Appendix A: Equipment Packages for St. Louis Regional ITS Architecture

1.1 ATMS01: Network Surveillance - Supporting Equipment Packages

1.1.1 Collect Traffic Surveillance (Equipment Packages*)

This Equipment package collects, stores, and provides electronic access to the traffic surveillance data.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.2.3-Update Data Source Static Data
1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.1.4.4-Update Traffic Display Map Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface

1.1.2 Traffic Maintenance (Equipment Packages*)

This Equipment package provides monitoring and remote diagnostics of field equipment to detect field equipment failures, issues problem reports, and tracks the repair or replacement of the failed equipment.
This Equipment Package has the following Pspecs:

1.1.1.2-Collect and Process Sensor Fault Data
1.1.4.4-Update Traffic Display Map Data
1.2.8.1-Collect Indicator Fault Data
1.2.8.2-Maintain Indicator Fault Data Store
1.2.8.3-Provide Device Fault Interface for M and C
1.2.8.4-Provide Traffic Operations Personnel Indicator Fault Interface

1.1.3 Roadway Equipment Coordination

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:
1.1.1.5-Provide Sensor Interface to Other Roadway Devices

1.2.7.8-Provide Device Interface to Other Roadway Devices

1.1.4 Roadway Basic Surveillance (Equipment Packages*)

This Equipment package provides the capabilities to monitor traffic flow in major intersections and on main highways for urban areas and to monitor road conditions using fixed equipment such as loop detectors and wireline communication.
This Equipment Package has the following Pspecs:

1.1.1.1-Process Traffic Sensor Data
1.3.1.3-Process Traffic Images

1.2 ATMS02-Probe Surveillence

1.2.1 ISP Probe Information Collection

This equipment package supports the collection of vehicle probe data by the ISP. It provides the capability to accept and process probe vehicle information. This capability shall be provided through the use of additional hardware and probe vehicle control and tracking software.
This Equipment Package has the following Pspecs:

6.2.1.6-Collect Environmental Probe Data
6.6.2.2-Provide Vehicle Route Calculation Data
6.6.2.6-Calculate Vehicle Probe Data for Guidance

1.2.2 Roadway Probe Beacons

This equipment package monitors traffic and road conditions by collecting information from passing vehicles that are equipped with a transponder or other short range communications device. The probe data collected by this equipment package may include link travel times, average speeds, road conditions, and any other data that can be measured and communicated by passing vehicles. This equipment package consists of roadside equipment that communicates with passing vehicles using dedicated short range communications, collects the information provided by the vehicles, and forwards this information back to the Traffic Management Subsystem.
This Equipment Package has the following Pspecs:

1.1.2.6-Process Collected Vehicle Smart Probe Data
1.1.6-Collect Vehicle Probe Data
1.1.7-Collect Vehicle Smart Probe Data
1.2.7.7-Process Vehicle Smart Probe Data for Output

1.2.3 TMC Probe Information Collection

This equipment package provides the capability to accept and process probe vehicle information. This capability shall be provided through the use of additional hardware and probe vehicle control and tracking software.
This Equipment Package has the following Pspecs:

1.1.2.1-Process Traffic Data for Storage
1.1.2.5-Process Probe Data
1.1.4.1-Retrieve Traffic Data
1.2.8.1-Collect Indicator Fault Data

1.2.4 Vehicle Location Determination

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.2.5 Vehicle Probe Support

This equipment package includes capabilities for the probe vehicle to identify its location, measure traffic conditions such as link travel time and speed and possibly environmental hazards such as icy road conditions, and transmit these data to either the ISP or TMC.
This Equipment Package has the following Pspecs:

6.7.2.1.2-Provide Dynamic In-Vehicle Guidance
7.1.7-Provide Traveler Card Interface for Tolls

1.3 ATMS03-Surface Street Control- Supporting Equipment Packages

1.3.1 Roadway Equipment Coordination (Equipment Packages*)

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.3.2 Roadway Signal Controls (Equipment Packages*)

This Equipment package provides the capabilities to control traffic signals at major intersections and on main highways for urban areas. This Equipment package is generally constrained to a single jurisdiction.
This Equipment Package has the following Pspecs:

