APPENDIX B:
TIPPECANOE COUNTY REGIONAL ITS ARCHITECTURE FUNCTIONAL REQUIREMENTS

This section discusses detailed Functional Requirements for the User Services and Market Packages identified for the Tippecanoe County RA. Functional Requirements were selected from a list of potential requirements for each of the Equipment Package[1] included in the Tippecanoe County RA.

The organization of the Functional Requirements report produced by Turbo Architecture contains the following information:

- Element: The name used by stakeholders to describe a system or piece of a system.

- Entity: Centers or Subsystems as defined in the National ITS Architecture

- Functional Area: Equipment Packages which groups similar processes of a particular subsystem together into an "implementable" package

- Requirements: High-level requirements that support regional integration

- Status: Requirement implementation status:
  - <u>Existing</u>: Requirement is being met by an accepted ITS data transfer/implementation or the process (as described in the requirement) has been implemented or documented.
  - <u>Planned</u>: Requirement will be met by a future ITS implementation.
  - <u>Phone/Traditional Comm.:</u> Requirement is being met by a non-ITS data transfer such as land-line phone calls, cellular phone calls, pagers, and/or plug in control unit.

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[1] Equipment Packages group similar ITS processes of a particular subsystem together into an "implementable" package. Equipment Packages are the most detailed elements of the physical architecture and tied to specific Market Packages. Furthermore, they provide the common link between the interface-oriented architecture definition and the deployment-oriented market packages.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element: **APC of Tippecanoe County**

Entity: **Archived Data Management Subsystem**

Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources. May include quality checks, error notification, and archive coordination.

Requirement:	1	The center shall collect data to be archived from one or more data sources.	Planned
Requirement:	6	The center shall include capabilities for archive to archive coordination.	Planned

Element: **CityBus - Operations Center and Dispatch**

Entity: **Information Service Provider**

Functional Area: **ISP Traveler Data Collection**

Collects traveler information from other centers, consolidates and refines the collected data, and makes this data available to traveler information applications.

Requirement:	1	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Existing
Requirement:	2	The center shall collect, process, and store maintenance and construction information, including scheduled maintenance and construction work activities and work zone activities.	Existing
Requirement:	3	The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.	Existing
Requirement:	7	The center shall collect, process, and store event information.	Existing

Functional Area: **Infrastructure Provided Trip Planning**

Generation of pre-trip and enroute trip plans for travelers (and vehicles) based on current traffic conditions, work zones, weather, and travelers constraints and preferences. Includes end-to-end trips using multiple modes, such as bicycle, transit, etc.

Requirement:	1	The center shall provide the capability to provide specific pre-trip and enroute directions to travelers (and drivers), including costs, arrival times, and transfer points.	Existing
Requirement:	3	The center shall support on-line route guidance for travelers using personal devices (such as PDAs).	Existing
Requirement:	6	The center shall generate route plans based on current and/or predicted conditions of the road network, scheduled maintenance and construction work activities, and work zone activities.	Existing
Requirement:	7	The center shall generate route plans based on transit services, including fares, schedules, and requirements for travelers with special needs.	Existing
Requirement:	11	The center shall exchange route segment information with other centers outside the area served by the local center.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Operations Center and Dispatch**

*Entity:***Information Service Provider**

Functional Area: **Infrastructure Provided Trip Planning**

Generation of pre-trip and enroute trip plans for travelers (and vehicles) based on current traffic conditions, work zones, weather, and travelers constraints and preferences. Includes end-to-end trips using multiple modes, such as bicycle, transit, etc.

		Requirement	Status
Requirement:	12	The center shall generate trips based on the use of more than one mode of transport.	Existing
Requirement:	16	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used to determine vehicle and non-vehicle routes, trip planning, and on-line vehicle guidance.	Existing
Requirement:	17	The center shall provide the capability for center personnel to control route calculation parameters.	Existing

*Entity:***Transit Management**

Functional Area: **Transit Center Vehicle Tracking**

Monitoring transit vehicle locations via interactions with on-board systems. Furnish users with real-time transit schedule information and maintain interface with digital map providers.

		Requirement	Status
Requirement:	1	The center shall monitor the locations of all transit vehicles within its network.	Existing
Requirement:	2	The center shall determine adherence of transit vehicles to their assigned schedule.	Existing
Requirement:	3	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for transit tracking and dispatch.	Existing
Requirement:	4	The center shall provide transit operational data to traveler information service providers.	Phone/Traditional Com

Functional Area: **Transit Center Fixed-Route Operations**

Management of fixed route transit operations. Planning, scheduling, and dispatch associated with fixed and flexible route transit services. Updates customer service operator systems, and provides current vehicle schedule adherence and optimum scenarios for schedule adjustment.

		Requirement	Status
Requirement:	2	The center shall provide the interface to the system operator to control the generation of new routes and schedules (transit services) including the ability to review and update the parameters used by the routes and schedules generation processes and to initiate these processes	Existing
Requirement:	3	The center shall be able to generate special routes and schedules to support an incident, disaster, evacuation, or other emergency.	Existing
Requirement:	4	The center shall dispatch fixed route or flexible route transit vehicles	Existing
Requirement:	5	The center shall collect transit operational data for use in the generation of routes and schedules.	Existing
Requirement:	9	The center shall exchange information with Maintenance and Construction Operations concerning work zones, roadway conditions, asset restrictions, work plans, etc.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Operations Center and Dispatch**

*Entity:***Transit Management**

Functional Area:	**Transit Center Fixed-Route Operations**	

Management of fixed route transit operations. Planning, scheduling, and dispatch associated with fixed and flexible route transit services. Updates customer service operator systems, and provides current vehicle schedule adherence and optimum scenarios for schedule adjustment.

Requirement:	10	The center shall disseminate up-to-date schedules and route information to other centers for fixed and flexible route services.	Phone/Traditional Com

Functional Area:	**Transit Center Paratransit Operations**	

Management of demand response transit services, including paratransit. Planning and scheduling of these services. Supports automated vehicle dispatch and automatically updates customer service operator systems.

Requirement:	1	The center shall process trip requests for demand responsive transit services, i.e. paratransit. Sources of the requests may include traveler information service providers.	Existing
Requirement:	2	The center shall monitor the operational status of the demand response vehicles including status of passenger pick-up and drop-off.	Existing
Requirement:	3	The center shall generate demand response transit (including paratransit) routes and schedules based on such factors as parameters input by the system operator, what other demand responsive transit schedules have been planned, the availability and location of vehicles, the relevance of any fixed transit routes and schedules, and road network information.	Existing
Requirement:	5	The center shall dispatch demand response (paratransit) transit vehicles.	Existing
Requirement:	6	The center shall exchange information with Maintenance and Construction Operations concerning work zones, roadway conditions, asset restrictions, work plans, etc.	Phone/Traditional Com
Requirement:	7	The center shall disseminate up-to-date schedules and route information to other centers for demand responsive transit services (paratransit).	Phone/Traditional Com

Functional Area:	**Transit Center Fare Management**	

Management of fare collection at the center - includes setting and distributing fare information, central processing of fares for transit as well as other ITS services, links to financial institutions and enforcement agencies.

Requirement:	4	The center shall support the payment of transit fare transactions using data provided by the traveler cards / payment instruments.	Existing

Functional Area:	**Transit Center Passenger Counting**	

Receives and processes transit vehicle loading data using two-way communications from equipped transit vehicles.

Requirement:	1	The center shall collect passenger count information from each transit vehicle.	Existing
Requirement:	2	The center shall calculate transit ridership data by route, route segment, transit stop, time of day, and day of week based on the collected passenger count information.	Existing
Requirement:	3	The center shall make the compiled ridership data available to the system operator and other applications.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Operations Center and Dispatch**

*Entity:***Transit Management**

Functional Area: **Transit Center Security**

Monitor transit vehicle operator or traveler activated alarms; authenticate transit vehicle operators; remotely disable a transit vehicle; alert operators, travelers, and police to potential incidents identified by these security features.

			Status
Requirement:	1	The center shall monitor transit vehicle operational data to determine if the transit vehicle is off-route and assess whether a security incident is occurring.	Existing
Requirement:	2	The center shall receive reports of emergencies on-board transit vehicles entered directly be the transit vehicle operator or from a traveler through interfaces such as panic buttons or alarm switches.	Existing
Requirement:	3	The center shall support the back-office portion of functionality to authenticate transit vehicle operators.	Existing
Requirement:	4	The center shall exchange transit incident information along with other service data with other transit agencies.	Phone/Traditional Com
Requirement:	5	The center shall receive information pertaining to a wide-area alert such as weather alerts, disaster situations, or child abductions. This information may come from Emergency Management or from other Alerting and Advisory Systems.	Phone/Traditional Com
Requirement:	6	The center shall send wide-area alert information to travelers (on-board transit vehicles or at stations/stops) and transit vehicle operators.	Existing
Requirement:	7	The center shall coordinate the response to security incidents involving transit with other agencies including Emergency Management, other transit agencies, media, traffic management, and traveler information service providers.	Phone/Traditional Com
Requirement:	8	The center shall receive threat information and status on the integrity of the transit infrastructure.	Phone/Traditional Com

Functional Area: **Transit Vehicle Operator Assignment**

Assignment of transit operators to runs in a fair manner while minimizing labor and overtime services, considering operator preferences, qualifications, accumulated work hours, and other information about each operator.

Requirement:	4	The center shall provide an interface through which the transit vehicle operator information can be maintained - either from the transit vehicle operator, center personnel, or other functions.	Existing

Functional Area: **Transit Garage Maintenance**

Collect operational and maintenance data from transit vehicles, manage vehicle service histories, automatically generate preventative maintenance schedules, and provide information to service personnel.

Requirement:	1	The center shall collect operational and maintenance data from transit vehicles.	Existing
Requirement:	2	The center shall monitor the condition of a transit vehicle to analyze brake, drive train, sensors, fuel, steering, tire, processor, communications equipment, and transit vehicle mileage to identify mileage based maintenance, out-of-specification or imminent failure conditions.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

    *Element***CityBus - Operations Center and Dispatch**

      *Entity:***Transit Management**

        Functional Area: **Transit Garage Maintenance**

Collect operational and maintenance data from transit vehicles, manage vehicle service histories, automatically generate preventative maintenance schedules, and provide information to service personnel.

			Status
Requirement:	3	The center shall generate transit vehicle maintenance schedules that identify the maintenance or repair to be performed and when the work is to be done.	Existing
Requirement:	4	The center shall generate transit vehicle availability listings, current and forecast, to support transit vehicle assignment planning based, in part, on the transit vehicle maintenance schedule.	Existing
Requirement:	8	The center shall provide transit operations personnel with the capability to update transit vehicle maintenance information and receive reports on all transit vehicle operations data.	Existing

        Functional Area: **Transit Center Information Services**

Provide interactive traveler information to travelers (on-board transit vehicles, at stops/stations, using personal devices), traveler information service providers, media, and other transit organizations. Includes routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, yellow pages, and special events.

			Status
Requirement:	1	The center shall provide travelers using public transportation with traffic and advisory information upon request. Such information may include transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, and special events.	Existing
Requirement:	2	The center shall provide transit information to the media including details of deviations from schedule of regular transit services.	Phone/Traditional Com
Requirement:	3	The center shall exchange transit schedules, real-time arrival information, fare schedules, and general transit service information with other transit organizations to support transit traveler information systems.	Phone/Traditional Com
Requirement:	4	The center shall provide transit service information to traveler information service providers including routes, schedules, schedule adherence, and fare information as well as transit service information during evacuation.	Phone/Traditional Com
Requirement:	6	The center shall broadcast transit advisory data, including alerts and advisories pertaining to major emergencies, or man made disasters.	Existing

        Functional Area: **Transit Data Collection**

Collection and storage of transit management data. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect transit management data such as transit fares and passenger use, transit services, paratransit operations, transit vehicle maintenance data, etc.	Existing
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Operations Center and Dispatch**

*Entity:***Transit Management**

Functional Area: **Transit Data Collection**

Collection and storage of transit management data. For use by operations personnel or data archives in the region.

Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the transit data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Existing

*Element***CityBus - Transit Information Displays**

*Entity:***Remote Traveler Support**

Functional Area: **Remote Transit Information Services**

Public traveler interface that provides real-time travel-related information at transit stops and multi-modal transfer points, including general annunciation, display of imminent arrival information, the latest available information on transit routes, schedules, transfer options, available services, fares, and real-time schedule adherence.

Requirement:	1	The public interface for travelers shall collect and provide real-time travel-related information at transit stops, multi-modal transfer points, and other public transportation areas.	Existing
Requirement:	2	The public interface for travelers shall collect and present to the transit traveler information on transit routes, schedules, and real-time schedule adherence.	Existing
Requirement:	3	The public interface for travelers shall provide support for general annunciation and/or display of imminent arrival information and other information of general interest to transit users.	Existing
Requirement:	4	The public interface for travelers shall present information to the traveler in a form suitable for travelers with physical disabilities.	Existing

*Element***CityBus - Transit Vehicles**

*Entity:***Transit Vehicle Subsystem**

Functional Area: **On-board Transit Trip Monitoring**

Support fleet management with automatic vehicle location (AVL) and automated mileage and fuel reporting and auditing.

Requirement:	1	The transit vehicle shall compute the location of the transit vehicle based on inputs from a vehicle location determination function.	Existing
Requirement:	2	The transit vehicle shall support the computation of the location of a transit vehicle using on-board sensors to augment the location determination function. This may include proximity to the transit stops or other known reference points as well as recording trip length.	Existing
Requirement:	3	The transit vehicle shall record transit trip monitoring data including vehicle mileage and fuel usage.	Planned
Requirement:	4	The transit vehicle shall record transit trip monitoring data including operational status information such as doors open/closed, running times, etc.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Transit Vehicles**

*Entity:***Transit Vehicle Subsystem**

Functional Area: **On-board Transit Trip Monitoring**

Support fleet management with automatic vehicle location (AVL) and automated mileage and fuel reporting and auditing.

		Status
Requirement:	5 The transit vehicle shall send the transit vehicle trip monitoring data to center-based trip monitoring functions.	Existing

Functional Area: **On-board Schedule Management**

Collecting of data for schedule generation and adjustment on-board a transit vehicle. Supports communication between the vehicle, operator, and center.

Requirement:	1 The transit vehicle shall receive a vehicle assignment including transit route information, transit service instructions, traffic information, road conditions, and other information for the operator.	Existing
Requirement:	2 The transit vehicle shall use the route information and its current location to determine the deviation from the predetermined schedule.	Existing
Requirement:	3 The transit vehicle shall calculate the estimated times of arrival (ETA) at transit stops.	Existing

Functional Area: **On-board Paratransit Operations**

On-board systems to manage paratransit and flexible-route dispatch requests, including multi-stop runs. Passenger data is collected and provided to the center.

Requirement:	1 The transit vehicle shall manage data input to sensor(s) on-board a transit vehicle to determine the vehicle's availability for use in demand responsive and flexible-route transit services based on identity, type, and passenger capacity.	Existing
Requirement:	2 The transit vehicle shall receive the status of demand responsive or flexible-route transit schedules and passenger loading from the transit vehicle operator.	Existing
Requirement:	3 The transit vehicle shall provide the transit vehicle operator instructions about the demand responsive or flexible-route transit schedule that has been confirmed from the center.	Existing

Functional Area: **On-board Transit Fare Management**

On-board systems provide fare collection using a travelers non-monetary fare medium. Collected fare data are made available to the center.

Requirement:	1 The transit vehicle shall read data from the traveler card / payment instrument presented by boarding passengers.	Planned
Requirement:	6 The transit vehicle shall provide a transit fare payment interface that is suitable for travelers with physical disabilities.	Planned

Functional Area: **On-board Passenger Counting**

On-board systems collect transit vehicle loading data and make it available to the center.

Requirement:	1 The transit vehicle shall count passengers boarding and alighting.	Existing
Requirement:	2 The passenger counts shall be related to location to support association of passenger counts with routes, route segments, or bus stops.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Transit Vehicles**

*Entity:***Transit Vehicle Subsystem**

Functional Area: **On-board Passenger Counting**

On-board systems collect transit vehicle loading data and make it available to the center.

			Status
Requirement:	3	The passenger counts shall be timestamped so that ridership can be measured by time of day and day of week.	Existing
Requirement:	4	The transit vehicle shall send the collected passenger count information to the transit center.	Existing

Functional Area: **On-board Transit Security**

On-board video/audio surveillance systems, threat sensors, and object detection sensors to enhance security and safety on-board a transit vehicles. Also includes silent alarms activated by transit user or vehicle operator, operator authentication, and remote vehicle disabling.

Requirement:	1	The transit vehicle shall perform video and audio surveillance inside of transit vehicles and output raw video or audio data for either local monitoring (for processing or direct output to the transit vehicle operator), remote monitoring or for local storage (e.g., in an event recorder).	Existing
Requirement:	8	The transit vehicle shall monitor and output surveillance and sensor equipment status and fault indications.	Existing
Requirement:	9	The transit vehicle shall accept emergency inputs from either the transit vehicle operator or a traveler through such interfaces as panic buttons, silent or audible alarms, etc.	Existing
Requirement:	10	The transit vehicle shall output reported emergencies to the center.	Existing
Requirement:	14	The transit vehicle shall perform authentication of the transit vehicle operator.	Existing

Functional Area: **On-board Maintenance**

On-board systems to collect and process transit vehicle maintenance data including mileage and vehicle operating conditions for use in scheduling future vehicle maintenance.

Requirement:	1	The transit vehicle shall collect and process vehicle mileage data available to sensors on-board.	Planned
Requirement:	2	The transit vehicle shall collect and process the transit vehicle's operating conditions such as engine temperature, oil pressure, brake wear, internal lighting, environmental controls, etc.	Existing
Requirement:	3	The transit vehicle shall transmit vehicle maintenance data to the center to be used for scheduling future vehicle maintenance.	Existing

Functional Area: **On-board Transit Information Services**

On-board systems to furnish next-stop annunciation as well as interactive travel-related information, including routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, non-motorized transportation services, and special events.

Requirement:	3	The transit vehicle shall broadcast advisories about the imminent arrival of the transit vehicle at the next stop via an on-board automated annunciation system.	Existing
Requirement:	4	The transit vehicle shall support input and output forms that are suitable for travelers with physical disabilities.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***CityBus - Transit Vehicles**

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Requirement:	2	The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Existing

*Element***INDOT - 511 Traveler Information**

*Entity:***Information Service Provider**

Functional Area: **ISP Traveler Data Collection**

Collects traveler information from other centers, consolidates and refines the collected data, and makes this data available to traveler information applications.

Requirement:	1	The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.	Planned
Requirement:	2	The center shall collect, process, and store maintenance and construction information, including scheduled maintenance and construction work activities and work zone activities.	Planned
Requirement:	3	The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.	Planned
Requirement:	4	The center shall collect, process, and store parking information, including location, availability, and fees.	Planned
Requirement:	5	The center shall collect, process, and store toll fee information.	Planned
Requirement:	6	The center shall collect, process, and store current and forecast road conditions and surface weather conditions.	Planned
Requirement:	7	The center shall collect, process, and store event information.	Planned

Functional Area: **Traveler Telephone Information**

Distribution of traveler information and wide-area alerts to traveler telephone information systems such as 511, based on voice-based traveler requests.

Requirement:	1	The center shall provide the capability to process voice-formatted requests for traveler information from a traveler telephone information system, and return the information in the requested format.	Planned
Requirement:	2	The center shall provide the capability to process dual-tone multifrequency (DTMF)-based requests (touch-tone) for traveler information from a traveler telephone information system.	Planned
Requirement:	3	The center shall provide the capability to process traveler information requests from a traveler telephone information system.	Planned
Requirement:	4	The center shall provide information on traffic conditions in the requested voice format and for the requested location.	Planned
Requirement:	5	The center shall provide work zone and roadway maintenance information in the requested voice format and for the requested location.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***INDOT - 511 Traveler Information**

*Entity:***Information Service Provider**

Functional Area: **Traveler Telephone Information**

Distribution of traveler information and wide-area alerts to traveler telephone information systems such as 511, based on voice-based traveler requests.

			Status
Requirement:	6	The center shall provide roadway environment conditions information in the requested voice format and for the requested location.	Planned
Requirement:	7	The center shall provide weather and event information in the requested voice format and for the requested location.	Planned
Requirement:	11	The center shall provide the capability to support both specific caller requests as well as bulk upload of regional traveler information.	Planned
Requirement:	12	The center shall receive and forward region-specific wide-area alert and advisory information to the traveler telephone information system, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.	Planned

Functional Area: **ISP Emergency Traveler Information**

Distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.

Requirement:	3	The center shall disseminate wide-area alert information to the traveler interface systems, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.	Planned
Requirement:	4	The center shall provide the capability for a system operator to control the type and update frequency of emergency and wide-area alert information distributed to travelers.	Planned

Functional Area: **ISP Data Collection**

Collection and storage of information supporting the operations of traveler information service providers. For use by operations personnel or data archives in the region.

Requirement:	1	The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.	Planned
Requirement:	4	The center shall receive and respond to requests from ITS Archives for either a catalog of the traveler information data or for the data itself.	Planned
Requirement:	5	The center shall be able to produce sample products of the data available.	Planned

*Element***INDOT - Data Services**

*Entity:***Archived Data Management Subsystem**

Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources. May include quality checks, error notification, and archive coordination.

Requirement:	1	The center shall collect data to be archived from one or more data sources.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

    *Element***INDOT - Data Services**

        *Entity:***Archived Data Management Subsystem**

        Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources. May include quality checks, error notification, and archive coordination.

	Requirement		Status
Requirement:	2	The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).	Planned
Requirement:	3	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Requirement:	4	The center shall include capabilities for performing quality checks on the incoming archived data.	Planned
Requirement:	5	The center shall include capabilities for error notification on the incoming archived data.	Planned
Requirement:	6	The center shall include capabilities for archive to archive coordination.	Planned
Requirement:	7	The center shall support a broad range of archived data management implementations, ranging from simple data marts that collect a focused set of data and serve a particular user community to large-scale data warehouses that collect, integrate, and summarize transportation data from multiple sources and serve a broad array of users within a region.	Planned
Requirement:	8	The center shall perform quality checks on received data.	Planned
Requirement:	9	The center shall provide the capability to execute methods on the incoming data such as cleansing, summarizations, aggregations, or transformations applied to the data before it is stored in the archive.	Planned
Requirement:	10	The center shall respond to requests from the administrator interface function to maintain the archive data.	Planned
Requirement:	11	When data or a catalog of data is received from the archive, the center shall generate the requested data product for the users systems.	Planned

        Functional Area: **Traffic and Roadside Data Archival**

Collects and archives traffic and environmental information directly from the roadside for use in off-line planning, research, and analysis.

