**
    Install new DMS on new box truss in Fiscal Year 2013 to provide traveler information to motorists in conjunction with the 2007 - 2011 TTID deployment area, as well as the existing Indianapolis ATMS deployment area. The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 3 deployment area, as well as before the I-69 decision point. Allisonville Road and other local roadways via 131st, 126th, and 116th Streets are available as diversion routes off of I-69. Estimated cost: **$375,000.**

16. **EB I-70 C/D, near Mile 70.6 (east of Indianapolis International Airport interchange), west of I-465 (West Leg) (Marion County)**
    Install new DMS on new box truss in Fiscal Year 2013. The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 2 and 4 deployment areas. The DMS is before the I-465 decision point for motorists on the eastbound I-70 Collector / Distributor (C/D). Please note that once the I-70 / I-465 interchange is modified as part of the Accelerate 465 project (Des # 9910300), motorists on the eastbound I-70 mainline will not be able to divert from I-70 to I-465 (they currently can divert to northbound I-465), thus the placement over the eastbound C/D. All traffic destined for northbound and southbound I-465 will be in the C/D; they will have the opportunity to divert to eastbound I-70 via the downstream slip ramp at Mile 71.6. This DMS is in lieu of a DMS on Indianapolis International Airport property oriented for motorists leaving the airport. Estimated cost: **$375,000.**

17. ***WB I-70, Mile 92.1, east of Post Rd (Marion County)***
    Replace** existing Vultron DMS **and install on new box truss in Fiscal Year 2013** during the I-70 Added Travel Lanes project from 0.6 mile east of Post Road to 0.5 mile east of Mt. Comfort Road (Des # 0200699). Estimated cost: **$375,000.

Reference Markers

18. ***US 31 Added Travel Lanes (Freeway Upgrade) from Blackburn Ave (Mile 133) to 203rd St (Mile 135) (Hamilton County)***

Install 1/10 Mile Reference Markers in Fiscal Year 2013 *as part of the Added Travel Lanes (Freeway Upgrade) project in 2013. AADT projected as 39,290 - 42,520.* ***Estimated cost is included in the US 31 ATMS deployment in this Section.***

Standalone ITS = $5,375,000
ITS with Road Projects = $4,125,000
Total Fiscal Year 2013 Deployments ESTIMATED COST = $9,500,000

8.8. FISCAL YEAR 2014 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. **I-94 from I-90 (Indiana Toll Road) (Exit 16) to SR 49 (Exit 26) (Porter County)**
   Weekday LOS C / Summer Friday and Sunday LOS D from I-90 to US 20 (Exit 22); Weekday LOS B / Summer Friday and Sunday LOS C from US 20 to SR 49, Weekday AADT = 51,970 - 69,970 / Summer Friday and Sunday AADT = 73,760 - 91,760, six lanes, high growth area. Interstate 94 experiences significant spikes in traffic on Fridays and Sundays during the summer months, increasing traffic by approximately 22,000 vehicles per day and lowering LOS by one across the board (B deteriorates to C and C deteriorates to D). **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, direct burial of fiber optic cables from SR 249 to SR 49) in Fiscal Year 2014.** In addition, install **2/10 Mile Reference Markers** on the eight mile segment of I-94 **from SR 249 (Mile 19) to SR 49 (Mile 27).** Estimated cost: **$2,525,000.**

2. **I-65 from US 231 (Exit 247) to US 30 (Exit 253) (Lake County)**
   LOS C, AADT = 42,580, four lanes, high growth area, new interchange planned at 109th Avenue (Des # 0500468) in 2009 - 2010. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile) in Fiscal Year 2014.** Care shall be taken to ensure that the devices are set back from the mainline so as to not conflict with the future 3rd lane per direction on I-65 (the existing shoulder is in reality the future 3rd lane; an outside shoulder will need to be added to the mainline). This future 3rd lane is not yet programmed. In addition, install **1/10 Mile Reference Markers** on the six mile segment of I-65 **from US 30 (Mile 253) to I-80/94 (Borman Expwy) NW Connector Ramps (Mile 259)** (replaces the existing 2/10 Mile Reference Markers) in conjunction with this adjacent ATMS deployment. AADT is 80,120 - 87,510 from US 30 to the I-80/94 NW Connector Ramps. Estimated cost: **$1,200,000.**

3. **I-65 from I-80/94 (Borman Expwy) (Mile 260) to I-90 (Indiana Toll Road (Exit 262) (Lake County)**
   LOS B, AADT = 29,620 - 33,770, four lanes. While LOS B does not call for a "standalone" project of merit, it is logical to implement full detection on this segment as this is a short, two mile segment that is part a larger **system** that provides motorists and TMC operators with traffic information; I-65 provides the access from to and from the Indiana Toll Road (I-90) and can be used by certain trips to divert from I-80/94 or I-90. A similar situation exists in Indianapolis: I-865 is not a candidate for full detection on its own, but it is a small part of a larger system and is planned for full detection. **Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile) in Fiscal Year 2014.** Estimated cost: **$400,000.**

4. **SR 912 (Cline Ave) from I-90 (W jct) (Exit 0) to I-80/94 (Borman Expwy) (Exit 10) (Lake County)**
   LOS A - E, AADT = 24,290 - 68,530, six and four lanes. The freeway portions of SR 912 are essentially two separate roads. To the west and north it is a lower volume (AADT of 24,290 - 44,300 (the 10,490 AADT from I-90 to US 41 is not included since it is essentially the ramps to and from the Toll Road)) newer (completed in the mid-1980s) six lane freeway from its western terminus at I-90 to just north of US 12. To the south it is a higher volume (AADT of 49,820 - 68,530) older (completed in stages during the 1960s) four lane freeway from just north of US 12 to I-80/94. The lower volume, newer, six lane segment is currently operating at an acceptable LOS A and B. The higher volume, older, four lane segment is currently operating at LOS C, D, and E. While the lower volume, acceptable LOS newer six lane segment is not a "standalone" project of merit, it is logical to implement full detection on this segment as this is a small part a larger **system** that provides motorists and TMC operators with traffic information; SR 912 can be used by certain trips to divert from I-80/94 or I-90. A similar situation exists in Indianapolis: I-865 is not a candidate for full detection on its own, but it is a small part of a larger system and is planned for full detection. **Recommendation: Full ATMS deployment in Fiscal Year 2014 (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)** (conduit due to the limited Right-of-Way and the elevated nature of portions of SR 912). In addition, install **2/10 Mile Reference Markers** on the entire 11 mile segment of SR 912 **from I-90 (Indiana Toll Road) (West Jct) (Mile 0) to I-80/94 (Borman Expwy) (Mile 11).** This ATMS deployment should be coordinated with the proposed SR 912 Road Reconstruction project (Des # 0400210) from 1.66 miles west of US 12 to 0.26 mile west of US 12 in Fiscal Year 2013 and the two Bridge Deck Reconstruction projects (over Indiana Harbor Canal, Riley Road, railroads, and Ramp C (Des # 0501114) and over CSX (Conrail) RR, Dickey Road, and Dock Street (Des # 0501120) in Fiscal Year 2013. Estimated cost: **$3,750,000.**

5. ***I-70 from 0.5 mile east of Mt. Comfort Rd (Exit 96) to 0.8 mile east of SR 9 (Exit 104) (Hancock County)***
   Replace Transportation Technology Innovation and Demonstration Program (TTID) devices *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0200700)* ***in Fiscal Year 2014.*** *Estimated cost:* ***$3,000,000.***

6. ***I-64 from I-265 (Exit 121) to SR 111 / Spring St (Exit 123) (Floyd County)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0500307)* ***in Fiscal Year 2014.*** *Estimated cost:* ***$500,000.***

7. ***US 31* Added Travel Lanes (Freeway Upgrade) from 111th St (Mile 125) to 0.75 mile north of 131st St (Mile 127) (Hamilton County)**
Design Year LOS C - D, Design Year AADT = 67,060 - 90,390, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600432)* ***in Fiscal Year 2014.*** *In addition,* ***install 1/10 Mile Reference*** *Markers and a SB* ***Dynamic Message Sign*** *in this area. Estimated cost:* ***$750,000.***

8. ***I-65* Ohio River Bridge (Mile 0) and Indiana approach (Clark County)**
Replace full ATMS *deployment with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every ½ mile, conduit and fiber optic cables)*** *as part of the New Bridge Construction / Added Travel Lanes projects (Des #s 0201294, 0810312, 0810313, 0810314, 0810315, 0810316, and 0810317* ***in Fiscal Years 2014 - 2019.*** *Estimated cost:* ***$500,000.***

Dynamic Message Signs (DMS)

9. ***NB US 31*, south of I-465 (South Leg) between Banta Rd and Edgewood Ave (Marion County)**
Install new DMS on new box truss in Fiscal Year 2014 *during the US 31 Pavement Replacement project (Des # 0100721). The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the Indianapolis ATMS Phase 4, 2, and 3 deployment areas, as well as before the I-465 decision point. East Street and other local roadways are available as diversion routes off of I-465. Estimated cost:* ***$375,000.***

10. ***SB US 31*(Freeway), north of I-465 (North Leg), between 106th St and 116th St (Hamilton County)**
Install new DMS on new box truss in Fiscal Year 2014 *during the Added Travel Lanes (Freeway Upgrade) project on US 31 in the immediate area (Des # 0600432). The DMS will provide traveler information for motorists in the US 31 ATMS deployment area and the Indianapolis ATMS Phase 5 and 3 deployment areas, as well as before the I-465 decision point. This DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). Estimated cost:* ***$375,000.***

Reference Markers

11. **I-94 from SR 249 (Mile 19) to SR 49 (Mile 27) (Porter County)**
Install 2/10 Mile Reference Markers in Fiscal Year 2014 on this eight-mile segment of I-94 as part of the addition to the Northwest Indiana ATMS in 2014. **Estimated cost is included in the Northwest Indiana ATMS deployment in this Section.**

12. **I-65 from US 30 (Mile 253) to I-80/94 (Borman Expwy) NW Connector Ramps (Mile 259) (Lake County)**
Install 1/10 Mile Reference Markers in Fiscal Year 2014 on this six-mile segment of I-65 in conjunction with the adjacent ATMS deployment from US 231 (Exit 247) to US 30 (Exit 253). AADT is 80,120 - 87,510. This deployment replaces the existing 2/10 Mile Reference Markers on this segment. **Estimated cost is included in the Northwest Indiana ATMS deployment in this Section.**

13. **SR 912 (Cline Ave) from I-90 (Indiana Toll Road) (West Jct) (Mile 0) to I-80/94 (Borman Expwy) (Mile 11) (Lake County)**
Install 2/10 Mile Reference Markers in Fiscal Year 2014 on this 11-mile segment of SR 912 as part of the addition to the Northwest Indiana ATMS in 2014. **Estimated cost is included in the Northwest Indiana ATMS deployment in this Section.**

14. ***US 31 Added Travel Lanes (Freeway Upgrade) from 111th St (Mile 125) to 0.75 mile north of 131st St (Mile 127) (Hamilton County)***
Install 1/10 Mile Reference Markers in Fiscal Year 2014 *as part of the Added Travel Lanes (Freeway Upgrade) project in 2014. AADT projected as 67,060 - 90,390.* ***Estimated cost is included in the US 31 ATMS deployment in this Section.***

Standalone ITS	**= $8,700,000**
ITS with Road Projects	***= $6,050,000***
Total Fiscal Year 2014 Deployments ESTIMATED COST =	**$14,750,000**

8.9. FISCAL YEAR 2015 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-65 from 0.5 mile south of Southport Rd (Exit 103) to 0.25 mile south of I-465 (South Leg) (Exit 106) (Marion County)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400909)* ***in Fiscal Year 2015.*** *Estimated cost:* ***$1,125,000.***