1.1.1.1-Process Traffic Sensor Data
1.2.7.1-Process Indicator Output Data for Roads
1.2.7.2-Monitor Roadside Equipment Operation for Faults

1.3.3 TMC Signal Control (Equipment Packages*)

This Equipment package provides the capability for traffic managers to monitor and manage the traffic flow at signalized intersections. This capability includes analyzing and reducing the collected data from traffic surveillance equipment and developing and implementing control plans for signalized intersections. Control plans may be developed and implemented that coordinate signals at many intersections under the domain of a single traffic management subsystem. In advanced implementations, this package collects route planning information and integrates and uses this information in predicting future traffic conditions and optimizing the traffic control strategy for these conditions. These capabilities are achieved through real-time communication of logged routes from an Information Service Provider. The planned control strategies can be passed back to the Information Service Provider so that the intended strategies can be reflected in future route planning.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.2.1-Select Strategy
1.2.2.2-Determine Indicator State for Road Management
1.2.4.1-Output Control Data for Roads

1.3.4 Traffic Maintenance (Equipment Packages*)

This Equipment package provides monitoring and remote diagnostics of field equipment to detect field equipment failures, issues problem reports, and tracks the repair or replacement of the failed equipment.
This Equipment Package has the following Pspecs:

1.1.1.2-Collect and Process Sensor Fault Data

1.1.4.4-Update Traffic Display Map Data
1.2.8.1-Collect Indicator Fault Data
1.2.8.2-Maintain Indicator Fault Data Store
1.2.8.3-Provide Device Fault Interface for M and C
1.2.8.4-Provide Traffic Operations Personnel Indicator Fault Interface

1.4 ATMS04-Freeway Control- Supporting Equipment Packages

1.4.1 Roadway Equipment Coordination (Equipment Packages*)

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.4.2 Roadway Freeway Control (Equipment Packages*)

Ramp meters, CMS and other freeway control effects which will control traffic on freeways.
This Equipment Package has the following Pspecs:

1.2.7.2-Monitor Roadside Equipment Operation for Faults
1.2.7.5-Process Indicator Output Data for Freeways

1.4.3 TMC Freeway Management (Equipment Packages*)

Control system for efficient freeway management including integration of surveillance information with freeway road geometry, vehicle control such as ramp metering, CMS, HAR. Interface to coordinated traffic subsystems for information dissemination to the public.
This Equipment Package has the following Pspecs:

1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.2.2.1-Determine Indicator State for Freeway Management
1.2.3-Determine Ramp State
1.2.4.2-Output Control Data for Freeways

1.4.4 Traffic Maintenance (Equipment Packages*)

This Equipment package provides monitoring and remote diagnostics of field equipment to detect field equipment failures, issues problem reports, and tracks the repair or replacement of the failed equipment.
This Equipment Package has the following Pspecs:

1.1.1.2-Collect and Process Sensor Fault Data
1.1.4.4-Update Traffic Display Map Data
1.2.8.1-Collect Indicator Fault Data
1.2.8.2-Maintain Indicator Fault Data Store
1.2.8.3-Provide Device Fault Interface for M and C
1.2.8.4-Provide Traffic Operations Personnel Indicator Fault Interface

1.5 ATMS06-Traffic Information Dissemination- Supporting Equipment Packages

1.5.1 Roadway Equipment Coordination (Equipment Packages*)

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices

(e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.5.2 Roadway Traffic Information Dissemination (Equipment Packages*)

This Equipment package provides the roadside elements of traffic information dissemination including DMS, HAR, and talking pedestrian signs.
This Equipment Package has the following Pspecs:

1.2.7.1-Process Indicator Output Data for Roads
1.2.7.5-Process Indicator Output Data for Freeways
1.2.7.9-Process Roadway Information Data

1.5.3 TMC Traffic Information Dissemination (Equipment Packages*)

This Equipment package provides the capability to disseminate incident related information to travelers, potential travelers, and private information service providers. These capabilities shall be provided using a workstation type processor within a facility connected to traveler information providers by utilizing existing wireline links.
This Equipment Package has the following Pspecs:

1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.1.4.3-Provide Direct Media Traffic Data Interface
1.2.4.4-Output Roadway Information Data
1.3.4.3-Provide Media Incident Data Interface

1.5.4 4-TMC Incident Dispatch Coordination/Communication (Equipment Packages*)

This Equipment package provides the capability for an incident response formulation function minimizing 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.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.5-Exchange Data with Other Traffic Centers
1.2.1-Select Strategy
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents
1.3.2.3-Review and Classify Planned Events
1.3.2.6-Manage Traffic Routing
1.3.3-Respond to Current Incidents
1.3.4.1-Retrieve Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface
1.3.4.3-Provide Media Incident Data Interface
1.3.4.4-Update Incident Display Map Data
1.3.4.5-Manage Resources for Incidents
1.3.5-Manage Incident Response Planning
1.3.6-Traffic Disaster Response Control
1.3.7-Traffic Evacuation Control
1.6.2.1-Exchange Data with Rail Operations

1.6 ATMS07-Regional Traffic Control- Supporting Equipment Packages

1.6.1 TMC Regional Traffic Control (Equipment Packages*)

This Equipment package provides capabilities in addition to those provided by the TMC Basic Signal Control Equipment package for analyzing, controlling, and optimizing area-wide traffic flow. These capabilities provide for wide area optimization integrating control of a network signal system with control of freeway, considering current demand as well as expected demand with a goal of providing the capability for real-time traffic adaptive control while balancing inter-jurisdictional control issues to achieve regional solutions. These capabilities are best provided using a Traffic Management Center (TMC) to monitor and manage freeway ramp meters and intersection traffic signals and software to process traffic information and implement traffic management measures (e.g., ramp metering, signalization, and traffic coordination between both local and regional jurisdiction). The TMC shall be able to communicate with other TMCs in order to receive and transmit traffic information on other jurisdictions within the region.
This Equipment Package has the following Pspecs:

1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.1.5-Exchange data with Other Traffic Centers

1.7 ATMS08-Incident Management System- Supporting Equipment Packages

1.7.1 Emergency Response Management (Equipment Packages*)

This Equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This Equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident. It provides vital communications linkages which provide real-time information to emergency response personnel in the field.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.1.5-Manage Emergency Service Allocation Store
5.2-Provide Operator Interface for Emergency Data
5.3.1-Select Response Mode
5.5-Update Emergency Display Map Data
5.7.1-Assess System Status For Disasters
5.7.2-Provide Disaster Response Coordination
5.7.3-Assess System Status For Evacuation

1.7.2 MCM Incident Management (Equipment Packages*)

This equipment package supports coordinated response to highway incidents. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response is coordinated among allied response organizations.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.2-Status Current M&C Activities
9.2.3.4-Manage M&C Resource Needs
9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.2.3-Generate Work Zone Information for Distribution

1.7.3 Roadway Equipment Coordination (Equipment Packages*)

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.7.4 Roadway Incident Detection (Equipment Packages*)

This Equipment package provides incident detection capability to reside at the roadside. For example, advanced CCTV's with built-in incident detection algorithms would allow the actual detection function to be roadside rather than transmitting images to a center for visual or automated detection.
This Equipment Package has the following Pspecs:

1.1.1.1-Process Traffic Sensor Data
1.3.1.3-Process Traffic Images

1.7.5 TMC Incident Detection (Equipment Packages*)

This Equipment package provides the capability to traffic managers to detect and verify incident. This capability includes analyzing and reducing the collected data from traffic surveillance equipment, including planned incidents and hazardous conditions.
This Equipment Package has the following Pspecs:

1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.3.1.1-Analyze Traffic Data for Incidents
1.3.1.2-Maintain Static Data for Incident Management
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents
1.3.2.3-Review and Classify Planned Events
1.3.2.4-Provide Planned Events Store Interface
1.3.2.5-Provide Current Incidents Store Interface
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface

1.8 ATMS09-Traffic Forecast and Demand Management

1.8.1 TMC Toll/Parking Coordination

This equipment package provides the transportation management center with the capability to transform and transmit network traffic congestion information to the Toll Administration or Parking Management so that dynamic pricing for demand management is possible.
This Equipment Package has the following Pspecs:

1.1.2.1-Process Traffic Data for Storage
1.1.2.2-Process Traffic Data
1.2.1-Select Strategy
1.2.6.1-Maintain Traffic and Sensor Static Data
1.2.6.2-Provide Static Data Store Output Interface
1.4.1-Provide Traffic Operations Personnel Demand Interface
1.4.2-Collect Demand Forecast Data
1.4.4-Implement Demand Management Policy

1.8.2 TMC Traffic Network Performance Evaluation

This equipment package provides the capability to predict travel demand patterns to support traffic flow optimization, demand management, and incident management. This equipment package requires the data collected by surveillance equipment packages as well as input from other management subsystems including the ISP Subsystem, Transit Management Subsystem.
This Equipment Package has the following Pspecs:

1.1.2.1-Process Traffic Data for Storage
1.1.2.2-Process Traffic Data
1.1.3-Generate Predictive Traffic Model
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.1.5-Exchange Data with Other Traffic Centers
1.2.6.1-Maintain Traffic and Sensor Static Data
1.2.6.2-Provide Static Data Store Output Interface
1.3.2.1-Store Possible Incident Data
1.4.1-Provide Traffic Operations Personnel Demand Interface
1.4.2-Collect Demand Forecast Data
1.4.3-Update Demand Display Map Data
1.4.5-Calculate Forecast Demand

1.8.3 Transit Center Fixed-Route Operations

This equipment package enhances the planning and scheduling associated with fixed and flexible route transit services. The package allows fixed-route and flexible-route transit services to develop, print and disseminate schedules and automatically updates customer service operator systems with the most current schedule information. Current vehicle schedule adherence and optimum scenarios for schedule adjustment shall also be provided.
This Equipment Package has the following Pspecs:

4.1.4-Manage Transit Vehicle Deviations
4.1.6-Manage Transit Vehicle Operations
4.2.2-Provide Transit Plans Store Interface
4.2.3.1-Generate Transit Routes
4.2.3.2-Generate Transit Schedules
4.2.3.4-Provide Transit Sys Operator Interface for Services Generation
4.2.3.5-Manage Transit Operational Data Store
4.2.3.6-Produce Transit Service Data for Manage Transit Use
4.5.5-Generate Transit Vehicle Operator Route Assignments
4.5.6-Update Transit Vehicle Operator Information

1.9 ATMS11-Emissionas Monitoring and Management- Supporting Equipment Packages

1.9.1 Emissions Data Management (Equipment Packages*)

This Equipment package assimilates and stores air quality measures and roadside collected emissions data. General air quality measures are distributed as general traveler information and also may be used for in demand management programs. Collected roadside emissions are analyzed and used to detect, identify, and notify concerned parties regarding vehicles that exceed emissions standards.
This Equipment Package has the following Pspecs:

1.5.1-Provide Traffic Operations Personnel Pollution Data Interface
1.5.2-Process Pollution Data
1.5.3-Update Pollution Display Map Data
1.5.4-Manage Pollution State Data Store
1.5.7-Manage Pollution Data Log
1.5.8-Manage Pollution Reference Data Store

5.4.8-Process Emissions Violations

1.9.2 Roadway Emissions Monitoring (Equipment Packages*)

This Equipment package monitors emissions and general air quality and communicates the collected information back to the emissions management subsystem where it can be monitored, analyzed, and used. This equipment package supports point monitoring of individual vehicle emissions as well as general monitoring of standard air quality measures.
This Equipment Package has the following Pspecs:

1.2.7.9-Process Roadway Information Data
1.5.5-Process Vehicle Pollution Data
1.5.6-Detect Roadside Pollution Levels

1.9.3 TMC Environmental Monitoring (Equipment Packages*)

This equipment package assimilates current and forecast road conditions and surface weather information using a combination of weather service provider information and an array of environmental sensors deployed on and about the roadway. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively deploy road maintenance resources, issue general traveler advisories, and support location specific warnings to drivers. Other equipment packages process the collected information and provide decision support.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.3.2.1-Store Possible Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface

1.10 ATMS13-Standard Railroad Grade Crossing- Supporting Equipment Packages

1.10.1 Standard Rail Crossing (Equipment Packages*)

This Equipment Package manages highway traffic 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). Either passive (e.g., the crossbuck sign) or active warning systems (e.g., flashing lights and gates) are supported depending on the specific requirements for each intersection. These traditional HRI warning systems may also be augmented with other standard traffic management devices. The warning systems are activated on notification by interfaced wayside equipment of an approaching train. The equipment at the HRI may also be interconnected with adjacent signalized intersections so that local control can be adapted to highway-rail intersection activities. Health monitoring of the HRI equipment and interfaces is performed; detected abnormalities are reported through interfaces to the wayside interface equipment and the traffic management subsystem.
This Equipment Package has the following Pspecs:

1.1.1.1-Process Traffic Sensor Data
1.2.7.1-Process Indicator Output Data for Roads
1.6.1.2.1-Control HRI Traffic Signals
1.6.1.2.2-Control HRI Warnings and Barriers
1.6.1.2.3-Provide SSR Device Controls
1.6.1.2.5-Manage Device Control
1.6.1.2.6-Maintain Device State
1.6.1.3-Perform Equipment Self-Test
1.6.1.4.2-Provide Closure Parameters
1.6.1.4.4-Report HRI Status on Approach
1.6.1.7.1-Control Traffic Volume at Active HRI

1.6.1.7.2-Close HRI on Command
1.6.3.1-Interact with Wayside Systems
1.6.5.1-Provide Interactive Interface
1.6.5.2-Determine HRI Status
1.6.5.3-Maintain HRI Closure Data

1.10.2 HRI Traffic Management (Equipment Packages*)

This equipment package monitors highway-rail intersection (HRI) equipment at the roadside which manages highway traffic. Various levels of roadside equipment may be interfaced to, and supported by, this equipment package to include standard speed active warning systems and high speed systems which provide additional information on approaching trains and detect and report on obstructions in the HRI. This equipment package remotely monitors and reports the status of this roadside equipment. A two way interface supports explicitly status requests or remote control plan updates to be generated by this equipment package. Status may also be received periodically in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
This Equipment Package has the following Pspecs:

1.6.2.1-Exchange Data with Rail Operations
1.6.2.2-Manage Alerts and Advisories
1.6.4.1-Manage HRI Closures
1.6.4.2-Exchange Data with Traffic Management

1.11 ATMS14-Advanced Railroad Grade Crossing

1.11.1 Advanced Rail Crossing

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

1.1.1.1-Process Traffic Sensor Data
1.2.7.1-Process Indicator Output Data for Roads
1.6.1.1-Detect Roadway Events
1.6.1.2.4-Provide HSR Device Controls
1.6.1.4.1-Generate Alerts and Advisories
1.6.1.4.3-Report Alerts and Advisories
1.6.1.5-Detect HRI Hazards
1.6.1.6.1-Close HRI on Detection
1.6.1.6.2-Detect Imminent Vehicle/Train Collision
1.6.3.1-Interact with Wayside Systems
1.6.3.2-Advise and Protect Train Crews
1.6.3.3-Provide ATS Alerts
1.6.5.1-Provide Interactive Interface

1.11.2 HRI Traffic Management

This equipment package monitors highway-rail intersection (HRI) equipment at the roadside which manages highway traffic. Various levels of roadside equipment may be interfaced to, and supported by, this equipment package to include standard speed active warning systems and high speed systems which provide additional information on approaching trains and detect and report on obstructions in the HRI. This equipment package remotely monitors and reports the status of this roadside equipment. A two way interface supports explicitly status requests or remote control plan updates to be generated by this equipment package. Status may also be received periodically in the absence of a request or asynchronously in the event of a detected failure or other unsafe condition at the intersection.
This Equipment Package has the following Pspecs:

1.6.2.1-Exchange Data with Rail Operations
1.6.2.2-Manage Alerts and Advisories
1.6.4.1-Manage HRI Closures
1.6.4.2-Exchange Data with Traffic Management