	Requirement		Status
Requirement:	1	The center shall manage the collection of archive data directly from collection equipment located at the roadside.	Planned
Requirement:	2	The center shall collect traffic sensor information from roadside devices.	Planned
Requirement:	3	The center shall collect environmental sensor information that from roadside devices.	Planned
Requirement:	4	The center shall respond to requests from the Archive Data Administer to input the parameters that control the collection process.	Planned

    *Element***INDOT - Data Services**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***INDOT - Data Services**

*Entity:***Archived Data Management Subsystem**

Functional Area: **Traffic and Roadside Data Archival**

Collects and archives traffic and environmental information directly from the roadside for use in off-line planning, research, and analysis.

		Status
Requirement:	5 The center shall send the request for data and control parameters to the field equipment where the information is collected and returned.	Planned
Requirement:	6 The center shall record the status about the imported traffic and roadside data.	Planned
Requirement:	7 The center shall use the status information to adjust the collection of traffic and roadside data.	Planned

Functional Area: **On-Line Analysis and Mining**

Advanced data analysis and mining features to support discovery of information, patterns, and correlations in large ITS archives.

		Status
Requirement:	1 The center shall support the interface with Archive Data User Systems for requests for analysis of the archive data.	Planned
Requirement:	2 The center shall provide the capability to perform activities such as data mining, data fusion, summarizations, aggregations, and recreation from archive data. This may include multidimensional analysis, selective summarization and expansion of data details, and many other advanced analysis services.	Planned
Requirement:	3 The center shall receive the user's systems requests and develop the request to retrieve the data from the archive.	Planned
Requirement:	4 The center shall respond to users systems requests for a catalog of the archived data analysis products available.	Planned
Requirement:	5 For archive analysis and data mining products requiring financial payment the center shall process the financial requests and manage an interface to a Financial Institution.	Planned

*Element***INDOT - Roadside Equipment**

*Entity:***Remote Traveler Support**

Functional Area: **Remote Basic Information Reception**

Public traveler interface, such as a kiosk, that provides formatted traffic advisories, transit, event, and other traveler information, as well as broadcast alerts.

		Status
Requirement:	1 The public interface for travelers shall receive traffic information from a center and present it to the traveler.	Planned
Requirement:	3 The public interface for travelers shall receive event information from a center and present it to the traveler.	Planned
Requirement:	4 This public interface for travelers shall receive evacuation information from a center and present it to the traveler.	Planned
Requirement:	5 The public interface for travelers shall receive wide-area alerts and present it to the traveler.	Planned

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Basic Surveillance**

Field elements that monitor traffic conditions using loop detectors and CCTV cameras.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***INDOT - Roadside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Basic Surveillance**

Field elements that monitor traffic conditions using loop detectors and
CCTV cameras.

		Status
Requirement:	1 The field element shall collect, process, digitize, and send traffic sensor data (speed, volume, and occupancy) to the center for further analysis and storage, under center control.	Planned
Requirement:	2 The field element shall collect, process, and send traffic images to the center for further analysis and distribution.	Planned
Requirement:	4 The field element shall return sensor and CCTV system operational status to the controlling center.	Planned
Requirement:	5 The field element shall return sensor and CCTV system fault data to the controlling center for repair.	Planned

Functional Area: **Roadway Signal Controls**

Field elements including traffic signal controllers for use at signalized
intersections; also supports pedestrian crossings.

		Status
Requirement:	1 The field element shall control traffic signals at intersections and on main highways for urban and rural areas, under center control.	Existing
Requirement:	6 The field element shall return traffic signal controller operational status to the controlling center.	Existing
Requirement:	7 The field element shall return traffic signal controller fault data to the maintenance center for repair.	Existing

Functional Area: **Roadway Traffic Information Dissemination**

Driver information systems, such as dynamic message signs and Highway
Advisory Radio (HAR).

		Status
Requirement:	1 The field element shall include dynamic messages signs for dissemination of traffic and other information to drivers, under center control; the DMS may be either those that display variable text messages, or those that have fixed format display(s) (e.g. vehicle restrictions, or lane open/close).	Existing
Requirement:	2 The field element shall include driver information systems that communicate directly from a center to the vehicle radio (such as Highway Advisory Radios) for dissemination of traffic and other information to drivers, under center control.	Planned
Requirement:	4 The field element shall provide operational status for the driver information systems equipment (DMS, HAR, etc.) to the center.	Planned
Requirement:	5 The field element shall provide fault data for the driver information systems equipment (DMS, HAR, etc.) to the center for repair.	Planned

Functional Area: **Roadway Incident Detection**

Field elements that monitor traffic conditions to identify incidents. It
includes traffic detectors that collect traffic flow information and identify
unusual traffic conditions and advanced CCTV cameras with built-in
incident detection algorithms.

		Status
Requirement:	1 The field element shall collect, process, and send traffic images to the center for further analysis and distribution.	Planned
Requirement:	3 The field element's video devices shall be remotely controlled by a traffic management center.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **INDOT - Roadside Equipment**

Entity: **Roadway Subsystem**

Functional Area: **Roadway Incident Detection**

Field elements that monitor traffic conditions to identify incidents. It includes traffic detectors that collect traffic flow information and identify unusual traffic conditions and advanced CCTV cameras with built-in incident detection algorithms.

Requirement:	4	The field element shall provide operational status and fault data for the incident detection devices to the traffic management center.	Planned

Functional Area: **Standard Rail Crossing**

Field elements at highway-rail intersections (HRIs) where operational requirements do not dictate advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Includes traditional HRI warning systems augmented with other standard traffic management devices.

Requirement:	7	The field element shall close the highway-rail intersection (HRI) when a train is approaching using gates, lights/signs, barriers, and traffic control signals.	Existing

Functional Area: **Roadway Equipment Coordination**

Field elements that control and send data to other field elements (such as environmental sensors that send data to a DMS or coordination between traffic controllers on adjacent intersections), without center control.

Requirement:	1	The field element shall include sensors (such as traffic, environmental, and work zone intrusion detection sensors) that provide data and status information to other field element devices (such as dynamic message signs, ramp meters, traffic signals, work zone intrusion alert systems), without center control.	Planned
Requirement:	2	The field element shall include sensors (such as traffic, environmental, and work zone intrusion detection sensors) that receive control information from other field element devices, without center control.	Planned

Functional Area: **Roadway Speed Monitoring**

Vehicle speed sensors that detect excessive vehicle speeds, informing drivers, centers and/or enforcement agencies of speed violations.

Requirement:	1	The field element shall include sensors to detect vehicle speeds, under traffic or maintenance center control.	Planned
Requirement:	8	The field element shall return fault data for the vehicle speed sensors to the controlling center for repair.	Planned

Functional Area: **Roadway Data Collection**

Field elements to collect traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications. Includes the sensors, supporting roadside infrastructure, and communications equipment.

Requirement:	1	The field element shall collect traffic, road, and environmental conditions information.	Planned
Requirement:	2	The field element shall include the sensors and supporting roadside devices that sense, collect, and send traffic, road, and environmental conditions information to a center for archival.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***INDOT - Roadside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Data Collection**

Field elements to collect traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications. Includes the sensors, supporting roadside infrastructure, and communications equipment.

Requirement:	3	The field element shall collect sensor status and sensor faults from roadside equipment and send it along with the recorded data to a center for archival.	Planned

*Element***INDOT - TMC, TO, and MCM**

*Entity:***Information Service Provider**

Functional Area: **ISP Traveler Data Collection**

Collects traveler information from other centers, consolidates and refines the collected data, and makes this data available to traveler information applications.

Requirement:	2	The center shall collect, process, and store maintenance and construction information, including scheduled maintenance and construction work activities and work zone activities.	Existing
Requirement:	3	The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.	Planned
Requirement:	6	The center shall collect, process, and store current and forecast road conditions and surface weather conditions.	Planned
Requirement:	7	The center shall collect, process, and store event information.	Planned
Requirement:	8	The center shall collect, process, and store air quality information.	Planned

Functional Area: **ISP Emergency Traveler Information**

Distribution of emergency information to the traveling public, including evacuation information and wide-area alerts.

Requirement:	1	The center shall disseminate emergency evacuation information to the traveler interface systems, including evacuation zones, shelter information, available transportation modes, road closures and detours, changes to transit services, and traffic and road conditions at the origin, destination, and along the evacuation routes.	Planned
Requirement:	2	The center shall provide evacuation information to shelter providers.	Planned
Requirement:	3	The center shall disseminate wide-area alert information to the traveler interface systems, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.	Planned
Requirement:	4	The center shall provide the capability for a system operator to control the type and update frequency of emergency and wide-area alert information distributed to travelers.	Planned

Functional Area: **ISP Data Collection**

Collection and storage of information supporting the operations of traveler information service providers. For use by operations personnel or data archives in the region.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

    *Element:***INDOT - TMC, TO, and MCM**

        *Entity:***Information Service Provider**

        Functional Area: **ISP Data Collection**

Collection and storage of information supporting the operations of traveler information service providers. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.	Planned
Requirement:	3	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Planned
Requirement:	4	The center shall receive and respond to requests from ITS Archives for either a catalog of the traveler information data or for the data itself.	Planned
Requirement:	5	The center shall be able to produce sample products of the data available.	Planned

        *Entity:***Maintenance and Construction Management**

        Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

			Status
Requirement:	1	The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Planned
Requirement:	2	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Planned
Requirement:	3	The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Planned
Requirement:	4	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Planned
Requirement:	5	The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element: **INDOT - TMC, TO, and MCM**

Entity: **Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

		Status
Requirement:	6 The center shall exchange road network status assessment information with emergency management and traffic management centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	Planned
Requirement:	7 The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Planned
Requirement:	8 The center shall receive information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses to support incident management.	Planned

Functional Area: **MCM Data Collection**

Collection and storage of maintenance and construction information. For use by operations personnel or data archives in the region.

		Status
Requirement:	1 The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.	Planned
Requirement:	2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Planned
Requirement:	3 The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.	Planned
Requirement:	4 The center shall be able to produce sample products of the data available.	Planned
Requirement:	5 The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.	Planned

Entity: **Traffic Management**

Functional Area: **Collect Traffic Surveillance**

Management of traffic sensors and surveillance (CCTV) equipment, collection of current traffic conditions, and distribution of the collected information to other centers and operators.

		Status
Requirement:	1 The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element: **INDOT - TMC, TO, and MCM**

Entity: **Traffic Management**

Functional Area: **Collect Traffic Surveillance**

Management of traffic sensors and surveillance (CCTV) equipment, collection of current traffic conditions, and distribution of the collected information to other centers and operators.

		Status
Requirement:	4 The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Planned
Requirement:	5 The center shall respond to control data from center personnel regarding sensor and surveillance data collection, analysis, storage, and distribution.	Planned
Requirement:	6 The center shall maintain a database of surveillance and sensors and the freeways, surface street and rural roadways, e.g. where they are located, to which part(s) of the network their data applies, the type of data, and the ownership of each link (that is, the agency or entity responsible for collecting and storing surveillance of the link) in the network.	Planned
Requirement:	7 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic data.	Planned

Functional Area: **TMC Signal Control**

Remotely controls traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, emergency vehicle preemptions, pedestrian crossings, etc.

		Status
Requirement:	1 The center shall remotely control traffic signal controllers.	Existing
Requirement:	3 The center shall collect traffic signal controller operational status and compare against the control information sent by the center.	Existing
Requirement:	4 The center shall collect traffic signal controller fault data from the field.	Existing
Requirement:	5 The center shall implement control plans to coordinate signalized intersections, under control of center personnel, based on data from sensors and surveillance monitoring traffic conditions, incidents, emergency vehicle preemptions, the passage of commercial vehicles with unusual loads, equipment faults, pedestrian crossings, etc.	Existing

Functional Area: **TMC Traffic Information Dissemination**

Controls dissemination of traffic-related data to other centers, the media, and travelers via the driver information systems (DMS, HAR) that it operates.