2. ***US 31 Added Travel Lanes (Freeway Upgrade) from 0.75 mile north of 131st St (Mile 127) to 156th St (Mile 130) (Hamilton County)***
   Design Year LOS C, Design Year AADT = 69,920 - 80,240, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600438)* ***in Fiscal Year 2015.*** *In addition,* ***install 1/10 Mile Reference Markers.*** *Estimated cost:* ***$1,125,000.***

CCTV Cameras / Vehicle Detection

3. **I-65 from south of SR 2 (Exit 240) to US 231 (Exit 247) (Lake County)**
   (5 cameras and side-fire radar detection sites (12 miles))
   LOS B – C, AADT = 34,850 - 37,930, four lanes, high growth area near Crown Point and moderate growth area near Lowell, supports the deployment of a NB DMS near Mile 236.0 (½ mile north of 217th Avenue). **Install cameras and side-fire vehicle detection in Fiscal Year 2015** near 217th Avenue, ½ mile south of SR 2, Lowell Weigh Station, 153rd Avenue, and 137th Avenue. Estimated cost: **$625,000.**

4. **I-94 from SR 49 (Exit 26) to Michigan State Line (Mile 46)**
   (Porter and LaPorte Counties)
   (11 cameras and side-fire radar detection sites (20 miles))
   LOS A - B (LOS B - C on Fridays and Sundays during summer), weekday AADT = 31,700 - 43,980 / Summer Friday and Sunday AADT = 53,490 - 65,770, six lanes, high growth area near Chesterton, moderate growth area near Michigan City, completes Illinois to Michigan ATMS or CCTV camera / vehicle detection deployment on I-94, and supports winter operations, especially during lake-effect snow events. **Install cameras and side-fire vehicle detection in Fiscal Year 2015** near ½ mile east of SR 49, Chesterton Weigh Station, the former crossing of Porter CR 1500N, the former crossing of Porter CR 600E, the former crossing of LaPorte CR 1100W, the former crossing of LaPorte CR 375N, Bleck Road, Warnke Road, LaPorte CR 800N, Michigan City Rest Area, and ¼ mile south of LaPorte CR 1000N. Estimated cost: **$1,375,000.**

<u>Dynamic Message Signs (DMS)</u>

5. **NB I-65, near Mile 236.0 (½ mile north of 217th Ave), south of SR 2 (Lake County)**
   Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the SR 2 diversion route. Estimated cost: **$375,000.**

6. **SB I-65, near Mile 250.3 (101st Ave), north of US 231 (Exit 247) and future 109th Ave (future Exit 249) (Lake County)**
   Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the US 231 diversion route. Estimated cost: **$375,000.**

7. **EB I-94, near Mile 20.9 (east of former Salt Creek Rd), west of US 20 (Porter County)**
   Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the US 20 and SR 49 diversion routes. Estimated cost: **$375,000.**

8. **WB I-94, near Mile 28.1 (Brummitt Rd (CR 300E)), east of SR 49 (Porter County)**
   Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the SR 49 and US 20 diversion routes. Estimated cost: **$375,000.**

9. **WB I-94, near Mile 44.4 (½ mile west of CR 1000N), east of US 20/35 (LaPorte County)**
   Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015, as well as the Fiscal Year 2014 Northwest Indiana ATMS Expansion deployment area. The DMS is in advance of the US 20 and US 421 diversion routes. Estimated cost: **$375,000.**

10. **EB I-94, near Mile 31.8 (east of the former crossing of Porter CR 600E), west of US 421 (Porter County)**
    Install new DMS on new box truss in Fiscal Year 2015 to provide traveler information to motorists in conjunction with the deployment of CCTV cameras and vehicle detection contiguous to the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2015. The DMS is in advance of the US 421 and US 20 diversion routes. Estimated cost: **$375,000.**

11. **SB SR 912 (Cline Ave), near Mile 5.9 (US 12 (Columbus Dr / Industrial Hwy), north of I-80/94 (Borman Expwy) and I-90 (Indiana Toll Road) (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015. The DMS meets the criteria of an INDOT facility (in this case, a freeway) with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the existing Northwest Indiana ATMS and the Fiscal Year 2014 SR 912 ATMS deployment areas. The DMS is in advance of the I-90 (Indiana Toll Road) and I-80/94 (Borman Expressway) decision points, as well as other local east-west diversion routes. Estimated cost: **$375,000.**

12. **NB SR 912 (Cline Ave), near Mile 11.3, (north of Highway Ave / 35th Ave), south of I-80/94 (Borman Expwy) (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015. The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the existing Northwest Indiana ATMS and the Fiscal Year 2014 SR 912 ATMS deployment areas. The DMS is in advance of the I-80/94 (Borman Expressway) decision point, as well as other local east-west diversion routes. Estimated cost: **$375,000.**

13. **EB US 30, near Mile 9.3 (0.7 mile east of SR 55), west of I-65 (Lake County)**
    Install new DMS on new box truss in Fiscal Year 2015. The DMS meets the criteria of an INDOT facility with an AADT of 40,000 or greater for at least two miles approaching an Interstate or freeway that is currently deployed with a full ATMS (or is proposed for such). The DMS will provide traveler information for motorists in the existing Northwest Indiana ATMS deployment area, as well as the recommended Northwest Indiana ATMS Expansion in Fiscal Year 2014 and the Fiscal Year 2015 contiguous CCTV cameras and vehicle detection deployment areas. This DMS is in advance of the I-65 decision point and SR 53 diversion route. Estimated cost: **$375,000.**

Travel Time Signs (TTS)

14. **WB I-465 (South Leg), near Mile 6.2 (White River) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 3 miles, I-74 10 miles. Estimated cost: **$100,000.**

15. **NB I-465 (West Leg), near Mile 11.4 (south of US 40 / Washington St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 4 miles, I-65 8 miles. Estimated cost: **$100,000.**

16. **SB I-465 (West Leg), near Mile 12.3 (north of US 40 / Washington St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: SR 37 8 miles (in anticipation of future I-69), I-65 12 miles. Estimated cost: **$100,000.**

17. **SB I-465 (West Leg), near Mile 18.2 (46th St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-70 9 miles SR 37 14 miles (in anticipation of future I-69). Estimated cost: **$100,000.**

18. **SB I-465 (West Leg), near Mile 23.2 (86th St) (Marion County)**
    Install TTS in Fiscal Year 2015 after the completion of the I-465 West Leg Added Travel Lanes / Interchange Modification projects (Multiple Des #s) (Accelerate 465) from 2008 through 2012 and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-74 7 miles, I-70 14 miles. Estimated cost: **$100,000.**

19. **WB I-465 (North Leg), near Mile 35.4 (Allisonville Rd) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the multiple I-465 Added Travel Lanes projects from east of US 31 to the Fall Creek bridge and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: US 31 5 miles, I-865 11 miles. Estimated cost: **$100,000.**

20. **NB I-465 (East Leg), near Mile 40.8 (46th St) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the multiple I-465 Added Travel Lanes projects from east of US 31 to the Fall Creek bridge and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-69 4 miles, US 31 10 miles. Estimated cost: **$100,000.**

21. **EB I-465 (North Leg), near Mile 32.4 (Westfield Blvd) (Marion County)**
Install TTS in Fiscal Year 2015 after the completion of the multiple I-465 Added Travel Lanes projects from east of US 31 to the Fall Creek bridge and after developing / calibrating the algorithms needed to support the TTS in 2014. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: I-69 4 miles, I-70 11 miles. Estimated cost: **$100,000.**

Reference Markers

22. ***US 31 Added Travel Lanes (Freeway Upgrade) from 0.75 mile north of 131st St (Mile 127) to 156th St (Mile 130) (Hamilton County)***
Install 1/10 Mile Reference Markers in Fiscal Year 2015 *as part of the Added Travel Lanes (Freeway Upgrade) project in 2015. AADT projected as 69,920 - 80,240.* ***Estimated cost is included in the US 31 ATMS deployment in this Section.***

Standalone ITS	**= $6,800,000**
ITS with Road Projects	***= $2,475,000***
Total Fiscal Year 2015 Deployments ESTIMATED COST =	**$9,275,000**

8.10. FISCAL YEAR 2016 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-65 from 0.5 mile south of County Line Rd (Exit 101) to 0.5 mile south of Southport Rd (Exit 103) (Johnson and Marion Counties)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0300853)* ***in Fiscal Year 2016.*** *Estimated cost:* ***$750,000.***

2. ***I-65 from 0.5 mile south of Greenwood Rd (Main St) (Exit 99) to 0.5 mile south of County Line Rd (Exit 101) (Johnson County)***
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0401037)* ***in Fiscal Year 2016.*** *Estimated cost:* ***$750,000.***

3. ***US 31 Added Travel Lanes (Freeway Upgrade) from 156th St (Mile 130) to 0.2 mile north of 169th St (Mile 132) (Hamilton County)***
   Design Year LOS B - C, Design Year AADT = 55,080 - 69,920, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600440)* ***in Fiscal Year 2016.*** *In addition,* ***install 1/10 Mile Reference Markers and a SB Dynamic Message Sign*** *in this area. Estimated cost:* ***$750,000.***

Dynamic Message Signs (DMS)

4. ***SB US 31(Freeway), north of I-465 (North Leg), between 161st St and SR 32 (Hamilton County)***
   Install new DMS on new box truss in Fiscal Year 2016 *during the Added Travel Lanes (Freeway Upgrade) project on US 31 in the immediate area (Des # 0600440). The DMS will provide traveler information for motorists in the US 31 ATMS deployment area and the Indianapolis ATMS Phase 5 and 3 deployment areas, as well as before the Keystone Ave decision point / diversion route and the I-465 decision point. Estimated cost:* ***$375,000.***

Reference Markers

5. ***US 31* Added Travel Lanes (Freeway Upgrade) from 156th St (Mile 130) to 0.2 mile north of 169th St (Mile 132) (Hamilton County)**
Install 1/10 Mile Reference Markers in Fiscal Year 2016 *as part of the Added Travel Lanes (Freeway Upgrade) project in 2016. AADT projected as 55,080 - 69,920.* ***Estimated cost is included in the US 31 ATMS deployment in this Section.***

Standalone ITS = $ 0
ITS with Road Projects = $2,900,000
Total Fiscal Year 2016 Deployments ESTIMATED COST = $2,900,000

8.11. FISCAL YEAR 2017 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-70* from I-65 (North Split) (Exit 83) to I-465 (East Leg) (Exit 90) (Marion County)**
   Add to and replace devices as needed in the full ATMS *as part of the Stage 2 Added Travel Lanes projects (Parts A, B, and C; Des #s 0400399, 0400400, and 0500550, respectively)* ***in Fiscal Year 2017.*** *Estimated cost:* ***$700,000.***

2. ***US 31* Added Travel Lanes (Freeway Upgrade) from 0.2 mile north of 169th St (Mile 132) to Blackburn Ave (Mile 133) (Hamilton County)**
   Design Year LOS B - C, Design Year AADT = 42,520 - 55,080, six lanes, high growth area. ***Recommendation: Replace Transportation Technology Innovation and Demonstration Program (TTID) devices*** *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Freeway Upgrade project (Des # 0600441)* ***in Fiscal Year 2017.*** *In addition,* ***install 1/10 Mile Reference Markers and a SB Travel Time Sign*** *in this area. Estimated cost:* ***$375,000.***