		Status
Requirement:	2 The center shall remotely control driver information systems that communicate directly from a center to the vehicle radio (such as Highway Advisory Radios) for dissemination of traffic and other information to drivers.	Planned
Requirement:	3 The center shall collect operational status for the driver information systems equipment (DMS, HAR, etc.).	Planned
Requirement:	4 The center shall collect fault data for the driver information systems equipment (DMS, HAR, etc.) for repair.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element: **INDOT - TMC, TO, and MCM**

Entity: **Traffic Management**

Functional Area: **TMC Traffic Information Dissemination**

Controls dissemination of traffic-related data to other centers, the media, and travelers via the driver information systems (DMS, HAR) that it operates.

		Status
Requirement:	5 The center shall retrieve locally stored traffic information, including current and forecasted traffic information, road and weather conditions, traffic incident information, information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements), etc.	Planned
Requirement:	6 The center shall distribute traffic data to maintenance and construction centers, transit centers, emergency management centers, and traveler information providers.	Planned
Requirement:	7 The center shall distribute traffic data to the media; the capability to provide the information in both data stream and graphical display shall be supported.	Planned
Requirement:	8 The center shall provide the capability for center personnel to control the nature of the data that is available to non-traffic operations centers and the media.	Planned

Functional Area: **TMC Incident Detection**

Remotely monitors traffic sensor and surveillance systems to detect and verify incidents. Also monitors external advisory and incident reporting systems, intermodal freight depots, and border crossings for additional incident information. Identified incidents are reported to operations personnel and other centers.

		Status
Requirement:	1 The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Planned
Requirement:	2 The center shall collect and store traffic flow and image data from the field equipment to detect and verify incidents.	Planned
Requirement:	3 The center shall receive inputs concerning upcoming events that would effect the traffic network from event promoters, traveler information service providers, border crossings, and intermodal freight depots.	Planned
Requirement:	4 The center shall exchange incident and threat information with emergency management centers as well as maintenance and construction centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Planned
Requirement:	5 The center shall support requests from emergency management centers and border inspection systems to remotely control sensor and surveillance equipment located in the field.	Planned
Requirement:	6 The center shall provide road network conditions and traffic images to emergency management centers to support the detection, verification, and classification of incidents.	Planned
Requirement:	7 The center shall provide video and traffic sensor control commands to the field equipment to detect and verify incidents.	Planned

Functional Area: **TMC Incident Dispatch Coordination/Communication**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***INDOT - TMC, TO, and MCM**

*Entity:***Traffic Management**

Functional Area: **TMC Incident Dispatch Coordination/Communication**

Center-based capability to formulate an incident response that takes into account the incident potential, incident impacts, and/or resources required for incident management including proposing and facilitating the dispatch of emergency response and service vehicles as well as coordinating response with all appropriate cooperating agencies.

			Status
Requirement:	1	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This may also identify specific information that should not be released to the public.	Planned
Requirement:	2	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Requirement:	3	The center shall support requests from emergency management centers to remotely control sensor and surveillance equipment located in the field, provide special routing for emergency vehicles, and to provide responding emergency vehicles with signal preemption.	Planned
Requirement:	4	The center shall exchange incident and threat information with emergency management centers as well as maintenance and construction centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Existing
Requirement:	5	The center shall share resources with allied agency centers to implement special traffic control measures, assist in clean up, verify an incident, etc. This may also involve coordination with maintenance centers.	Existing
Requirement:	6	The center shall receive inputs concerning upcoming events that would effect the traffic network from event promoters, traveler information service providers, media, border crossings, and rail operations centers.	Existing
Requirement:	7	The center shall provide road network conditions and traffic images to emergency management centers, maintenance and construction centers, and traveler information service providers.	Planned
Requirement:	8	The center shall exchange road network status assessment information with emergency management and maintenance centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	Phone/Traditional Com
Requirement:	9	The center shall coordinate information and controls with other traffic management centers.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

   *Element:***INDOT - TMC, TO, and MCM**

     *Entity:***Traffic Management**

     Functional Area: **TMC Incident Dispatch Coordination/Communication**

Center-based capability to formulate an incident response that takes into account the incident potential, incident impacts, and/or resources required for incident management including proposing and facilitating the dispatch of emergency response and service vehicles as well as coordinating response with all appropriate cooperating agencies.

Requirement:	10	The center shall receive inputs from emergency management and transit management centers to develop an overall status of the transportation system including emergency transit schedules in effect and current status and condition of the transportation infrastructure.	Phone/Traditional Com
Requirement:	11	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic incident management.	Planned

     Functional Area: **TMC Speed Monitoring**

Remotely monitors vehicle speeds, and informs an enforcement agency if excessive speeds are detected. Also configures and controls speed warning systems that provide safe speed advisories to the motorist.

Requirement:	2	The center shall collect operational status for the vehicle speed sensors; the status shall include logged information including measured speeds, warning messages displayed, and violation records.	Planned
Requirement:	4	The center shall collect fault data for the vehicle speed sensors for repair.	Planned

     Functional Area: **Traffic Maintenance**

Monitoring and remote diagnostics of field equipment - detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

Requirement:	1	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) operational status.	Existing
Requirement:	2	The center shall collect and store CCTV surveillance system (traffic, pedestrian) operational status.	Planned
Requirement:	3	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) fault data and send to the maintenance center for repair.	Existing
Requirement:	4	The center shall collect and store CCTV surveillance system (traffic, pedestrian) fault data send to the maintenance center for repair.	Planned
Requirement:	7	The center shall exchange data with maintenance centers concerning the reporting of faulty equipment and the schedule/status of their repair. Information exchanged includes details of new equipment faults, and clearances when the faults are cleared.	Existing
Requirement:	8	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic maintenance data.	Planned

     Functional Area: **Traffic Data Collection**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element*INDOT - TMC, TO, and MCM

*Entity:*Traffic Management

Functional Area: Traffic Data Collection

Collection and storage of traffic management data. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect traffic management data such as operational data, event logs, etc.	Planned
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Planned
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the traffic data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Planned

*Element*Lafayette - Emergency Vehicles

*Entity:*Emergency Vehicle Subsystem

Functional Area: On-board EV En Route Support

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

			Status
Requirement:	1	The emergency vehicle, including roadway service patrols, shall compute the location of the emergency vehicle based on inputs from a vehicle location determination function.	Existing
Requirement:	2	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.	Existing
Requirement:	5	The emergency vehicle shall send requests to traffic signal control equipment at the roadside to preempt the signal.	Extended Vision
Requirement:	6	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing

Functional Area: On-board EV Incident Management Communication

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

			Status
Requirement:	1	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Requirement:	2	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **Lafayette - Emergency Vehicles**

Entity: **Emergency Vehicle Subsystem**

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

			Status
Requirement:	3	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing

Entity: **Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Requirement:	1	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Requirement:	2	The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Existing

Element **Lafayette - Public Safety and Emergency Management**

Entity: **Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

Requirement:	1	The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.	Existing
Requirement:	2	The center shall receive emergency call information from 911 services and present the possible incident information to the emergency system operator.	Existing
Requirement:	5	The center shall receive emergency notification information from other public safety agencies and present the possible incident information to the emergency system operator.	Existing
Requirement:	6	The center shall receive emergency notification information from public transit systems and present the possible incident information to the emergency system operator.	Existing
Requirement:	9	The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.	Existing
Requirement:	10	The center shall update the incident information log once the emergency system operator has verified the incident.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

Requirement:	11	The center shall provide the capability for digitized map data to act as the background to the emergency information presented to the emergency system operator.	Existing

Functional Area: **Emergency Dispatch**

Dispatch emergency vehicles to incidents, tracking their location and status. Pertinent incident information is gathered and relayed to the responding units.

Requirement:	1	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Requirement:	2	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Requirement:	3	The center shall relay location and incident details to the responding vehicles.	Existing
Requirement:	4	The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.	Existing
Requirement:	5	The center shall store and maintain the emergency service responses in an action log.	Existing
Requirement:	6	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing
Requirement:	9	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

Requirement:	1	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Existing
Requirement:	2	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.	Existing
Requirement:	3	The center shall track and maintain resource information and action plans pertaining to the incident command.	Existing
Requirement:	4	The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **Lafayette - Public Safety and Emergency Management**

Entity: **Emergency Management**

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

Requirement:	5	The center shall assess the status of responding emergency vehicles as part of an incident command.	Existing

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	1	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Requirement:	2	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Requirement:	3	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Requirement:	4	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Requirement:	5	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Requirement:	6	The center shall allocate the appropriate emergency services, resources, and vehicle (s) to respond to incidents, and shall provide the capability to override the current allocation to suit the special needs of a current incident.	Existing
Requirement:	7	The center shall receive event scheduling information from Event Promoters.	Phone/Traditional Com
Requirement:	10	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Phone/Traditional Com
Requirement:	11	The center shall assimilate the damage assessment of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.	Planned
Requirement:	12	The center shall provide information to the media concerning the status of an emergency response.	Phone/Traditional Com
Requirement:	13	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	14	The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.	Existing

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

Requirement:	1	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Requirement:	2	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Requirement:	3	The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.	Existing
Requirement:	4	The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.	Phone/Traditional Com
Requirement:	5	The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Existing
Requirement:	6	The center shall request resources from transit agencies as needed to support the evacuation.	Phone/Traditional Com
Requirement:	7	The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Phone/Traditional Com
Requirement:	8	The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Phone/Traditional Com
Requirement:	9	The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Existing
Requirement:	10	The center shall monitor the progress of the reentry process.	Existing

Functional Area: **Center Secure Area Surveillance**

Management of security surveillance devices and analysis of that data to detect potential threats. Areas under surveillance may include transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Center Secure Area Surveillance**

Management of security surveillance devices and analysis of that data to detect potential threats. Areas under surveillance may include transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.

Requirement:	2	The center shall remotely monitor video images and audio surveillance data collected in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers). The data may be raw or pre-processed in the field.	Existing

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management. For use by operations personnel or data archives in the region.

Requirement:	1	The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Existing
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Existing

*Entity:***Remote Traveler Support**

Functional Area: **Traveler Secure Area Surveillance**

Security surveillance devices that monitor traveler-frequented areas such as transit stops and rest stops.

Requirement:	1	The field element shall include video and/or audio surveillance of traveler secure areas including transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and traveler information centers).	Existing
Requirement:	4	The field element shall provide raw video or audio data.	Existing

*Entity:***Traffic Management**

Functional Area: **TMC Traffic Information Dissemination**

Controls dissemination of traffic-related data to other centers, the media, and travelers via the driver information systems (DMS, HAR) that it operates.

Requirement:	1	The center shall remotely control dynamic messages signs for dissemination of traffic and other information to drivers.	Phone/Traditional Com

*Element***Lafayette - Roadside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Basic Surveillance**

Field elements that monitor traffic conditions using loop detectors and CCTV cameras.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - Roadside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Basic Surveillance**

Field elements that monitor traffic conditions using loop detectors and CCTV cameras.

			Status
Requirement:	1	The field element shall collect, process, digitize, and send traffic sensor data (speed, volume, and occupancy) to the center for further analysis and storage, under center control.	Planned

Functional Area: **Roadway Signal Controls**

Field elements including traffic signal controllers for use at signalized intersections; also supports pedestrian crossings.

Requirement:	1	The field element shall control traffic signals at intersections and on main highways for urban and rural areas, under center control.	Existing

Functional Area: **Roadway Traffic Information Dissemination**

Driver information systems, such as dynamic message signs and Highway Advisory Radio (HAR).