Reference Markers

3. ***US 31* Added Travel Lanes (Freeway Upgrade) from 0.2 mile north of 169th St (Mile 132) to Blackburn Ave (Mile 133) (Hamilton County)**
   Install 1/10 Mile Reference Markers in Fiscal Year 2017 *as part of the Added Travel Lanes (Freeway Upgrade) project in 2017. AADT projected as 42,520 - 55,080.* ***Estimated cost is included in the US 31 ATMS deployment in this Section.***

Standalone ITS	**= $ 0**
ITS with Road Projects	***= $1,175,000***
Total Fiscal Year 2017 Deployments ESTIMATED COST =	**$1,175,000**

8.12. FISCAL YEAR 2018 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-465* from 0.5 mile east of US 421 / Michigan Rd (North Leg) (Mile 27) to 0.65 mile west of US 31 / Meridian St (North Leg) (Exit 31) (Marion and Hamilton Counties)**
   Replace full ATMS *with* ***new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)*** *as part of the Added Travel Lanes project (Des # 0400885)* ***in Fiscal Year 2018.*** *Estimated cost:* ***$1,125,000.***

Travel Time Signs (TTS)

2. ***SB US 31* (Freeway), near Mile 135.0 (south of SR 38) (Hamilton County)**
   Install TTS in Fiscal Year 2018 *near the conclusion of the final US 31 Added Travel Lanes (Freeway Upgrade) project (Des # 0600441) and after developing / calibrating the algorithms needed to support the TTS in 2018. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: Keystone Ave 6 miles, I-465 12 miles. Estimated cost:* ***$100,000.***

Standalone ITS = $ 0
ITS with Road Projects = $1,350,000
Total Fiscal Year 2018 Deployments ESTIMATED COST = $1,350,000

8.13. FISCAL YEAR 2019 DEPLOYMENTS

Advanced Traffic Management Systems (ATMS)

1. ***I-465 from 0.65 mile north of 86th St (West Leg) (Exit 23) to 0.5 mile east of US 421 / Michigan Rd (North Leg) (Exit 27) (Marion and Boone Counties)***
__Replace full ATMS__ with __new full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)__ as part of the Added Travel Lanes project (Des #s 0400881) __in Fiscal Year 2019.__ Estimated cost: __$1,500,000.__

2. ***I-69 from 9.0 miles south of I-465 (South Leg) (north of SR 144) (Mile 136 (SR 37)) to I-465 (South Leg) (Mile 145 (SR 37)) (Johnson and Marion Counties)***
Specific Design Year LOS and Design Year AADT are not available at this time but will be determined during the current Tier 2 Environmental studies. However, the Tier 1 Environmental study identified eight lanes in this high growth area. __Recommendation: Full ATMS deployment (side-fire vehicle detection every ½ mile, CCTV every mile, conduit and fiber optic cables)__ as part of the New Road Construction (Freeway Upgrade) project (Des # 0500432) __in Fiscal Year 2019. The ATMS should be extended just south of SR 144 to ensure the NB DMS approaching SR 144 recommended in Section 8.14. is covered with this deployment__ as part of the New Road Construction (Freeway Upgrade) project to the south (Des # 0500431). In addition, __install 1/10 or 2/10 Mile__ (as appropriate) __Reference Markers, one NB and one SB Dynamic Message Sign, and one NB Travel Time Sign__ in this area. Estimated cost: __$3,750,000.__

Reference Markers

3. ***I-69 from 9.0 miles south of I-465 (South Leg) (north of SR 144) (Mile 136 (SR 37)) to I-465 (South Leg) (Mile 145 (SR 37)) (Johnson and Marion Counties)***
__Install 1/10 or 2/10 Mile__ (as appropriate) __Reference Markers in Fiscal Year 2019__ as part of the New Road Construction (Freeway Upgrade) project in 2019. __Estimated cost is included in the I-69 ATMS deployment in this Section.__

Standalone ITS	**= $ 0**
ITS with Road Projects	***= $5,775,000***
Total Fiscal Year 2019 Deployments ESTIMATED COST =	**$5,775,000**

8.14. FISCAL YEAR 2020 DEPLOYMENTS

Dynamic Message Signs (DMS)

1. ***NB I-69*, south of I-465 (South Leg), between County Line Rd and Southport Rd (Marion County)**
   Install new DMS on new box truss in Fiscal Year 2020 *during the New Road Construction (Freeway Upgrade) project (Des # 0500432) on I-69 in Section 8.13. The DMS will provide traveler information for motorists in the I-69 ATMS deployment area and Indianapolis ATMS Phase 4 and 2 deployment areas, as well as before the I-465 decision point. Estimated cost:* ***$375,000.***

2. ***SB I-69*, south of I-465 (South Leg), between I-465 and Southport Rd (Marion County)**
   Install new DMS on new box truss in Fiscal Year 2020 *during the New Road Construction (Freeway Upgrade) project (Des # 0500432) on I-69 in Section 8.13.. The DMS will provide traveler information for motorists in the I-69 ATMS deployment area, as well as before the Southport Road diversion route (only bridge over the White River between SR 144 and I-465). Estimated cost:* ***$375,000.***

3. ***NB I-69* approaching SR 144 at Waverly (Morgan County)**
   Install new DMS on new box truss in Fiscal Year 2020 *during the New Road Construction (Freeway Upgrade) projects (Des #s 0500431 and 0500432) on I-69 in Section 8.13.. The DMS will provide traveler information for motorists in the I-69 ATMS deployment area, as well as before the SR 144 and Johnson CR 144 diversion routes. Estimated cost:* ***$375,000.***

Travel Time Signs (TTS)

4. ***NB I-69*, south of Smith Valley Rd (Johnson County)**
   Install TTS in Fiscal Year 2020 *near the conclusion of the I-69 New Road Construction (Freeway Upgrade) project (Des # 0500432) from north of SR 144 to I-465 (South Leg) and after developing / calibrating the algorithms needed to support the TTS in 2020. TTS may be located on an overhead balanced cantilever (butterfly) on the median barrier wall. Downstream destinations: County Line Rd 4 miles, I-465 8 miles. Estimated cost:* ***$100,000.***

Standalone ITS	**= $ 0**
ITS with Road Projects	***= $1,350,000***
Total Fiscal Year 2020 Deployments ESTIMATED COST =	**$1,350,000**

8.15. NON YEAR-SPECIFIC DEPLOYMENTS (Intermediate Reference Location Signs (½ Mile Reference Markers) on Rural Interstates)

The **deployment of Intermediate Reference Location Signs at ½ mile intervals** (with a ".0" at the whole number mile locations and ".5" placed at ½ mile locations, per the MUTCD) on all Interstates outside of urban areas with Intermediate Enhanced Reference Location Signs **should occur as part of sign replacement projects or during reconstruction projects and thus is not prioritized by year,** nor are maps prepared. The **estimated cost** for deployment of Intermediate Reference Location Signs at ½ mile intervals **includes the cost of replacing the existing one mile signs.**

It is important to note that the costs to add Traffic Management / ITS field devices listed below shall be included in the road project's budget, just as any other traffic control device would be. ***Therefore, these costs are not charged against the Traffic Management budget.***

I-64 (107 of 123 miles)
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 0 to Mile 21 and from Mile 31 to Mile 117. Estimated cost: ***$86,000.***

I-65 (104 of 262 miles) *(Seymour District has deployed these from Mile 9 to Mile 102)*
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 142 to Mile 246. Estimated cost: ***$83,000.***

I-69 (107 of 157 miles)
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 27 to Mile 94 and from Mile 117 to Mile 157. Estimated cost: ***$86,000.***

I-70 (111 of 156 miles)
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 0 to Mile 59 and from Mile 104 to Mile 156. Estimated cost: ***$89,000.***

I-74 (136 of 171 miles)
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 0 to Mile 65 and from Mile 100 to Mile 171. Estimated cost: ***$109,000.***

I-94 (19 of 30 miles)
Install Intermediate Enhanced Reference Location Signs (½ Mile Reference Markers) from Mile 27 to Mile 46. Estimated cost: ***$15,000.***

Standalone ITS	**= $**	**0**
ITS with Road Projects	***= $***	***525,000***

Total Non Year-Specific Deployments ESTIMATED COST = $525,000

8.16. DEPLOYMENTS WITHOUT DESIGNATED COSTS

8.16.1. Proposed Expansions of the Hoosier Helper FSP

The Hoosier Helper Freeway Service Patrol is a function of the Traffic Management Centers Division and as such is more operations-oriented versus the capital improvement / fixed device-orientation of the majority of this document. Routes and hours of the day in service are based upon need, and more significantly, availability of personnel and funding to fill the need, variables that are difficult to predict. Therefore, no specific implementation years are identified, no cost estimates are developed, and no maps are prepared. Nevertheless, guidance is provided to assure a reasonably uniform Hoosier Helper FSP deployment on a statewide basis. **The Hoosier Helper FSP may be expanded to areas that meet at least three of the following criteria:**

1) Segment is within the deployment area of an existing or proposed **full ATMS**
2) Segment is a full access control facility (**freeway**)
3) Segment currently has an **AADT greater than 75,000**
4) Segment is currently **operating at or is contiguous to** segments operating at **LOS D or worse**
5) Segment needs to be served for **system continuity** / patrol routing purposes

The following segments of freeway are not currently served by the Hoosier Helper FSP but meet at least three of the above criteria and are candidates for implementation (in road order, not necessarily priority order):

Indianapolis Area

- **I-65 from CR 500N (Whiteland Rd) (Exit 95) to Main St (Greenwood Rd) (Exit 99)** (ATMS, freeway, LOS D or worse)
- **I-65 from Main St (Greenwood Rd) (Exit 99) to County Line Rd (Exit 101)** (ATMS, freeway, AADT 75,000+, contiguous to LOS D or worse)
- **I-65 from County Line Rd (Exit 101) to Southport Rd (Exit 103)** (ATMS, freeway, AADT 75,000+, LOS D or worse)
- **I-65 from 71st St (Exit 124) to I-865 (Exit 129)** (ATMS, freeway, contiguous to LOS D or worse)
- **I-65 from I-865 (Exit 129) to SR 267 (Exit 133)** (ATMS, freeway, LOS D or worse)
- **I-69 from 96th St (Exit 3) to SR 37 / 116th St (Exit 5)** (ATMS, freeway, AADT 75,000+, LOS D or worse)
- **I-69 from SR 37 / 116th St (Exit 5) to SR 238 (Exit 10)** (ATMS, freeway, LOS D or worse)
- **I-70 from Ronald Reagan Pkwy / Ameriplex Pkwy (Exit 68) to I-465 (West Leg) (Exit 73)** (ATMS, freeway, AADT 75,000)
- **I-70 from Post Rd (Exit 91) to Mt. Comfort Road (Exit 96)** (ATMS, freeway, LOS D or worse)

<u>Northwest Indiana</u>

- **I-94 from SR 249 (Exit 19) to US 20 (Exit 22)** (ATMS, freeway, AADT 75,000+ (Friday and Sunday in Summer only), LOS D or worse (Friday and Sunday in Summer only)
- **I-94 from US 20 (Exit 22) to SR 49 (Exit 26)** (ATMS, freeway, contiguous to LOS D or worse (Friday and Sunday in Summer only)
- **SR 912 from US 12 / Industrial Hwy to I-90 (Toll Road) (East jct.)** (ATMS, freeway, contiguous to LOS D or worse) (turnaround at US 12 / Industrial Hwy better serves the SR 912 mainline than the SR 312 / Chicago Ave turnaround)
- **SR 912 from I-90 (Toll Road) (East jct.) to I-80/94** (ATMS, freeway, LOS D or worse)

No cost provided as this is an operations-oriented expense, not a capital improvement fixed device-oriented expense, the focus of this document

8.17. SUMMARY / CONCLUSION

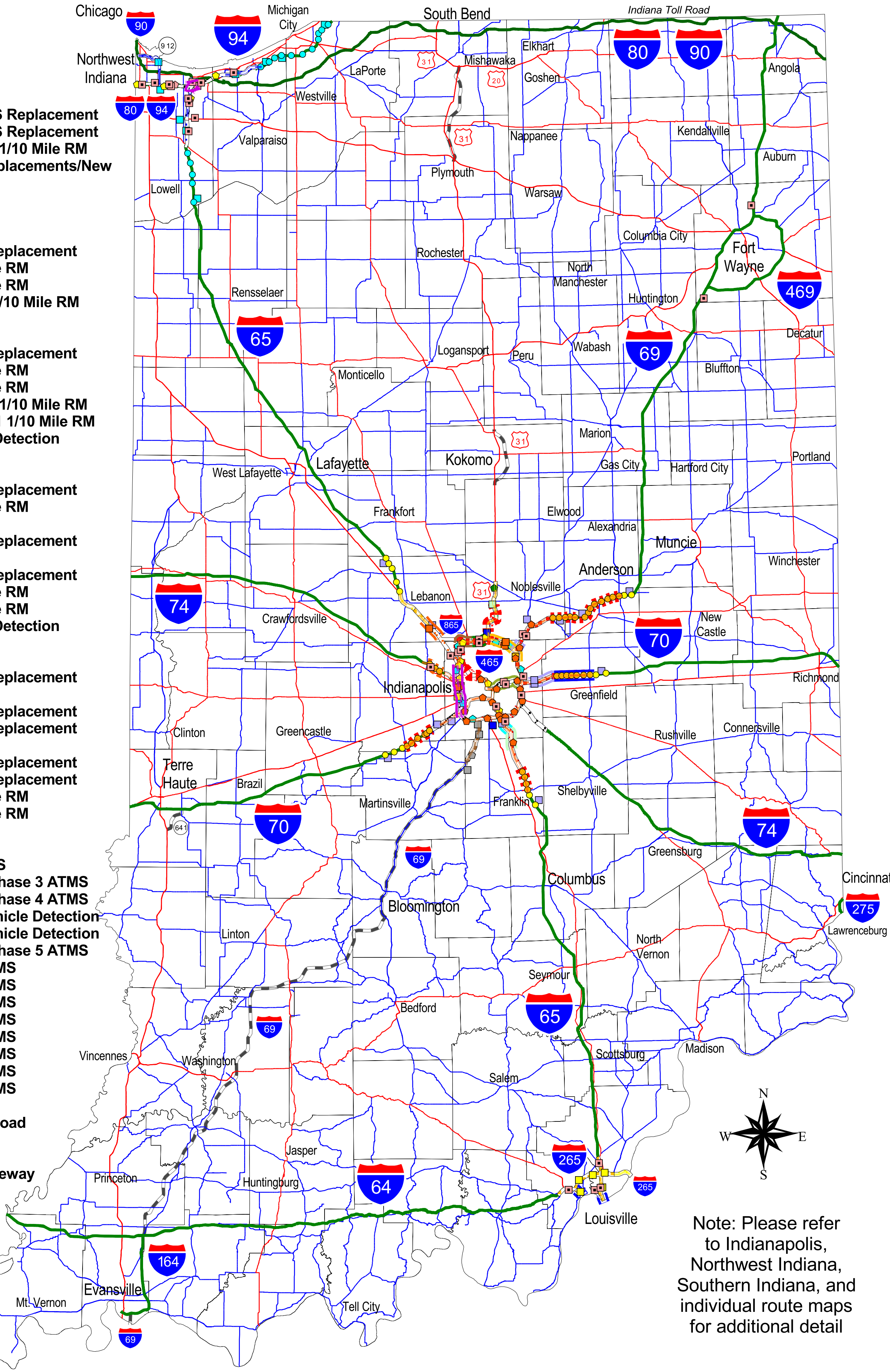
The preceding pages chronologically outlined Traffic Management / ITS recommendations and provided preliminary cost estimates for field-oriented devices through Fiscal Year 2020. *Chapter 7 grouped deployments by deployment type and provided greater detail*, especially in regards to the determination of priority. The following summarizes the estimated costs:

	Standalone ITS	+	*ITS w/ Road Projects*	=	Total
Fiscal Year 2009 Deployments	$6,200,000	+	*$ 0*	=	$ 6,200,000
Fiscal Year 2010 Deployments	8,075,000	+	*2,900,000*	=	10,975,000
Fiscal Year 2011 Deployments	9,425,000	+	*5,350,000*	=	14,775,000
Fiscal Year 2012 Deployments	5,300,000	+	*5,375,000*	=	10,675,000
Fiscal Year 2013 Deployments	5,375,000	+	*4,125,000*	=	9,500,000
Fiscal Year 2014 Deployments	8,700,000	+	*6,050,000*	=	14,750,000
Fiscal Year 2015 Deployments	6,800,000	+	*2,475,000*	=	9,275,000
Fiscal Year 2016 Deployments	0	+	*2,900,000*	=	2,900,000
Fiscal Year 2017 Deployments	0	+	*1,175,000*	=	1,175,000
Fiscal Year 2018 Deployments	0	+	*1,350,000*	=	1,350,000
Fiscal Year 2019 Deployments	0	+	*5,775,000*	=	5,775,000
Fiscal Year 2020 Deployments	0	+	*1,350,000*	=	1,350,000
Non Year-Specific Deployments	0	+	*525,000*	=	525,000
TOTAL ESTIMATED COST:	**$49,875,000**	**+**	***$39,350,000***	**=**	**$89,225,000**

Predicting the future is a difficult task. As with any highway project, the deployment dates in this document are subject to change due to a variety of circumstances, including but not limited to funding constraints, staffing and workload constraints, delays to the larger projects that some of these ITS deployments are a component of, technology changes, etc. Similarly, the estimated costs are subject to change due to changes in technology and the fact that they are very preliminary in nature. Furthermore, some components will likely go up in cost over time, while some components, particularly the technological ones, are likely to go down in the future. As such, this INDOT Traffic Management Strategic Deployment Plan will be updated periodically to adapt to changing needs and priorities on INDOT's system, as well as the inevitable changes to the overall INDOT program of highway improvements over time.

Finally, this document focused on the deployment of the primary field-oriented devices, what might traditionally be called "projects" at INDOT. Nevertheless, there are many other Traffic Management / ITS activities underway or planned in the future at INDOT, including, but certainly not limited to, 511 travel information deployment, commercial vehicle / virtual weigh station coordination, field device maintenance, Incident Management plan development, traffic signal system coordination, and the like. Most of these activities are reasonably well-defined so as to not need direction from the INDOT Traffic Management Strategic Deployment Plan. Regardless, all are important elements of Traffic Management / ITS technologies and strategies which are utilized to save motorists lives, time, and money.

Statewide Deployment Recommendations - Chronological

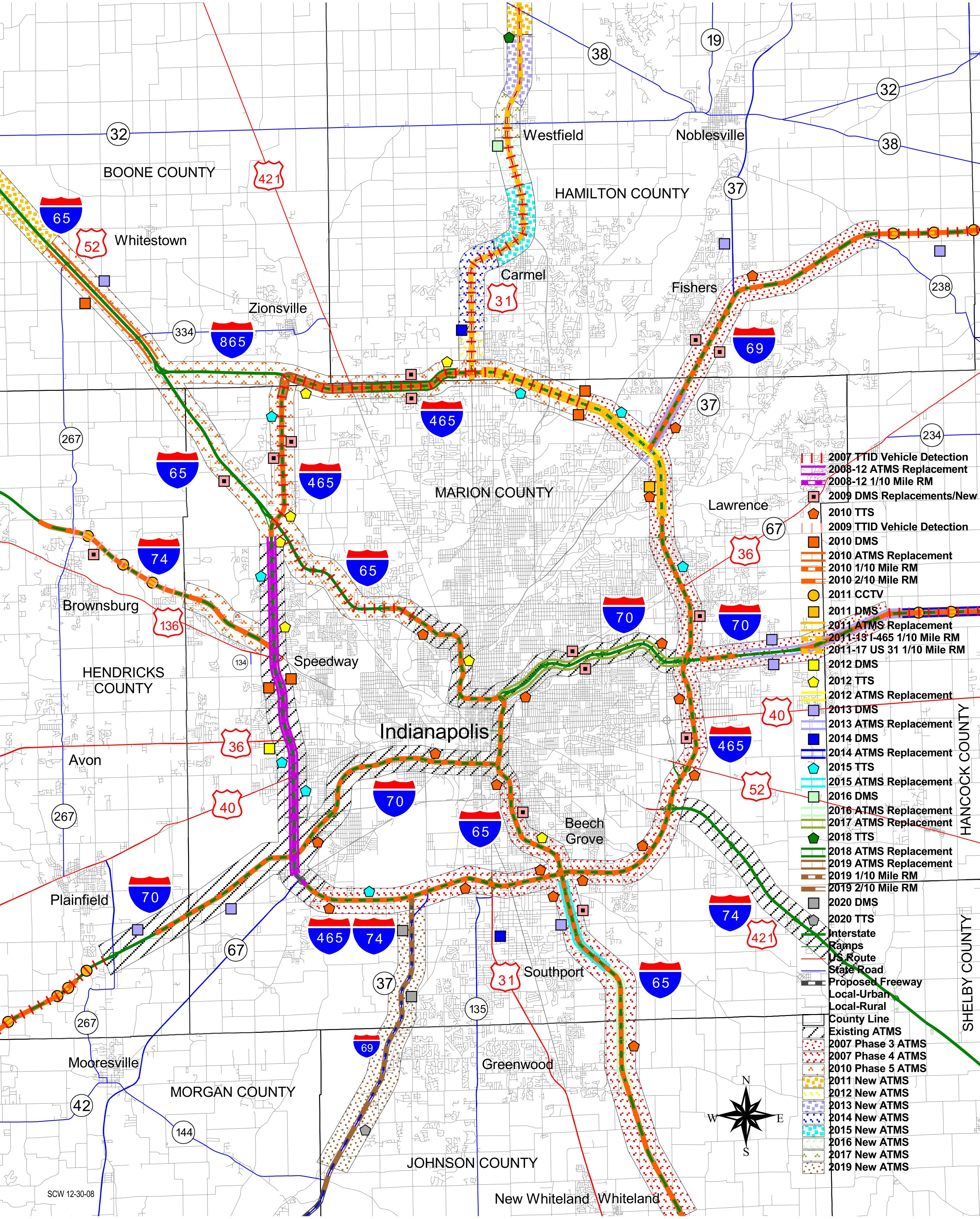


- 2007-10 ATMS Replacement
- 2008-12 ATMS Replacement
- 2008-12 I-465 1/10 Mile RM
- 2009 DMS Replacements/New
- 2009 DMS
- 2009 TTS
- 2010 DMS
- 2010 TTS
- 2010 ATMS Replacement
- 2010 1/10 Mile RM
- 2010 2/10 Mile RM
- 2010-12 I-65 2/10 Mile RM
- 2011 CCTV
- 2011 DMS
- 2011 ATMS Replacement
- 2011 1/10 Mile RM
- 2011 2/10 Mile RM
- 2011-13 I-465 1/10 Mile RM
- 2011-17 US 31 1/10 Mile RM
- 2012 CCTV / Detection
- 2012 DMS
- 2012 TTS
- 2012 ATMS Replacement
- 2012 2/10 Mile RM
- 2013 DMS
- 2013 ATMS Replacement
- 2014 DMS
- 2014 ATMS Replacement
- 2014 1/10 Mile RM
- 2014 2/10 Mile RM
- 2015 CCTV / Detection
- 2015 DMS
- 2015 TTS
- 2015 ATMS Replacement
- 2016 DMS
- 2016 ATMS Replacement
- 2017 ATMS Replacement
- 2018 TTS
- 2018 ATMS Replacement
- 2019 ATMS Replacement
- 2019 1/10 Mile RM
- 2019 2/10 Mile RM
- 2020 DMS
- 2020 TTS
- Existing ATMS
- 2007 Indpls Phase 3 ATMS
- 2007 Indpls Phase 4 ATMS
- 2007 TTID Vehicle Detection
- 2010 TTID Vehicle Detection
- 2010 Indpls Phase 5 ATMS
- 2011 New ATMS
- 2012 New ATMS
- 2013 New ATMS
- 2014 New ATMS
- 2015 New ATMS
- 2016 New ATMS
- 2017 New ATMS
- 2019 New ATMS
- Interstate
- Indiana Toll Road
- US Route
- State Road
- Proposed Freeway
- County Line