Requirement:	1	The field element shall include dynamic messages signs for dissemination of traffic and other information to drivers, under center control; the DMS may be either those that display variable text messages, or those that have fixed format display(s) (e.g. vehicle restrictions, or lane open/close).	Existing

Functional Area: **Roadway Equipment Coordination**

Field elements that control and send data to other field elements (such as environmental sensors that send data to a DMS or coordination between traffic controllers on adjacent intersections), without center control.

Requirement:	1	The field element shall include sensors (such as traffic, environmental, and work zone intrusion detection sensors) that provide data and status information to other field element devices (such as dynamic message signs, ramp meters, traffic signals, work zone intrusion alert systems), without center control.	Existing
Requirement:	2	The field element shall include sensors (such as traffic, environmental, and work zone intrusion detection sensors) that receive control information from other field element devices, without center control.	Existing

Functional Area: **Roadway Speed Monitoring**

Vehicle speed sensors that detect excessive vehicle speeds, informing drivers, centers and/or enforcement agencies of speed violations.

Requirement:	1	The field element shall include sensors to detect vehicle speeds, under traffic or maintenance center control.	Existing

Functional Area: **Roadway Data Collection**

Field elements to collect traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications. Includes the sensors, supporting roadside infrastructure, and communications equipment.

Requirement:	1	The field element shall collect traffic, road, and environmental conditions information.	Planned
Requirement:	2	The field element shall include the sensors and supporting roadside devices that sense, collect, and send traffic, road, and environmental conditions information to a center for archival.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - Roadside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Data Collection**

Field elements to collect traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications. Includes the sensors, supporting roadside infrastructure, and communications equipment.

Requirement:	3	The field element shall collect sensor status and sensor faults from roadside equipment and send it along with the recorded data to a center for archival.	Planned

*Element***Lafayette - TMC and MCM**

*Entity:***Archived Data Management Subsystem**

Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources. May include quality checks, error notification, and archive coordination.

Requirement:	1	The center shall collect data to be archived from one or more data sources.	Planned
Requirement:	3	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Requirement:	4	The center shall include capabilities for performing quality checks on the incoming archived data.	Planned
Requirement:	5	The center shall include capabilities for error notification on the incoming archived data.	Planned
Requirement:	6	The center shall include capabilities for archive to archive coordination.	Planned
Requirement:	8	The center shall perform quality checks on received data.	Planned
Requirement:	9	The center shall provide the capability to execute methods on the incoming data such as cleansing, summarizations, aggregations, or transformations applied to the data before it is stored in the archive.	Planned
Requirement:	10	The center shall respond to requests from the administrator interface function to maintain the archive data.	Planned

Functional Area: **Traffic and Roadside Data Archival**

Collects and archives traffic and environmental information directly from the roadside for use in off-line planning, research, and analysis.

Requirement:	1	The center shall manage the collection of archive data directly from collection equipment located at the roadside.	Planned
Requirement:	2	The center shall collect traffic sensor information from roadside devices.	Planned
Requirement:	4	The center shall respond to requests from the Archive Data Administer to input the parameters that control the collection process.	Planned
Requirement:	5	The center shall send the request for data and control parameters to the field equipment where the information is collected and returned.	Planned
Requirement:	6	The center shall record the status about the imported traffic and roadside data.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

   *Element***Lafayette - TMC and MCM**

     *Entity:***Archived Data Management Subsystem**

       Functional Area: **Traffic and Roadside Data Archival**

Collects and archives traffic and environmental information directly from the roadside for use in off-line planning, research, and analysis.

		Status
Requirement:	7 The center shall use the status information to adjust the collection of traffic and roadside data.	Planned

     *Entity:***Maintenance and Construction Management**

       Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

		Status
Requirement:	1 The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Planned
Requirement:	2 The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Phone/Traditional Com
Requirement:	3 The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Phone/Traditional Com
Requirement:	4 The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Requirement:	5 The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.	Phone/Traditional Com
Requirement:	6 The center shall exchange road network status assessment information with emergency management and traffic management centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	Phone/Traditional Com
Requirement:	7 The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - TMC and MCM**

*Entity:***Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

Requirement:	8	The center shall receive information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses to support incident management.	Phone/Traditional Com

Functional Area: **MCM Data Collection**

Collection and storage of maintenance and construction information. For use by operations personnel or data archives in the region.

Requirement:	1	The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.	Existing
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Existing
Requirement:	5	The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.	Existing

*Entity:***Traffic Management**

Functional Area: **Collect Traffic Surveillance**

Management of traffic sensors and surveillance (CCTV) equipment, collection of current traffic conditions, and distribution of the collected information to other centers and operators.

Requirement:	1	The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Planned
Requirement:	4	The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Planned
Requirement:	5	The center shall respond to control data from center personnel regarding sensor and surveillance data collection, analysis, storage, and distribution.	Planned
Requirement:	6	The center shall maintain a database of surveillance and sensors and the freeways, surface street and rural roadways, e.g. where they are located, to which part(s) of the network their data applies, the type of data, and the ownership of each link (that is, the agency or entity responsible for collecting and storing surveillance of the link) in the network.	Planned

Functional Area: **TMC Signal Control**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Lafayette - TMC and MCM**

*Entity:***Traffic Management**

Functional Area: **TMC Signal Control**

Remotely controls traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, emergency vehicle preemptions, pedestrian crossings, etc.

			Status
Requirement:	1	The center shall remotely control traffic signal controllers.	Planned
Requirement:	3	The center shall collect traffic signal controller operational status and compare against the control information sent by the center.	Planned
Requirement:	4	The center shall collect traffic signal controller fault data from the field.	Planned
Requirement:	5	The center shall implement control plans to coordinate signalized intersections, under control of center personnel, based on data from sensors and surveillance monitoring traffic conditions, incidents, emergency vehicle preemptions, the passage of commercial vehicles with unusual loads, equipment faults, pedestrian crossings, etc.	Planned

Functional Area: **Traffic Maintenance**

Monitoring and remote diagnostics of field equipment - detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

			Status
Requirement:	1	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) operational status.	Planned
Requirement:	3	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) fault data and send to the maintenance center for repair.	Planned
Requirement:	7	The center shall exchange data with maintenance centers concerning the reporting of faulty equipment and the schedule/status of their repair. Information exchanged includes details of new equipment faults, and clearances when the faults are cleared.	Planned
Requirement:	8	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic maintenance data.	Planned

Functional Area: **Traffic Data Collection**

Collection and storage of traffic management data. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect traffic management data such as operational data, event logs, etc.	Planned
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Planned
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the traffic data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Planned

*Element***Purdue - CATS/Civil Engineering**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

    *Element***Purdue - CATS/Civil Engineering**

      *Entity:***Archived Data Management Subsystem**

       Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources. May include quality checks, error notification, and archive coordination.

				Status
Requirement:	1	The center shall collect data to be archived from one or more data sources.		Planned
Requirement:	3	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.		Planned
Requirement:	4	The center shall include capabilities for performing quality checks on the incoming archived data.		Planned
Requirement:	5	The center shall include capabilities for error notification on the incoming archived data.		Planned
Requirement:	6	The center shall include capabilities for archive to archive coordination.		Planned
Requirement:	8	The center shall perform quality checks on received data.		Planned
Requirement:	9	The center shall provide the capability to execute methods on the incoming data such as cleansing, summarizations, aggregations, or transformations applied to the data before it is stored in the archive.		Planned
Requirement:	10	The center shall respond to requests from the administrator interface function to maintain the archive data.		Planned

    *Element***Purdue - Emergency Vehicles**

      *Entity:***Emergency Vehicle Subsystem**

       Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

				Status
Requirement:	1	The emergency vehicle, including roadway service patrols, shall compute the location of the emergency vehicle based on inputs from a vehicle location determination function.		Planned
Requirement:	2	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.		Planned
Requirement:	5	The emergency vehicle shall send requests to traffic signal control equipment at the roadside to preempt the signal.		Extended Vision
Requirement:	6	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.		Existing
Requirement:	7	The emergency vehicle shall send patient status information to the care facility along with a request for further information.		Existing
Requirement:	8	The emergency vehicle shall forward care facility status information to emergency vehicle personnel, including the location, specialized services, quality of care, waiting time, number of rooms available, and emergency room status of hospitals or emergency care providers.		Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Purdue - Emergency Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

			Status
Requirement:	1	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Requirement:	2	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing
Requirement:	3	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Requirement:	1	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Planned
Requirement:	2	The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Planned

*Element***Purdue - Facilities and Grounds**

*Entity:***Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

Requirement:	1	The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Planned
Requirement:	2	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Purdue - Facilities and Grounds**

*Entity:***Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

			Status
Requirement:	3	The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Phone/Traditional Com
Requirement:	4	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Requirement:	5	The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.	Phone/Traditional Com
Requirement:	6	The center shall exchange road network status assessment information with emergency management and traffic management centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	Phone/Traditional Com
Requirement:	7	The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Requirement:	8	The center shall receive information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses to support incident management.	Phone/Traditional Com

Functional Area: **MCM Data Collection**

Collection and storage of maintenance and construction information. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.	Existing
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **Purdue - Facilities and Grounds**

Entity: **Maintenance and Construction Management**

Functional Area: **MCM Data Collection**

Collection and storage of maintenance and construction information. For use by operations personnel or data archives in the region.

			Status
Requirement:	5	The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.	Existing

Element **Purdue - Public Safety and Emergency Management**

Entity: **Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

			Status
Requirement:	1	The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.	Existing
Requirement:	2	The center shall receive emergency call information from 911 services and present the possible incident information to the emergency system operator.	Existing
Requirement:	5	The center shall receive emergency notification information from other public safety agencies and present the possible incident information to the emergency system operator.	Existing
Requirement:	6	The center shall receive emergency notification information from public transit systems and present the possible incident information to the emergency system operator.	Phone/Traditional Com
Requirement:	9	The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.	Existing
Requirement:	10	The center shall update the incident information log once the emergency system operator has verified the incident.	Existing
Requirement:	11	The center shall provide the capability for digitized map data to act as the background to the emergency information presented to the emergency system operator.	Existing

Functional Area: **Emergency Dispatch**

Dispatch emergency vehicles to incidents, tracking their location and status. Pertinent incident information is gathered and relayed to the responding units.

			Status
Requirement:	1	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Requirement:	2	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Requirement:	3	The center shall relay location and incident details to the responding vehicles.	Existing
Requirement:	4	The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Purdue - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Dispatch**

Dispatch emergency vehicles to incidents, tracking their location and status. Pertinent incident information is gathered and relayed to the responding units.

Requirement:	5	The center shall store and maintain the emergency service responses in an action log.		Existing
Requirement:	6	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.		Existing
Requirement:	9	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.		Existing

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

Requirement:	1	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.		Existing
Requirement:	2	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.		Existing
Requirement:	3	The center shall track and maintain resource information and action plans pertaining to the incident command.		Existing
Requirement:	4	The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.		Existing
Requirement:	5	The center shall assess the status of responding emergency vehicles as part of an incident command.		Existing

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	1	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.		Existing
Requirement:	2	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.		Existing
Requirement:	3	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.		Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Purdue - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	4	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Requirement:	5	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Requirement:	6	The center shall allocate the appropriate emergency services, resources, and vehicle (s) to respond to incidents, and shall provide the capability to override the current allocation to suit the special needs of a current incident.	Existing
Requirement:	7	The center shall receive event scheduling information from Event Promoters.	Phone/Traditional Com
Requirement:	10	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Phone/Traditional Com
Requirement:	11	The center shall assimilate the damage assessment of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.	Phone/Traditional Com
Requirement:	12	The center shall provide information to the media concerning the status of an emergency response.	Phone/Traditional Com
Requirement:	13	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing
Requirement:	14	The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.	Existing

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

Requirement:	1	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Requirement:	2	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Requirement:	3	The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.	Existing
Requirement:	4	The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Purdue - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

			Status
Requirement:	5	The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Existing
Requirement:	6	The center shall request resources from transit agencies as needed to support the evacuation.	Phone/Traditional Com
Requirement:	7	The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Phone/Traditional Com
Requirement:	8	The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Phone/Traditional Com
Requirement:	9	The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Existing
Requirement:	10	The center shall monitor the progress of the reentry process.	Existing
Requirement:	11	The center shall submit evacuation information to toll administration centers along with requests for changes in the toll services or fee collection during an evacuation.	Existing

Functional Area: **Center Secure Area Alarm Support**

Collection and response to silent and audible alarms received from travelers in secure areas (such as transit stops, rest areas, park-and-ride lots) and from on-board transit vehicles.