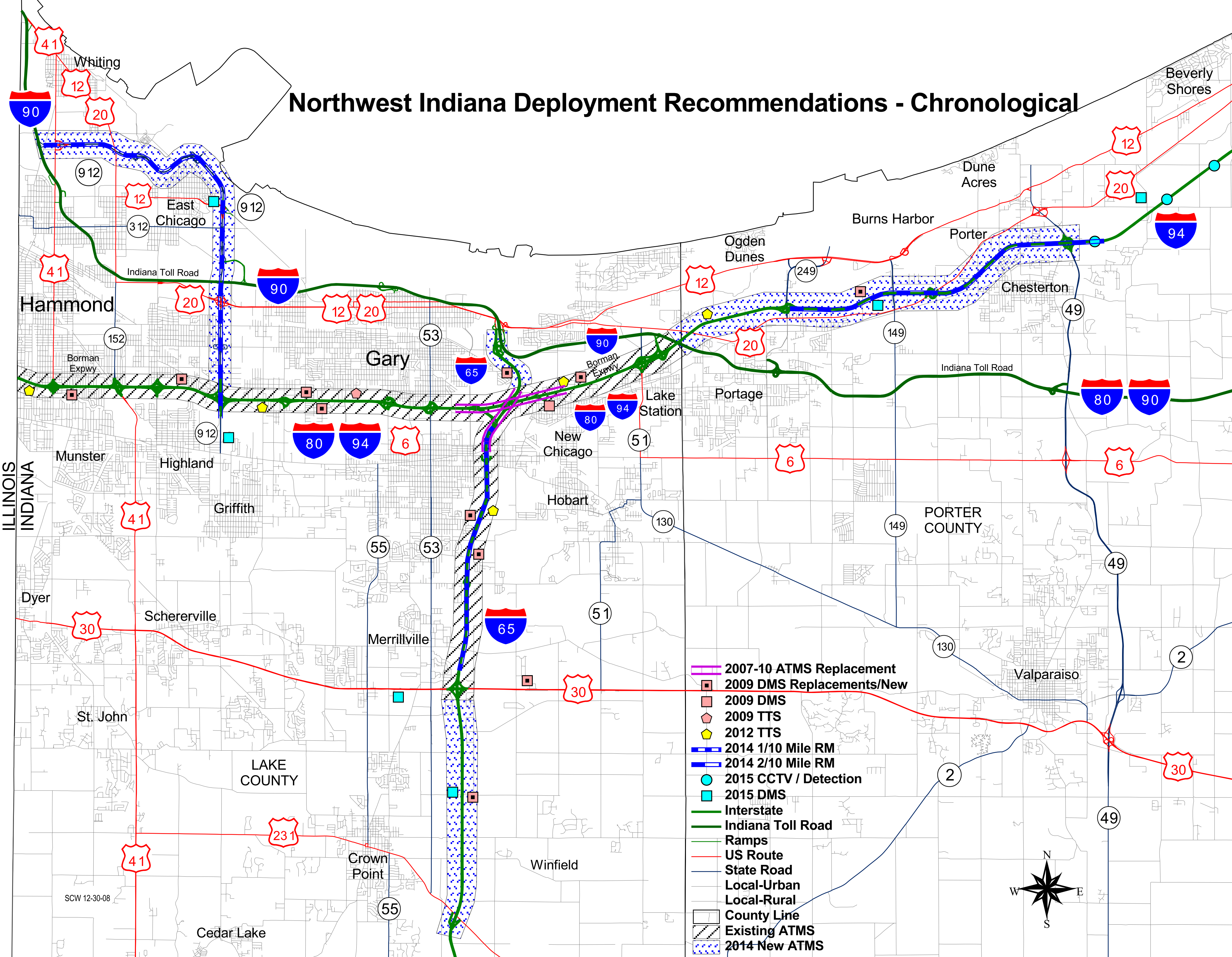
Note: Please refer to Indianapolis, Northwest Indiana, Southern Indiana, and individual route maps for additional detail

SCW 12-30-08

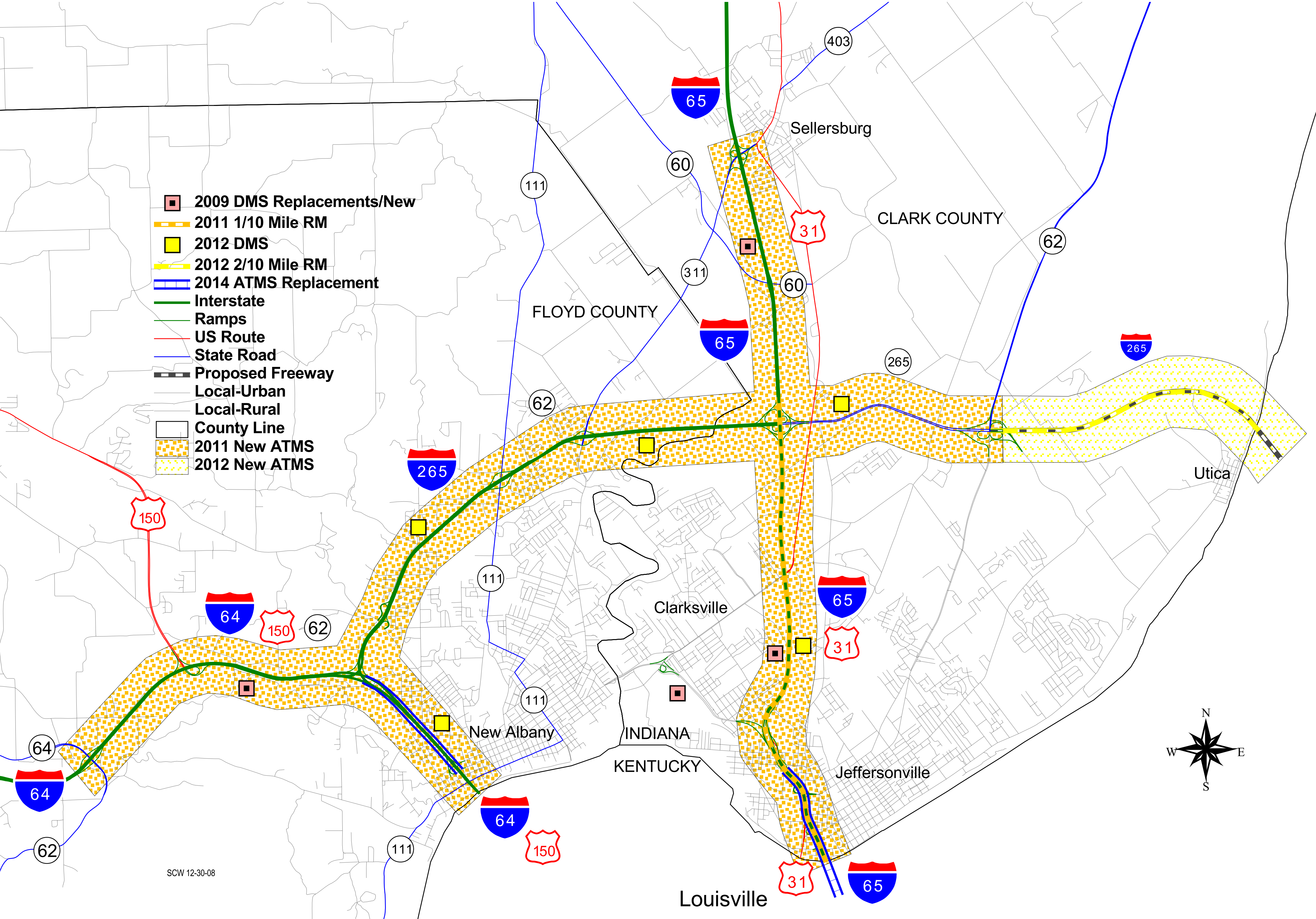
Indianapolis Deployment Recommendations - Chronological



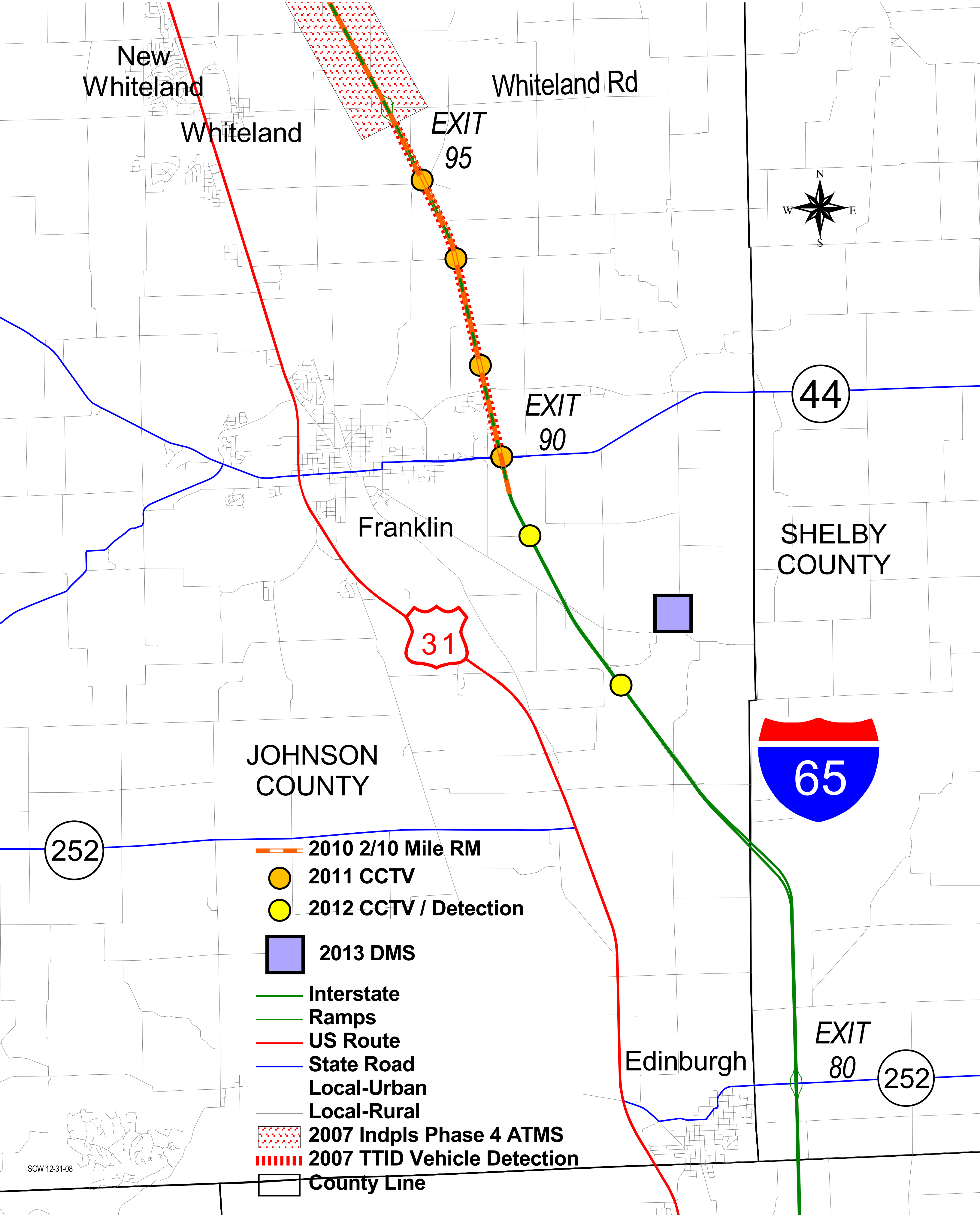
Northwest Indiana Deployment Recommendations - Chronological



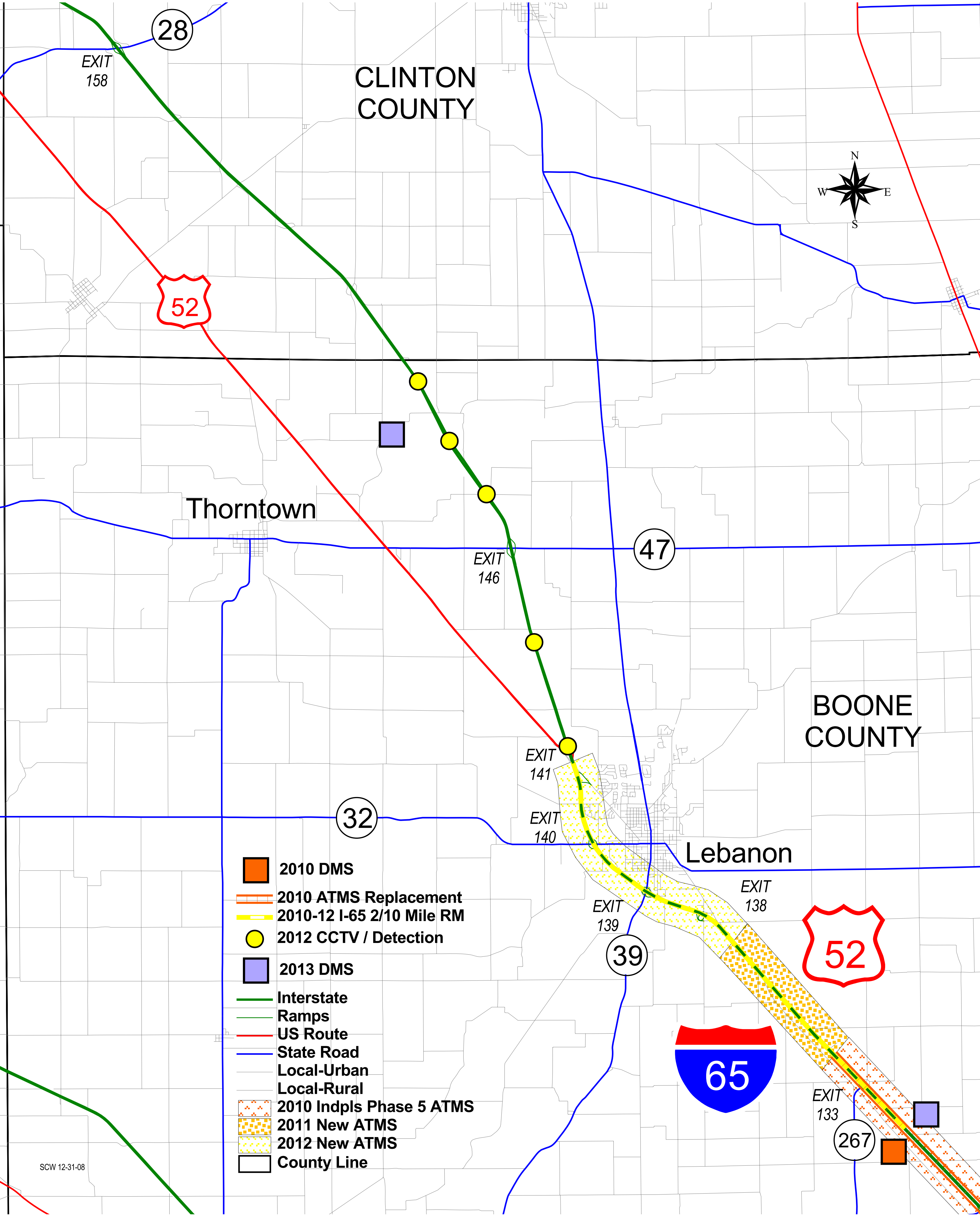
Southern Indiana Deployment Recommendations - Chronological



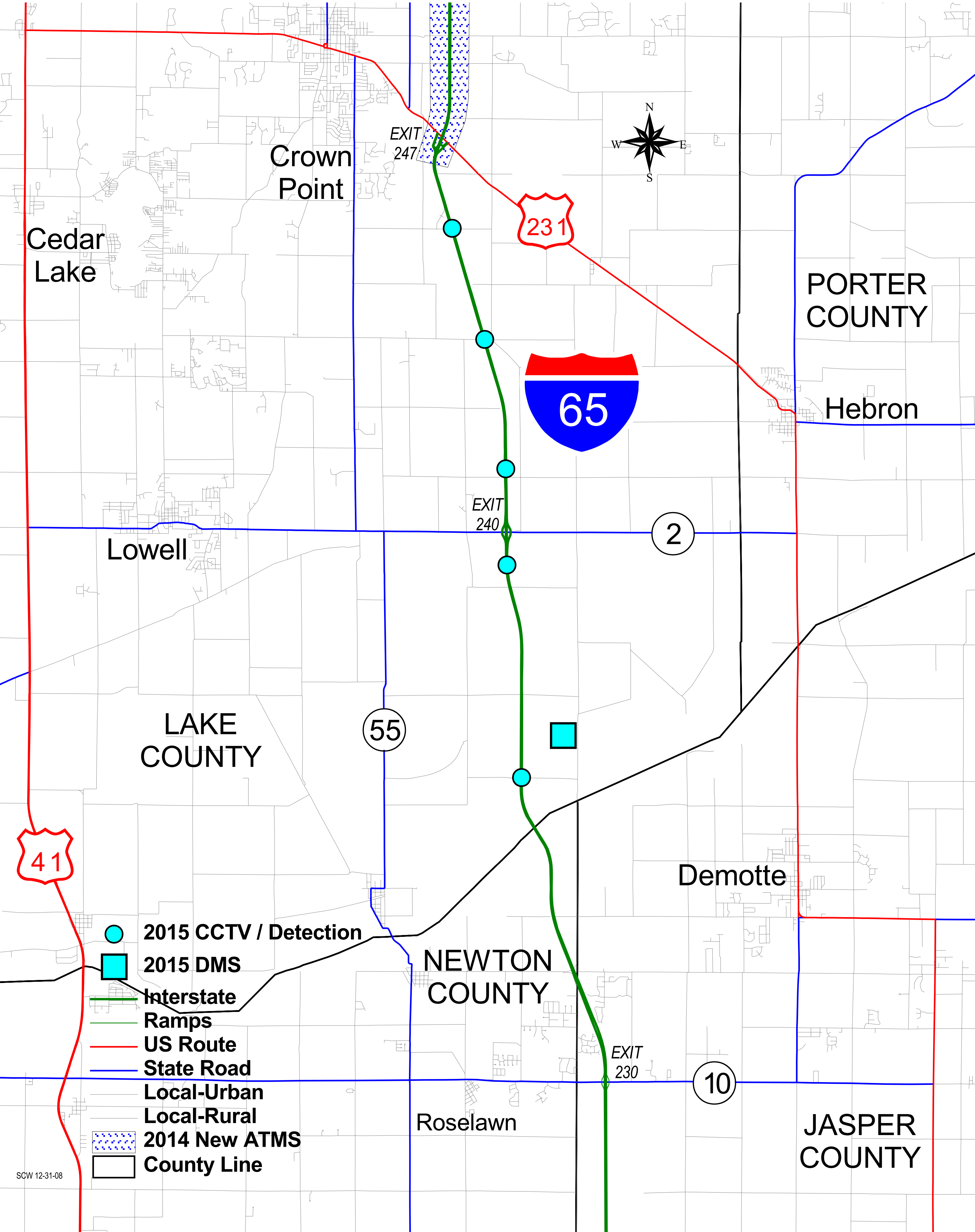
I-65 Deployment Recommendations - SR 252 to Whiteland Rd



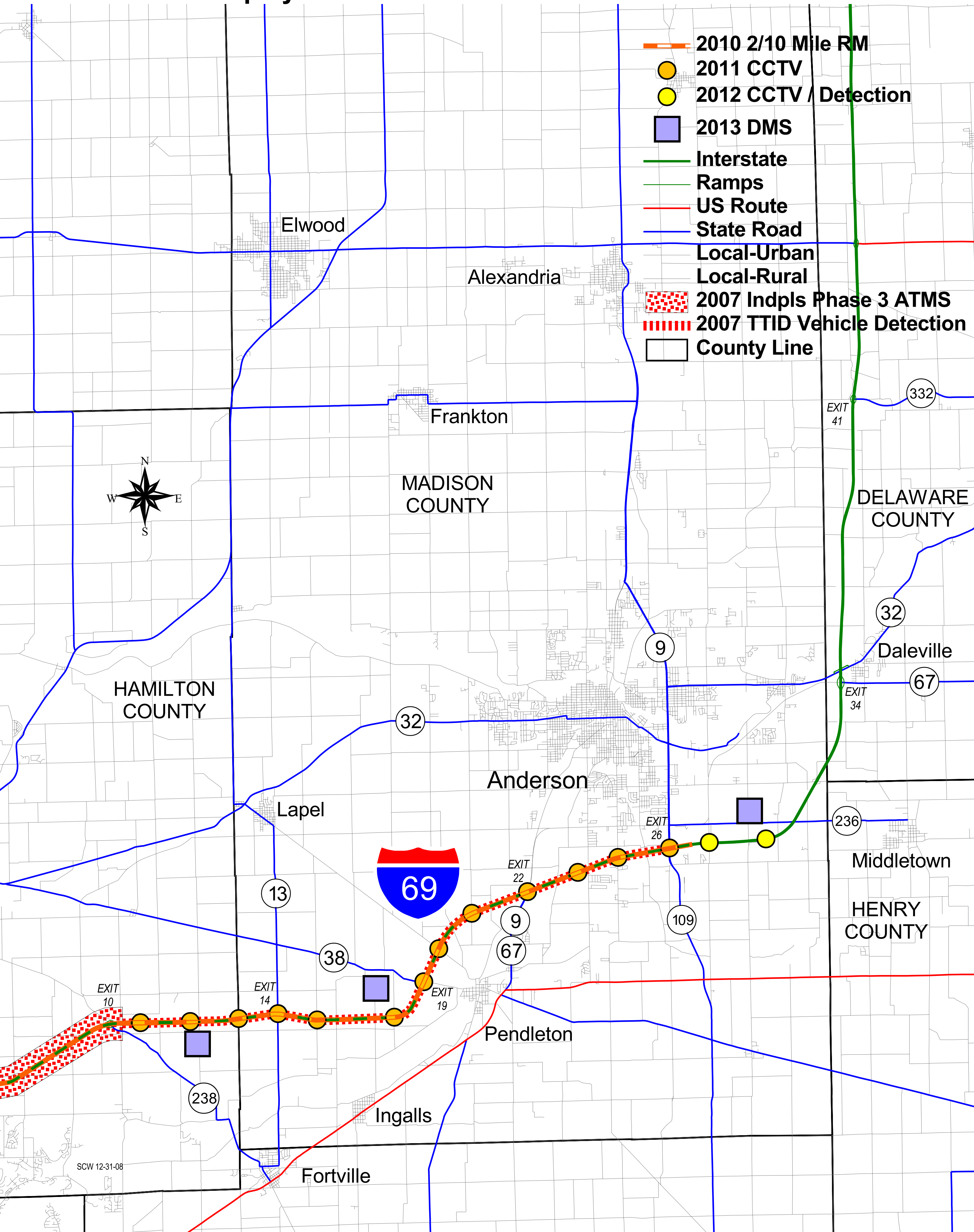
I-65 Deployment Recommendations - SR 267 to SR 28