Requirement:	1	The center shall collect silent and audible alarms received from travelers in secure areas (such as transit stops, rest areas, park and ride lots, modal interchange facilities).	Existing
Requirement:	3	After the alarm message has been received, the center shall generate an alarm acknowledgment to the sender.	Existing

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management. For use by operations personnel or data archives in the region.

Requirement:	1	The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Existing
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Existing
Requirement:	4	The center shall be able to produce sample products of the data available.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Purdue - Public Safety and Emergency Management**

*Entity:***Emergency Management**

*Entity:***Remote Traveler Support**

Functional Area: **Remote Traveler Security**

Public traveler interface that provides the capability for travelers to report an emergency or activate a panic button to summon assistance in areas such as transit stops, park-and-ride areas, etc.

Requirement:	1	The public interface for travelers shall provide the capability for a traveler to report an emergency and summon assistance from secure areas such as transit stops, transit stations, modal transfer facilities, rest stops, park-and-ride areas, travel information areas, and emergency pull off areas.	Existing
Requirement:	2	When initiated by a traveler, the public interface for travelers shall forward a request for assistance to an emergency management function and acknowledge the request.	Existing
Requirement:	3	The public interface for travelers shall provide the capability to broadcast a message to advise or warn a traveler.	Existing

*Element***Rail - Wayside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Standard Rail Crossing**

Field elements at highway-rail intersections (HRIs) where operational requirements do not dictate advanced features (e.g., where rail operational speeds are less than 80 miles per hour). Includes traditional HRI warning systems augmented with other standard traffic management devices.

Requirement:	8	The field element shall support the integrated control of adjacent traffic signals to clear an area in advance of an approaching train and to manage traffic around the intersection.	Existing

*Element***Small Municipality - Emergency Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

Requirement:	1	The emergency vehicle, including roadway service patrols, shall compute the location of the emergency vehicle based on inputs from a vehicle location determination function.	Planned
Requirement:	2	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.	Planned
Requirement:	6	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Small Municipality - Emergency Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders.
Incident information is provided to dispatched emergency personnel.
Emergency personnel transmit information about the incident and response
status.

			Status
Requirement:	1	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Requirement:	2	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing
Requirement:	3	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location
referencing and provides this information to other in-vehicle functions.

Requirement:	1	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Planned
Requirement:	2	The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Planned

*Element***Small Municipality - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications
integration among emergency management agencies for Incident Commands
that are established by first responders to support local management of an
incident.

Requirement:	1	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Existing
Requirement:	2	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.	Existing
Requirement:	3	The center shall track and maintain resource information and action plans pertaining to the incident command.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Small Municipality - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

Requirement:	4	The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.	Existing
Requirement:	5	The center shall assess the status of responding emergency vehicles as part of an incident command.	Existing

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	1	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Requirement:	2	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Requirement:	3	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Requirement:	4	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Requirement:	5	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Requirement:	10	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Phone/Traditional Com
Requirement:	11	The center shall assimilate the damage assessment of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.	Planned
Requirement:	12	The center shall provide information to the media concerning the status of an emergency response.	Phone/Traditional Com
Requirement:	13	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Planned
Requirement:	14	The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.	Existing

Functional Area: **Emergency Evacuation Support**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Small Municipality - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

			Status
Requirement:	1	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Requirement:	2	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Requirement:	3	The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.	Existing
Requirement:	4	The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.	Phone/Traditional Com
Requirement:	5	The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Existing
Requirement:	6	The center shall request resources from transit agencies as needed to support the evacuation.	Phone/Traditional Com
Requirement:	7	The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Phone/Traditional Com
Requirement:	8	The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Phone/Traditional Com
Requirement:	9	The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Existing
Requirement:	10	The center shall monitor the progress of the reentry process.	Existing
Requirement:	11	The center shall submit evacuation information to toll administration centers along with requests for changes in the toll services or fee collection during an evacuation.	Existing

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Planned
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***Small Municipality - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management.
For use by operations personnel or data archives in the region.

Requirement:	4	The center shall be able to produce sample products of the data available.	Existing

*Element***State Police - Crash Reports Database**

*Entity:***Archived Data Management Subsystem**

Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources.
May include quality checks, error notification, and archive coordination.

Requirement:	1	The center shall collect data to be archived from one or more data sources.	Existing
Requirement:	3	The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Existing
Requirement:	4	The center shall include capabilities for performing quality checks on the incoming archived data.	Existing
Requirement:	5	The center shall include capabilities for error notification on the incoming archived data.	Existing
Requirement:	8	The center shall perform quality checks on received data.	Existing

Functional Area: **On-Line Analysis and Mining**

Advanced data analysis and mining features to support discovery of
information, patterns, and correlations in large ITS archives.

Requirement:	1	The center shall support the interface with Archive Data User Systems for requests for analysis of the archive data.	Existing
Requirement:	3	The center shall receive the user's systems requests and develop the request to retrieve the data from the archive.	Existing

*Element***State Police - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the
Emergency Telecommunications System (e.g., 911) that correlate call
information with emergencies reported by transit agencies, commercial
vehicle operators, or other public safety agencies. Allows the operator to
verify the incident and forward the information to the responding agencies.

Requirement:	1	The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.	Existing
Requirement:	5	The center shall receive emergency notification information from other public safety agencies and present the possible incident information to the emergency system operator.	Existing
Requirement:	6	The center shall receive emergency notification information from public transit systems and present the possible incident information to the emergency system operator.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***State Police - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

Requirement:	7	The center shall coordinate, correlate, and verify all emergency inputs, including those identified based on external calls and internal analysis of security sensor and surveillance data, and assign each a level of confidence.	Planned
Requirement:	9	The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.	Phone/Traditional Com
Requirement:	10	The center shall update the incident information log once the emergency system operator has verified the incident.	Existing

Functional Area: **Emergency Dispatch**

Dispatch emergency vehicles to incidents, tracking their location and status. Pertinent incident information is gathered and relayed to the responding units.

Requirement:	1	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Requirement:	2	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Requirement:	3	The center shall relay location and incident details to the responding vehicles.	Existing
Requirement:	5	The center shall store and maintain the emergency service responses in an action log.	Existing
Requirement:	7	The center shall receive traffic images to support dispatch of emergency vehicles.	Planned
Requirement:	9	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

Requirement:	1	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Existing
Requirement:	2	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.	Existing
Requirement:	3	The center shall track and maintain resource information and action plans pertaining to the incident command.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***State Police - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

			Status
Requirement:	4	The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.	Existing
Requirement:	5	The center shall assess the status of responding emergency vehicles as part of an incident command.	Existing

Functional Area: **Emergency Early Warning System**

Monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies in order to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other ITS centers to notify the traveling public.

			Status
Requirement:	1	The center shall monitor information from Alerting and Advisory Systems such as the Information Sharing and Analysis Centers (ISACs), the National Infrastructure Protection Center (NIPC), the Homeland Security Advisory System (HSAS), etc. The information may include assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), or alerts (information on imminent or in-progress emergencies).	Existing
Requirement:	2	The center shall provide the capability to correlate alerts and advisories, incident information, and security sensor and surveillance data.	Existing
Requirement:	3	The center shall broadcast wide-area alerts and advisories to traffic management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Existing
Requirement:	4	The center shall broadcast wide-area alerts and advisories to transit management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Phone/Traditional Com
Requirement:	6	The center shall broadcast wide-area alerts and advisories to traveler information service providers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Existing
Requirement:	7	The center shall broadcast wide-area alerts and advisories to maintenance centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***State Police - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Early Warning System**

Monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies in order to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other ITS centers to notify the traveling public.

			Status
Requirement:	8	The center shall broadcast wide-area alerts and advisories to other emergency management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Existing
Requirement:	10	The center shall process status information from each of the centers that have been sent the wide-area alert.	Planned
Requirement:	11	The center shall coordinate the broadcast of wide-area alerts and advisories with other emergency management centers.	Existing
Requirement:	12	The center shall receive incident information from other transportation management centers to support the early warning system.	Existing
Requirement:	13	The center shall present the alert and advisory information and the status of the actions taken in response to the alert by the other centers to the emergency system operator as received from other system inputs.	Planned
Requirement:	14	The center shall support the entry of alert and advisory information directly from the emergency system operator.	Existing

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

			Status
Requirement:	1	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Requirement:	2	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Requirement:	3	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Requirement:	4	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Requirement:	5	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Planned
Requirement:	6	The center shall allocate the appropriate emergency services, resources, and vehicle (s) to respond to incidents, and shall provide the capability to override the current allocation to suit the special needs of a current incident.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **State Police - Public Safety and Emergency Management**

Entity: **Emergency Management**

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad
inter-agency interfaces to support large-scale incidents and disasters,
commonly associated with Emergency Operations Centers.

			Status
Requirement:	7	The center shall receive event scheduling information from Event Promoters.	Existing
Requirement:	10	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Phone/Traditional Com
Requirement:	11	The center shall assimilate the damage assessment of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.	Planned
Requirement:	12	The center shall provide information to the media concerning the status of an emergency response.	Phone/Traditional Com
Requirement:	13	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Planned
Requirement:	14	The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.	Existing

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a
population in the vicinity of a disaster or other emergency that poses a risk to
public safety.

			Status
Requirement:	1	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Requirement:	2	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Planned
Requirement:	3	The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.	Planned
Requirement:	4	The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.	Planned
Requirement:	5	The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Phone/Traditional Com
Requirement:	6	The center shall request resources from transit agencies as needed to support the evacuation.	Phone/Traditional Com
Requirement:	7	The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***State Police - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

Requirement:	8	The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Existing
Requirement:	9	The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Planned
Requirement:	10	The center shall monitor the progress of the reentry process.	Planned

Functional Area: **Emergency Environmental Monitoring**

Collects current and forecast road and weather information that is used by the operator to more effectively manage incidents.

Requirement:	1	The center shall collect current and forecast road and weather information from weather service providers (such as the National Weather Service and value-added sector specific meteorological services).	Existing
Requirement:	3	The center shall assimilate current and forecast road conditions and surface weather information to support incident management.	Planned
Requirement:	4	The center shall present the current and forecast road and weather information to the emergency system operator.	Planned

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management. For use by operations personnel or data archives in the region.