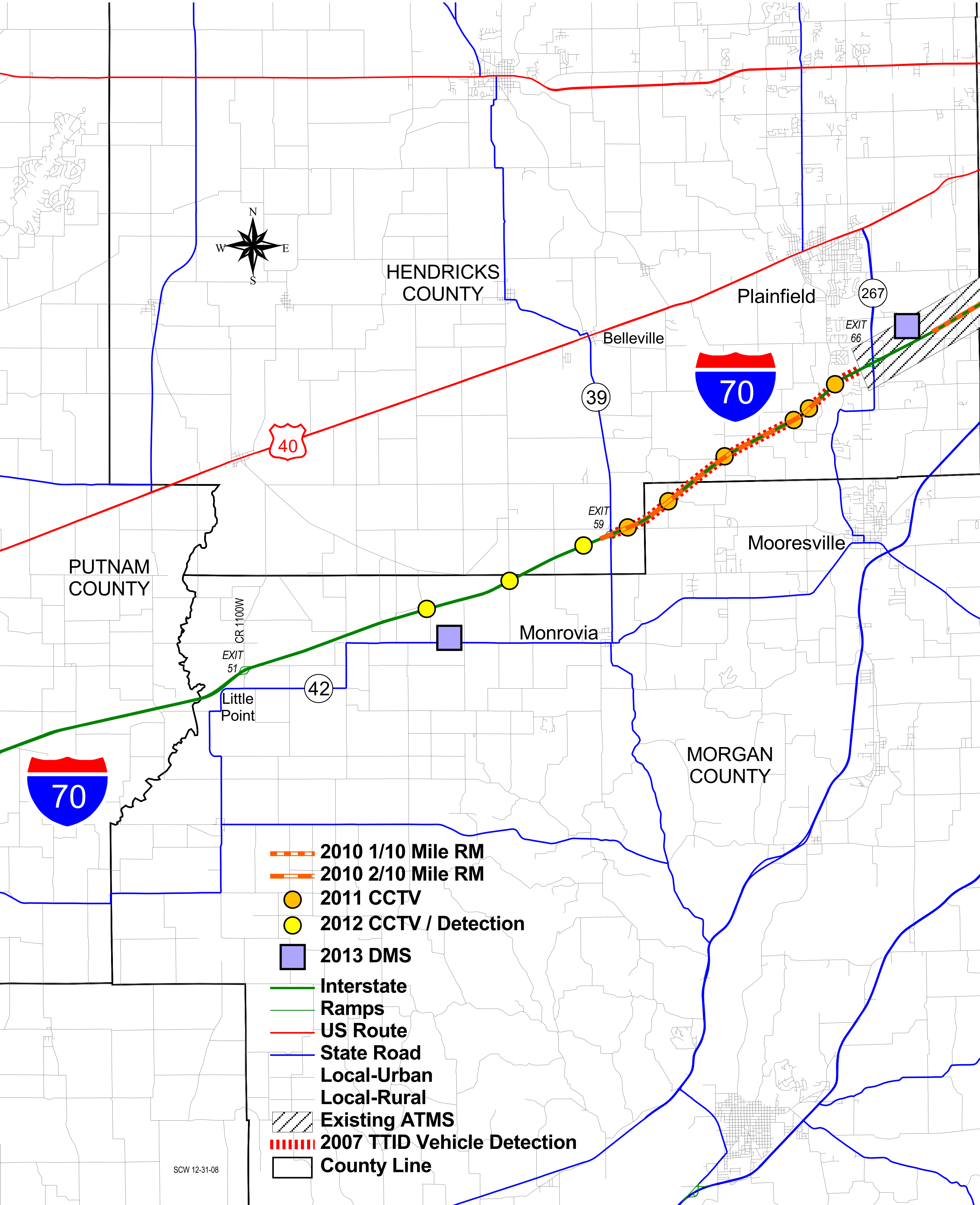
I-65 Deployment Recommendations - SR 10 to US 231



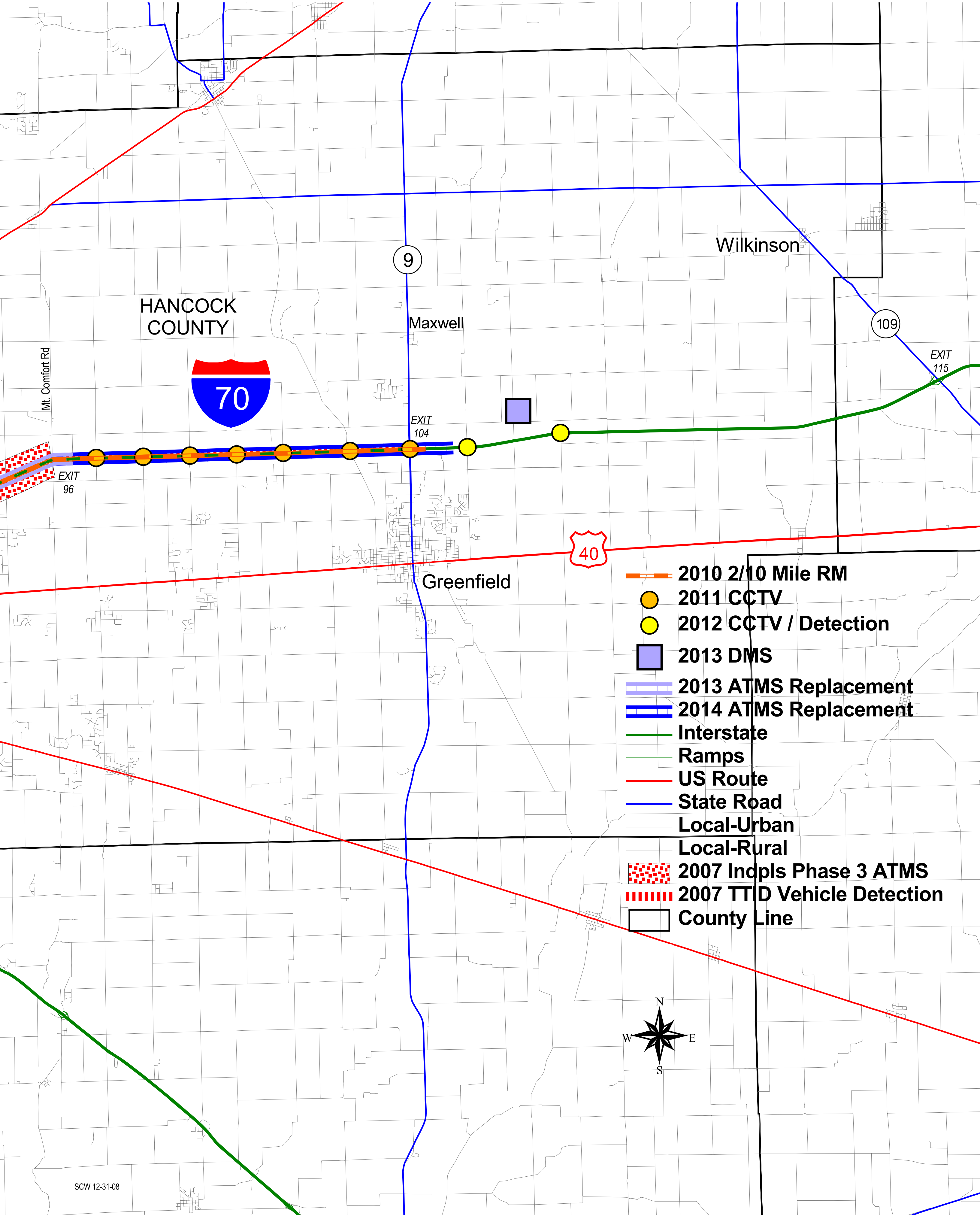
I-69 Deployment Recommendations - SR 238 to SR 32/67



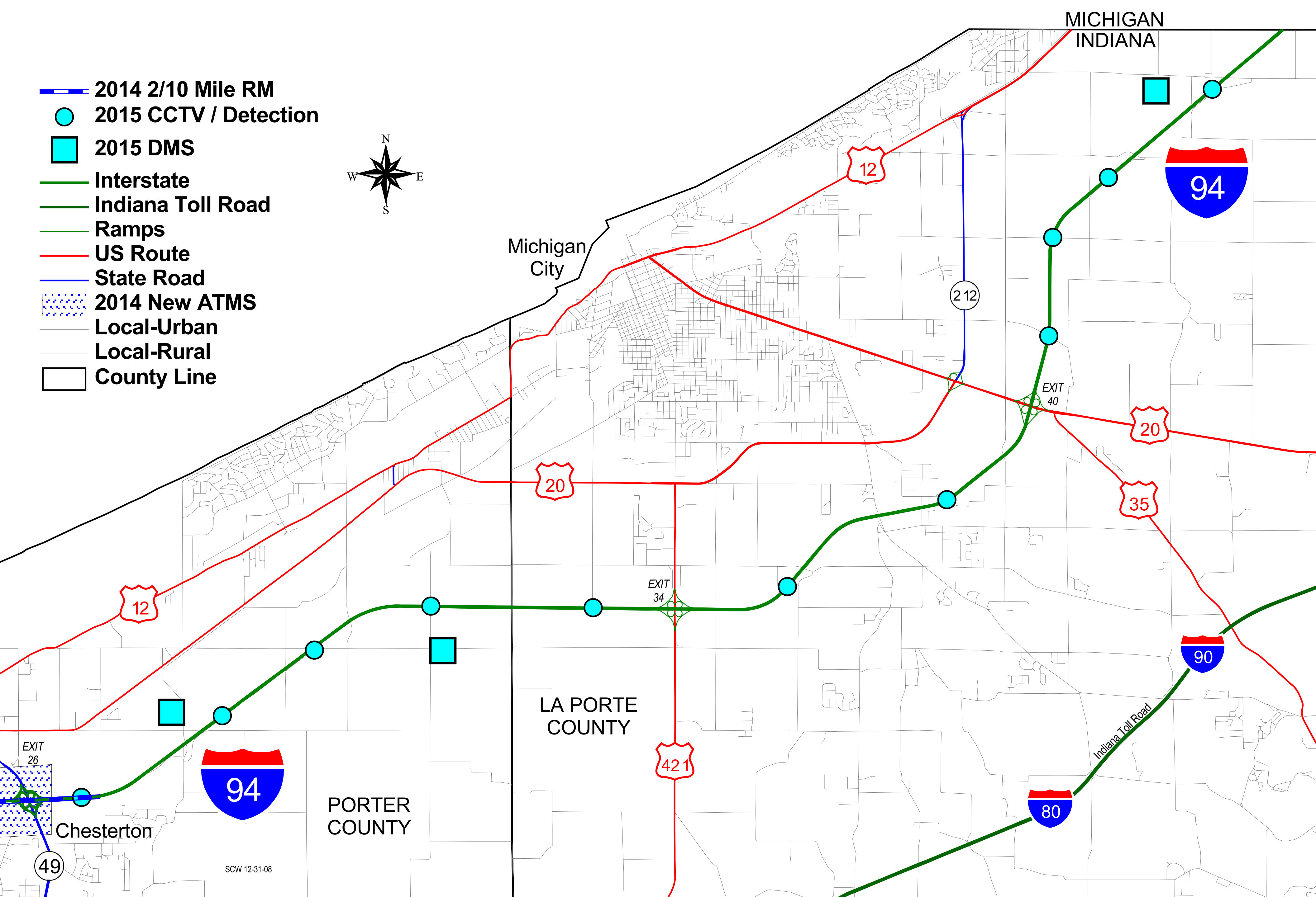
I-70 Deployment Recommendations - CR 1100W / Little Point to SR 267



I-70 Deployment Recommendations - Mt. Comfort Rd to SR 109



I-94 Deployment Recommendations - SR 49 to Michigan State Line



APPENDIX

INPUT CORRESPONDENCE RELATED TO SENATE ENROLLED ACT 315

Senate Enrolled Act (SEA) 315, enacted by the 115th Indiana General Assembly in 2007, required INDOT to obtain input on this study from seven named organizations:

SENATE ENROLLED ACT No. 315

AN ACT concerning utilities and transportation.

Be it enacted by the General Assembly of the State of Indiana:

SECTION 1. [EFFECTIVE JULY 1, 2007] **(a) As used in this SECTION, "department" refers to the Indiana department of transportation established by IC 8-23-2-1.**

(b) As used in this SECTION, "intelligent transportation system" means a combination of information, control, and electronic technologies used to enhance the safety, maintenance, fuel efficiency, traffic flow, and ease of use of highways. The term includes the following:
(1) Advanced traveler information systems.
(2) Advance traffic management systems.
(3) Incident management systems.

(c) The department shall study the feasibility of integrating intelligent transportation systems into Indiana's interstate and state highway systems, including reserving rights-of-way for the following:
(1) Power, communications, and fiber cables.
(2) Dedicated highway lanes for commercial and passenger vehicles.
(3) Parallel rail lines.

(d) The department shall obtain input from the following:
(1) The Purdue University College of Engineering.
(2) The Indiana University School of Informatics.
(3) The National Cooperative Highway Research Program.
(4) The United States Department of Transportation.
(5) The National Science Foundation.
(6) The Intelligent Transportation Society of America.
(7) The National Academy of Sciences' Transportation Research Board.
(8) Any other state agency that has a transportation related function.

(e) The department shall report the results of the study required by subsection (c) to the public and, in an electronic format under IC 5-14-6, to the general assembly:
(1) in an intermediate report due before January 1, 2008; and
(2) in a final report due before January 1, 2009.

(f) Upon approval by the governor, the budget agency may authorize the payment of expenses incurred by the department in conducting the study required by subsection (c) from the state general fund.

(g) This SECTION expires January 1, 2009.

As such, INDOT requested this input on October 24, 2007. Copies of these letters are on the following pages. Replies were received from two organizations; these replies are also on the following pages. As a result, appropriate modifications were made to this document, specifically deleting references to a superseded management initiative at INDOT and adding an explanation of performance measures (metrics) as it relates to the Traffic Management Business Unit. It should also be noted that additional comments, while not documented here, were received from INDOT stakeholders and FHWA's Indiana Division and incorporated where appropriate.

INDIANA DEPARTMENT OF TRANSPORTATION

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Indianapolis Traffic Management Center
8620 East 21ST Street
Indianapolis, IN 46219 (317) 899-8600 FAX: (317) 898-0897

Mitchell E. Daniels, Jr., Governor
Karl B. Browning, Commissioner

October 24, 2007

Dr. Leah H. Jamieson, Dean
Office of the Dean of Engineering
Purdue University
Neil Armstrong Hall of Engineering, Suite 2000
701 West Stadium Avenue
West Lafayette, IN 47907-2045

Dear Dr. Jamieson:

In 2006, the Indiana Department of Transportation (INDOT) resumed work on authoring the *Indiana Department of Transportation Traffic Management Strategic Deployment Plan*, significantly updating an earlier draft version from 2005. Please find enclosed a CD of a draft of this document, Version 2.2, dated October 2007. The *Indiana Department of Transportation Traffic Management Strategic Deployment Plan* is a data-driven analysis that culminates in recommendations for additional Intelligent Transportation System (ITS) deployments on the INDOT highway system over the next 10-15 years. There is no federal requirement for such study; INDOT merely desired to formally study and document our plan for future ITS field device deployments to assist our agency and others in planning for and incorporating these devices into our highway system.

As INDOT was nearing the completion of this report, the General Assembly of the State of Indiana passed Senate Enrolled Act (SEA) 315, which requires INDOT to study the feasibility of integrating ITS into Indiana's highway system; the *Indiana Department of Transportation Traffic Management Strategic Deployment Plan* meets the intent of SEA 315. SEA 315 also states that INDOT shall obtain input from several organizations, including yours.

Therefore, INDOT respectfully requests that your organization review and provide input to the enclosed *Indiana Department of Transportation Traffic Management Strategic Deployment Plan.* **Please provide your input, if any, by Friday, November 30, 2007** to my attention at the address above or by e-mail at swuertz@indot.in.gov.

Thank you for your attention to this matter. If you should have any questions, please contact me via e-mail or telephone at (317) 899-8615.

Sincerely,

Steven C. Wuertz
Traffic Management Planning Coordinator

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Mitchell E. Daniels, Jr., Governor
Karl B. Browning, Commissioner

October 24, 2007

Dr. Robert B. Schnabel, Dean
School of Informatics
Indiana University
Informatics Building
901 East 10th Street
Bloomington, IN 47408-3912

Dear Dr. Schnabel:

In 2006, the Indiana Department of Transportation (INDOT) resumed work on authoring the *Indiana Department of Transportation Traffic Management Strategic Deployment Plan*, significantly updating an earlier draft version from 2005. Please find enclosed a CD of a draft of this document, Version 2.2, dated October 2007. The *Indiana Department of Transportation Traffic Management Strategic Deployment Plan* is a data-driven analysis that culminates in recommendations for additional Intelligent Transportation System (ITS) deployments on the INDOT highway system over the next 10-15 years. There is no federal requirement for such study; INDOT merely desired to formally study and document our plan for future ITS field device deployments to assist our agency and others in planning for and incorporating these devices into our highway system.

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Karl B. Browning, Commissioner

October 24, 2007

Mr. Crawford Jencks, Manager
National Cooperative Highway Research Program
Keck Center of the National Academies
Transportation Research Board
500 Fifth Street, NW
Washington, DC 20001

Dear Mr. Jencks:

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Mitchell E. Daniels, Jr., Governor
Karl B. Browning, Commissioner

October 24, 2007

Ms. Shelly J. Row, Director
ITS Joint Programs Office
Research and Innovative Technology Administration
U.S. Department of Transportation
1200 New Jersey Avenue, SE
Washington, DC 20590

Dear Ms. Row:

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Mitchell E. Daniels, Jr., Governor
Karl B. Browning, Commissioner

October 24, 2007

Dr. Arden L. Bement, Jr., Director
National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230

Dear Dr. Bement:

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Karl B. Browning, Commissioner

October 24, 2007

Mr. Scott F. Belcher, President & CEO
Intelligent Transportation Society of America
1100 17th Street NW, Suite 1200
Washington, DC 20036

Dear Mr. Belcher:

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Karl B. Browning, Commissioner

October 24, 2007

Robert E. Skinner, Jr., Executive Director
Transportation Research Board
Keck Center of the National Academies
500 Fifth Street, NW
Washington, DC 20001

Dear Mr. Skinner:

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As INDOT was nearing the completion of this report, the General Assembly of the State of Indiana passed Senate Enrolled Act (SEA) 315, which requires INDOT to study the feasibility of integrating ITS into Indiana's highway system; the *Indiana Department of Transportation Traffic Management Strategic Deployment Plan* meets the intent of SEA 315. SEA 315 also states that INDOT shall obtain input from several organizations, including yours.

Therefore, INDOT respectfully requests that your organization review and provide input to the enclosed *Indiana Department of Transportation Traffic Management Strategic Deployment Plan*. **Please provide your input, if any, by Friday, November 30, 2007** to my attention at the address above or by e-mail at swuertz@indot.in.gov.

Thank you for your attention to this matter. If you should have any questions, please contact me via e-mail or telephone at (317) 899-8615.

Sincerely,

Steven C. Wuertz
Traffic Management Planning Coordinator

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Wuertz, Steve

From: Cunard, Richard [RCunard@nas.edu]
Sent: Thursday, November 29, 2007 3:08 PM
To: Wuertz, Steve
Cc: Norman, Mark
Subject: INDOT Traffic Management Strategic Development Plan

Dear Mr. Wuertz:

The Transportation Research Board of the National Academies (TRB) has received your request to review and provide input on your recently revised Traffic Management Strategic Development plan.

As we discussed yesterday, due to restrictions imposed on TRB by the Federal Advisory Committee Act, TRB is not able to provide this review as requested.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Richard Cunard, P.E.
Engineer of Traffic and Operations
Transportation Research Board

Wuertz, Steve

From: Reischman, Michael M. [mreischm@nsf.gov]
Sent: Monday, December 03, 2007 1:37 PM
To: Wuertz, Steve
Cc: chema@vt.edu; Bement, Arden L.; Reischman, Michael M.
Subject: Review of the Indiana Department of Transportation Traffic Management Strategic Deployment Plan

Mr. Wuertz,

Dr. Arden L. Bement, Director of the National Science Foundation (NSF), requested the Directorte for Engineering respond to your request for a review of the Indiana Department of Transportation (INDOT) Traffic Management Strategic Deployment Plan. Dr. Jesus de la Garza, who recently returned to Virginia Tech after a two-year rotation at NSF, was kind enough to provide some comments on the plan. I have reviewed the comments and offer the following feedback on your plan.

1. The strategic plan should consider documenting Indiana's current metrics for all or some of the USDOT's goals for ITS. For example, metrics describing current capacity, mobility, safety, economic productivity, etc. Once these current metrics are established, the plan needs to forecast what the expected metrics will be after investing and deploying ITS infrastructure valued at $187.4 million over the next 10-15 years. Furthermore, the strategic plan needs to define the long-term desired metrics for each of the ITS goals. Having a description of the current, expected and desired metrics will enable decision-makers and others to place the $187.4 million ITS investment in a context. This contextual discussion is of particular importance in the Executive Summary.

2. Since one of the goals of INDOT is to become one of the top five DOTs in the nation, the strategic plan should consider benchmarking Indiana against other states to illustrate its current ranking, the expected ranking after 10-15 years of investments in ITS, and the long-term desired 5th ranking. The metrics for this benchmarking purposes need not be the same as the suggested ITS metrics in item #1.

3. The strategic plan should seriously consider developing a clearer map between the proposed ITS investments and the INDOT's TOP DOT plan, USDOT's Strategic Plan, and FHWA's Strategic Plan.

4. Chapter 8 in the Executive Summary is unnecessary.

5. The Executive Summary would benefit from having the input of a professional editor to increase its readability.

In summary, the major concerns are centered on the establishment of metrics for the current transportation system and the desired outcome, and the

needed benchmarking of other states' current performance on these metrics. In addition, the Executive Summary needs to be more readable.

I hope this review is helpful to Indiana's quest to become a top-five state in transportation. The future of our nation depends on major enhancements in our

transportation system and it is reassuring to see Indiana taking up the challenge.

Thanks for the opportunity to review the plan.

Best wishes,
Michael Reischman

Michael M. Reischman
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Directorate for Engineering
National Science Foundation
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