Requirement:	1	The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Planned
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Planned
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Planned

*Element:***State Police - Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***State Police - Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

Requirement:	1	The emergency vehicle, including roadway service patrols, shall compute the location of the emergency vehicle based on inputs from a vehicle location determination function.	Existing
Requirement:	6	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

Requirement:	1	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Requirement:	2	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing
Requirement:	3	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Requirement:	1	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Requirement:	2	The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Existing

*Element:***Tippecanoe Co - Emergency Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Emergency Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

			Status
Requirement:	1	The emergency vehicle, including roadway service patrols, shall compute the location of the emergency vehicle based on inputs from a vehicle location determination function.	Existing
Requirement:	2	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.	Existing
Requirement:	5	The emergency vehicle shall send requests to traffic signal control equipment at the roadside to preempt the signal.	Extended Vision
Requirement:	6	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing
Requirement:	7	The emergency vehicle shall send patient status information to the care facility along with a request for further information.	Existing
Requirement:	8	The emergency vehicle shall forward care facility status information to emergency vehicle personnel, including the location, specialized services, quality of care, waiting time, number of rooms available, and emergency room status of hospitals or emergency care providers.	Existing

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

			Status
Requirement:	1	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Requirement:	2	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing
Requirement:	3	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Emergency Vehicles**

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

		Status
Requirement:	1 The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Existing
Requirement:	2 The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Existing

*Element:***Tippecanoe Co - MCM**

*Entity:***Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

		Status
Requirement:	1 The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Planned
Requirement:	2 The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Phone/Traditional Com
Requirement:	3 The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Phone/Traditional Com
Requirement:	4 The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Requirement:	5 The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.	Phone/Traditional Com
Requirement:	6 The center shall exchange road network status assessment information with emergency management and traffic management centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element:**Tippecanoe Co - MCM**

Entity:**Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

		Status
Requirement:	7 The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Requirement:	8 The center shall receive information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses to support incident management.	Phone/Traditional Com

Functional Area: **MCM Data Collection**

Collection and storage of maintenance and construction information. For use by operations personnel or data archives in the region.

		Status
Requirement:	1 The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.	Existing
Requirement:	2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3 The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.	Planned
Requirement:	4 The center shall be able to produce sample products of the data available.	Existing
Requirement:	5 The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.	Existing

Element:**Tippecanoe Co - Public Safety and Emergency Management**

Entity:**Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

		Status
Requirement:	1 The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.	Existing
Requirement:	2 The center shall receive emergency call information from 911 services and present the possible incident information to the emergency system operator.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element:Tippecanoe Co - Public Safety and Emergency Management

*Entity:***Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

Requirement:	5	The center shall receive emergency notification information from other public safety agencies and present the possible incident information to the emergency system operator.	Existing
Requirement:	6	The center shall receive emergency notification information from public transit systems and present the possible incident information to the emergency system operator.	Phone/Traditional Com
Requirement:	9	The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.	Existing
Requirement:	10	The center shall update the incident information log once the emergency system operator has verified the incident.	Existing
Requirement:	11	The center shall provide the capability for digitized map data to act as the background to the emergency information presented to the emergency system operator.	Existing

Functional Area: **Emergency Dispatch**

Dispatch emergency vehicles to incidents, tracking their location and status. Pertinent incident information is gathered and relayed to the responding units.

Requirement:	1	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Requirement:	2	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Requirement:	3	The center shall relay location and incident details to the responding vehicles.	Existing
Requirement:	4	The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.	Existing
Requirement:	5	The center shall store and maintain the emergency service responses in an action log.	Existing
Requirement:	6	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing
Requirement:	9	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

			Status
Requirement:	1	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Existing
Requirement:	2	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.	Existing
Requirement:	3	The center shall track and maintain resource information and action plans pertaining to the incident command.	Existing
Requirement:	4	The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.	Existing
Requirement:	5	The center shall assess the status of responding emergency vehicles as part of an incident command.	Existing

Functional Area: **Emergency Early Warning System**

Monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies in order to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other ITS centers to notify the traveling public.

			Status
Requirement:	1	The center shall monitor information from Alerting and Advisory Systems such as the Information Sharing and Analysis Centers (ISACs), the National Infrastructure Protection Center (NIPC), the Homeland Security Advisory System (HSAS), etc. The information may include assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), or alerts (information on imminent or in-progress emergencies).	Existing
Requirement:	2	The center shall provide the capability to correlate alerts and advisories, incident information, and security sensor and surveillance data.	Existing
Requirement:	3	The center shall broadcast wide-area alerts and advisories to traffic management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Phone/Traditional Com
Requirement:	4	The center shall broadcast wide-area alerts and advisories to transit management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Early Warning System**

Monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies in order to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other ITS centers to notify the traveling public.

Requirement:	6	The center shall broadcast wide-area alerts and advisories to traveler information service providers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Phone/Traditional Com
Requirement:	7	The center shall broadcast wide-area alerts and advisories to maintenance centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Phone/Traditional Com
Requirement:	8	The center shall broadcast wide-area alerts and advisories to other emergency management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.	Existing
Requirement:	10	The center shall process status information from each of the centers that have been sent the wide-area alert.	Existing
Requirement:	11	The center shall coordinate the broadcast of wide-area alerts and advisories with other emergency management centers.	Existing
Requirement:	12	The center shall receive incident information from other transportation management centers to support the early warning system.	Phone/Traditional Com
Requirement:	13	The center shall present the alert and advisory information and the status of the actions taken in response to the alert by the other centers to the emergency system operator as received from other system inputs.	Existing
Requirement:	14	The center shall support the entry of alert and advisory information directly from the emergency system operator.	Existing

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	1	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Requirement:	2	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Requirement:	3	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Public Safety and Emergency Management**	

*Entity:***Emergency Management**	

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

Requirement:	4	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Requirement:	5	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Requirement:	6	The center shall allocate the appropriate emergency services, resources, and vehicle (s) to respond to incidents, and shall provide the capability to override the current allocation to suit the special needs of a current incident.	Existing
Requirement:	7	The center shall receive event scheduling information from Event Promoters.	Phone/Traditional Com
Requirement:	8	The center shall support remote control of field equipment normally under control of the traffic management center including traffic signals, dynamic message signs, gates, and barriers.	Phone/Traditional Com
Requirement:	10	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Phone/Traditional Com
Requirement:	11	The center shall assimilate the damage assessment of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.	Existing
Requirement:	12	The center shall provide information to the media concerning the status of an emergency response.	Phone/Traditional Com
Requirement:	13	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing
Requirement:	14	The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.	Existing

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

Requirement:	1	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Requirement:	2	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Requirement:	3	The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

		Status
Requirement:	4 The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.	Phone/Traditional Com
Requirement:	5 The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Existing
Requirement:	6 The center shall request resources from transit agencies as needed to support the evacuation.	Phone/Traditional Com
Requirement:	7 The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Phone/Traditional Com
Requirement:	8 The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Phone/Traditional Com
Requirement:	9 The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Existing
Requirement:	10 The center shall monitor the progress of the reentry process.	Existing
Requirement:	11 The center shall submit evacuation information to toll administration centers along with requests for changes in the toll services or fee collection during an evacuation.	Existing

Functional Area: **Emergency Environmental Monitoring**

Collects current and forecast road and weather information that is used by the operator to more effectively manage incidents.

		Status
Requirement:	1 The center shall collect current and forecast road and weather information from weather service providers (such as the National Weather Service and value-added sector specific meteorological services).	Existing
Requirement:	2 The center shall collect current road and weather information from roadway maintenance operations.	Phone/Traditional Com
Requirement:	3 The center shall assimilate current and forecast road conditions and surface weather information to support incident management.	Phone/Traditional Com
Requirement:	4 The center shall present the current and forecast road and weather information to the emergency system operator.	Existing

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management. For use by operations personnel or data archives in the region.

		Status
Requirement:	1 The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element:***Tippecanoe Co - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management.
For use by operations personnel or data archives in the region.

		Status
Requirement:	2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3 The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Existing
Requirement:	4 The center shall be able to produce sample products of the data available.	Existing

*Entity:***Traffic Management**

Functional Area: **TMC Traffic Information Dissemination**

Controls dissemination of traffic-related data to other centers, the media, and travelers via the driver information systems (DMS, HAR) that it operates.

Requirement:	1 The center shall remotely control dynamic messages signs for dissemination of traffic and other information to drivers.	Phone/Traditional Com

*Element:***Tippecanoe Co - Roadside Equipment**

*Entity:***Roadway Subsystem**

Functional Area: **Roadway Traffic Information Dissemination**

Driver information systems, such as dynamic message signs and Highway Advisory Radio (HAR).

Requirement:	1 The field element shall include dynamic messages signs for dissemination of traffic and other information to drivers, under center control; the DMS may be either those that display variable text messages, or those that have fixed format display(s) (e.g. vehicle restrictions, or lane open/close).	Phone/Traditional Com

*Element:***User Personal Computing Devices**

*Entity:***Personal Information Access**

Functional Area: **Personal Interactive Information Reception**

Personal traveler interface that provides traffic, transit, yellow pages, event, and trip planning information, and other personalized traveler information services upon request. Devices include personal computers and personal portable devices such as PDAs.

Requirement:	2 The personal traveler interface shall receive transit information from a center and present it to the traveler upon request.	Existing

*Element:***User Vehicles**

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Requirement:	2 The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - Emergency Vehicles**

*Entity:***Emergency Vehicle Subsystem**

Functional Area: **On-board EV En Route Support**

On-board systems for gathering of dispatch and routing information for emergency vehicle personnel, vehicle tracking, communications with care facilities, and signal preemption via short range communication directly with traffic control equipment at the roadside.

Requirement:	1	The emergency vehicle, including roadway service patrols, shall compute the location of the emergency vehicle based on inputs from a vehicle location determination function.	Planned
Requirement:	2	The emergency vehicle, including roadway service patrols, shall send the vehicle's location and operational data to the center for emergency management and dispatch.	Planned
Requirement:	5	The emergency vehicle shall send requests to traffic signal control equipment at the roadside to preempt the signal.	Extended Vision
Requirement:	6	The emergency vehicle shall provide the personnel on-board with dispatch information, including incident type and location, and forward an acknowledgment from personnel to the center that the vehicle is on its way to the incident scene.	Existing

Functional Area: **On-board EV Incident Management Communication**

On-board systems provide communications support to first responders. Incident information is provided to dispatched emergency personnel. Emergency personnel transmit information about the incident and response status.

Requirement:	1	The emergency vehicle shall receive dispatch instructions sufficient to enable emergency personnel in the field to implement an effective incident response. It includes local traffic, road, and weather conditions, hazardous material information, and the current status of resources that have been allocated to an incident.	Existing
Requirement:	2	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the incident site such as the extent of injuries, identification of vehicles and people involved, hazardous material, etc.	Existing
Requirement:	3	The emergency vehicle shall provide an interface to the center for emergency personnel to transmit information about the current incident response status such as the identification of the resources on site, site management strategies in effect, and current clearance status.	Existing

*Entity:***Vehicle**

Functional Area: **Vehicle Location Determination**

Determines current location of the vehicle using GPS or similar location referencing and provides this information to other in-vehicle functions.

Requirement:	1	The vehicle shall provide the vehicle's current location to other in-vehicle functions.	Planned
Requirement:	2	The vehicle shall calculate the location from one or more sources of position data. These location referencing systems include position systems such as GPS, DGPS, odometer and differential odometers.	Planned

*Element***West Lafayette - Public Safety and Emergency Management**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Call-Taking**

Provides interface to the emergency call-taking systems such as the Emergency Telecommunications System (e.g., 911) that correlate call information with emergencies reported by transit agencies, commercial vehicle operators, or other public safety agencies. Allows the operator to verify the incident and forward the information to the responding agencies.

			Status
Requirement:	1	The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.	Existing
Requirement:	2	The center shall receive emergency call information from 911 services and present the possible incident information to the emergency system operator.	Existing
Requirement:	5	The center shall receive emergency notification information from other public safety agencies and present the possible incident information to the emergency system operator.	Existing
Requirement:	6	The center shall receive emergency notification information from public transit systems and present the possible incident information to the emergency system operator.	Existing
Requirement:	9	The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.	Existing
Requirement:	10	The center shall update the incident information log once the emergency system operator has verified the incident.	Existing
Requirement:	11	The center shall provide the capability for digitized map data to act as the background to the emergency information presented to the emergency system operator.	Existing

Functional Area: **Emergency Dispatch**

Dispatch emergency vehicles to incidents, tracking their location and status. Pertinent incident information is gathered and relayed to the responding units.

			Status
Requirement:	1	The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.	Existing
Requirement:	2	The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.	Existing
Requirement:	3	The center shall relay location and incident details to the responding vehicles.	Existing
Requirement:	4	The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.	Planned
Requirement:	5	The center shall store and maintain the emergency service responses in an action log.	Existing
Requirement:	6	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing
Requirement:	9	The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.	Existing

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Incident Command**

Tactical decision support, resource coordination, and communications integration among emergency management agencies for Incident Commands that are established by first responders to support local management of an incident.

			Status
Requirement:	1	The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.	Existing
Requirement:	2	The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.	Existing
Requirement:	3	The center shall track and maintain resource information and action plans pertaining to the incident command.	Existing
Requirement:	4	The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.	Existing
Requirement:	5	The center shall assess the status of responding emergency vehicles as part of an incident command.	Existing

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

			Status
Requirement:	1	The center shall provide strategic emergency response capabilities provided by an Emergency Operations Center for large-scale incidents and disasters.	Existing
Requirement:	2	The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.	Existing
Requirement:	3	The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and response status with allied agencies.	Existing
Requirement:	4	The center shall develop, coordinate with other agencies, and store emergency response plans.	Existing
Requirement:	5	The center shall track the availability of resources and coordinate resource sharing with allied agency centers including traffic, maintenance, or other emergency centers.	Existing
Requirement:	6	The center shall allocate the appropriate emergency services, resources, and vehicle (s) to respond to incidents, and shall provide the capability to override the current allocation to suit the special needs of a current incident.	Existing
Requirement:	7	The center shall receive event scheduling information from Event Promoters.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - Public Safety and Emergency Management**

*Entity:***Emergency Management**

Functional Area: **Emergency Response Management**

Strategic emergency planning and response capabilities and broad inter-agency interfaces to support large-scale incidents and disasters, commonly associated with Emergency Operations Centers.

			Status
Requirement:	10	The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.	Phone/Traditional Com
Requirement:	11	The center shall assimilate the damage assessment of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.	Existing
Requirement:	12	The center shall provide information to the media concerning the status of an emergency response.	Phone/Traditional Com
Requirement:	13	The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.	Existing
Requirement:	14	The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.	Existing

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

			Status
Requirement:	1	The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.	Existing
Requirement:	2	The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.	Existing
Requirement:	3	The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.	Existing
Requirement:	4	The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.	Phone/Traditional Com
Requirement:	5	The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.	Existing
Requirement:	6	The center shall request resources from transit agencies as needed to support the evacuation.	Phone/Traditional Com
Requirement:	7	The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.	Phone/Traditional Com
Requirement:	8	The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.	Phone/Traditional Com

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **West Lafayette - Public Safety and Emergency Management**

Entity: **Emergency Management**

Functional Area: **Emergency Evacuation Support**

Evacuation planning and coordination to manage evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety.

Requirement:	9	The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.	Existing
Requirement:	10	The center shall monitor the progress of the reentry process.	Existing

Functional Area: **Emergency Data Collection**

Collection and storage of information related to Emergency Management. For use by operations personnel or data archives in the region.

Requirement:	1	The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.	Existing
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Existing

Element **West Lafayette - Roadside Equipment**

Entity: **Roadway Subsystem**

Functional Area: **Roadway Basic Surveillance**

Field elements that monitor traffic conditions using loop detectors and CCTV cameras.

Requirement:	1	The field element shall collect, process, digitize, and send traffic sensor data (speed, volume, and occupancy) to the center for further analysis and storage, under center control.	Planned

Functional Area: **Roadway Signal Controls**

Field elements including traffic signal controllers for use at signalized intersections; also supports pedestrian crossings.

Requirement:	1	The field element shall control traffic signals at intersections and on main highways for urban and rural areas, under center control.	Existing

Functional Area: **Roadway Equipment Coordination**

Field elements that control and send data to other field elements (such as environmental sensors that send data to a DMS or coordination between traffic controllers on adjacent intersections), without center control.

Requirement:	1	The field element shall include sensors (such as traffic, environmental, and work zone intrusion detection sensors) that provide data and status information to other field element devices (such as dynamic message signs, ramp meters, traffic signals, work zone intrusion alert systems), without center control.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

Element **West Lafayette - Roadside Equipment**

Entity: **Roadway Subsystem**

Functional Area: **Roadway Equipment Coordination**

Field elements that control and send data to other field elements (such as environmental sensors that send data to a DMS or coordination between traffic controllers on adjacent intersections), without center control.

		Status
Requirement:	2 The field element shall include sensors (such as traffic, environmental, and work zone intrusion detection sensors) that receive control information from other field element devices, without center control.	Planned

Functional Area: **Roadway Data Collection**

Field elements to collect traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications. Includes the sensors, supporting roadside infrastructure, and communications equipment.

Requirement:	1 The field element shall collect traffic, road, and environmental conditions information.	Planned
Requirement:	2 The field element shall include the sensors and supporting roadside devices that sense, collect, and send traffic, road, and environmental conditions information to a center for archival.	Planned
Requirement:	3 The field element shall collect sensor status and sensor faults from roadside equipment and send it along with the recorded data to a center for archival.	Planned

Element **West Lafayette - TMC and MCM**

Entity: **Archived Data Management Subsystem**

Functional Area: **ITS Data Repository**

Collect and maintain data and data catalogs from one or more data sources. May include quality checks, error notification, and archive coordination.

Requirement:	1 The center shall collect data to be archived from one or more data sources.	Planned
Requirement:	3 The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.	Planned
Requirement:	4 The center shall include capabilities for performing quality checks on the incoming archived data.	Planned
Requirement:	5 The center shall include capabilities for error notification on the incoming archived data.	Planned
Requirement:	6 The center shall include capabilities for archive to archive coordination.	Planned
Requirement:	8 The center shall perform quality checks on received data.	Planned
Requirement:	9 The center shall provide the capability to execute methods on the incoming data such as cleansing, summarizations, aggregations, or transformations applied to the data before it is stored in the archive.	Planned
Requirement:	10 The center shall respond to requests from the administrator interface function to maintain the archive data.	Planned

Functional Area: **Traffic and Roadside Data Archival**

Collects and archives traffic and environmental information directly from the roadside for use in off-line planning, research, and analysis.

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - TMC and MCM**

*Entity:***Archived Data Management Subsystem**

Functional Area: **Traffic and Roadside Data Archival**

Collects and archives traffic and environmental information directly from the roadside for use in off-line planning, research, and analysis.

			Status
Requirement:	1	The center shall manage the collection of archive data directly from collection equipment located at the roadside.	Planned
Requirement:	2	The center shall collect traffic sensor information from roadside devices.	Planned
Requirement:	4	The center shall respond to requests from the Archive Data Administer to input the parameters that control the collection process.	Planned
Requirement:	5	The center shall send the request for data and control parameters to the field equipment where the information is collected and returned.	Planned
Requirement:	6	The center shall record the status about the imported traffic and roadside data.	Planned
Requirement:	7	The center shall use the status information to adjust the collection of traffic and roadside data.	Planned

*Entity:***Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

			Status
Requirement:	1	The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.	Planned
Requirement:	2	The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.	Phone/Traditional Com
Requirement:	3	The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.	Phone/Traditional Com
Requirement:	4	The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.	Existing
Requirement:	5	The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.	Phone/Traditional Com

*Element***West Lafayette - TMC and MCM**

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - TMC and MCM**

*Entity:***Maintenance and Construction Management**

Functional Area: **MCM Incident Management**

Supports coordinated response to incidents - share incident notifications, manage incident response resources, and coordinate overall incident situation and response among allied response organizations.

		Status
Requirement:	6 The center shall exchange road network status assessment information with emergency management and traffic management centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.	Phone/Traditional Com
Requirement:	7 The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.	Existing
Requirement:	8 The center shall receive information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses to support incident management.	Phone/Traditional Com

Functional Area: **MCM Data Collection**

Collection and storage of maintenance and construction information. For use by operations personnel or data archives in the region.

		Status
Requirement:	1 The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.	Existing
Requirement:	2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Existing
Requirement:	3 The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.	Planned
Requirement:	4 The center shall be able to produce sample products of the data available.	Existing
Requirement:	5 The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.	Existing

*Entity:***Traffic Management**

Functional Area: **Collect Traffic Surveillance**

Management of traffic sensors and surveillance (CCTV) equipment, collection of current traffic conditions, and distribution of the collected information to other centers and operators.

		Status
Requirement:	1 The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - TMC and MCM**

*Entity:***Traffic Management**

Functional Area: **Collect Traffic Surveillance**

Management of traffic sensors and surveillance (CCTV) equipment, collection of current traffic conditions, and distribution of the collected information to other centers and operators.

			Status
Requirement:	4	The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.	Planned
Requirement:	5	The center shall respond to control data from center personnel regarding sensor and surveillance data collection, analysis, storage, and distribution.	Planned
Requirement:	6	The center shall maintain a database of surveillance and sensors and the freeways, surface street and rural roadways, e.g. where they are located, to which part(s) of the network their data applies, the type of data, and the ownership of each link (that is, the agency or entity responsible for collecting and storing surveillance of the link) in the network.	Planned

Functional Area: **TMC Signal Control**

Remotely controls traffic signal controllers to implement traffic management strategies at signalized intersections based on traffic conditions, incidents, emergency vehicle preemptions, pedestrian crossings, etc.

			Status
Requirement:	1	The center shall remotely control traffic signal controllers.	Planned
Requirement:	3	The center shall collect traffic signal controller operational status and compare against the control information sent by the center.	Planned
Requirement:	4	The center shall collect traffic signal controller fault data from the field.	Planned
Requirement:	5	The center shall implement control plans to coordinate signalized intersections, under control of center personnel, based on data from sensors and surveillance monitoring traffic conditions, incidents, emergency vehicle preemptions, the passage of commercial vehicles with unusual loads, equipment faults, pedestrian crossings, etc.	Planned

Functional Area: **Traffic Maintenance**

Monitoring and remote diagnostics of field equipment - detect failures, issue problem reports, and track the repair or replacement of the failed equipment.

			Status
Requirement:	1	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) operational status.	Planned
Requirement:	3	The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) fault data and send to the maintenance center for repair.	Planned
Requirement:	7	The center shall exchange data with maintenance centers concerning the reporting of faulty equipment and the schedule/status of their repair. Information exchanged includes details of new equipment faults, and clearances when the faults are cleared.	Planned
Requirement:	8	The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic maintenance data.	Planned

Architecture	Status
Tippecanoe County Regional Architecture (Region)	(Region)

*Element***West Lafayette - TMC and MCM**

*Entity:***Traffic Management**

Functional Area: **Traffic Data Collection**

Collection and storage of traffic management data. For use by operations personnel or data archives in the region.

			Status
Requirement:	1	The center shall collect traffic management data such as operational data, event logs, etc.	Planned
Requirement:	2	The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.	Planned
Requirement:	3	The center shall receive and respond to requests from ITS Archives for either a catalog of the traffic data or for the data itself.	Planned
Requirement:	4	The center shall be able to produce sample products of the data available.	Planned

Tippecanoe County Regional Architecture (Region)

*Element***West Lafayette - TMC and MCM**