1.12 ATMS16-Parking Facility Management

1.12.1 Parking Electronic Payment

This equipment package supports electronic payment of parking fees.
This Equipment Package has the following Pspecs:

5.4.3-Process Parking Lot Violations
7.2.1.1-Read Parking Lot Tag Data
7.2.1.10-Determine Advanced Charges
7.2.1.2-Calculate Vehicle Parking Lot Charges
7.2.1.3-Collect Bad Charge Payment Data
7.2.1.4-Check for Advanced Parking Lot Payment
7.2.1.5-Bill Driver for Parking Lot Charges
7.2.1.6-Manage Parking Lot Financial Processing
7.2.1.7-Update Parking Lot Data
7.2.1.8-Register for Advanced Parking Lot Payment
7.2.2-Produce Parking Lot Displays
7.2.3-Obtain Parking Lot Violator Image
7.2.5-Detect Vehicle for Parking Lot Payment

1.12.2 Parking Management

This equipment package provides the capability to detect and classify properly equipped vehicles entering and exiting the parking facility, and to maintain database information with parking availability and pricing structure information. This capability shall be provided through the utilization of active/passive tag readers and database software containing parking pricing structure and current availability. Fixed point communications with clearinghouse operators (the Financial Institution terminator) enable processing of financial transactions.
This Equipment Package has the following Pspecs:

1.2.5.1-Provide Parking Lot Static Data
1.2.5.3-Provide Parking Lot Operator Interface
1.2.5.4-Determine Dynamic Parking Lot State
7.2.1.9-Manage Parking Lot Reservations

1.12.3 Parking Surveillance

This equipment package provides the capability to detect and classify vehicles entering and exiting the parking facility and measures parking facility occupancy to support parking operations and traveler information services.
This Equipment Package has the following Pspecs:

7.2.5-Detect Vehicle for Parking Lot Payment

1.12.4 Vehicle Toll/Parking Interface

This equipment package shall provide the capability for vehicle operators to pay toll without stopping their vehicles and pay for parking without the use of cash. These capabilities shall be provided through the use of equipment such as an active tag interface and debit/credit card interface.
This Equipment Package has the following Pspecs:

7.1.4-Provide Driver Toll Payment Interface
7.1.7-Provide Traveler Card Interface for Tolls
7.2.4-Provide Driver Parking Lot Payment Interface
7.2.7-Provide Traveler Card Interface for Parking
7.5.1-Provide Vehicle Traveler Card Interface

1.13 ATMS17-Regional Parking Management

1.13.1 Parking Coordination

This equipment package supports communication and coordination between equipped parking facilities and also supports regional coordination between parking facilities and traffic and transit management systems. Information including current parking availability, system status, and operating strategies are shared through this equipment package to enable local parking facility management that supports regional transportation strategies.
This Equipment Package has the following Pspecs:

1.2.5.2-Coordinate Other Parking Data
7.2.1.7-Update Parking Lot Data

1.13.2 Parking Management

This equipment package provides the capability to detect and classify properly equipped vehicles entering and exiting the parking facility, and to maintain database information with parking availability and pricing structure information. This capability shall be provided through the utilization of active/passive tag readers and database software containing parking pricing structure and current availability. Fixed point communications with clearinghouse operators (the Financial Institution terminator) enable processing of financial transactions.
This Equipment Package has the following Pspecs:

1.2.5.1-Provide Parking Lot Static Data
1.2.5.3-Provide Parking Lot Operator Interface
1.2.5.4-Determine Dynamic Parking Lot State
7.2.1.9-Manage Parking Lot Reservations

1.14 ATMS18-Reversible Lane Management- Supporting Equipment Packages

1.14.1 Roadway Equipment Coordination (Equipment Packages*)

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.14.2 Roadway Reversible Lanes (Equipment Packages*)

This Equipment package provides the capability for control of reversible lanes using sensor and actuator type equipment. This Equipment package also provides the capability to notify users the direction of the reversible lanes using electronic lane signs.
This Equipment Package has the following Pspecs:

1.1.1.1-Process Traffic Sensor Data
1.2.7.1-Process Indicator Output Data for Roads
1.2.7.5-Process Indicator Output Data for Freeways

1.14.3 TMC Reversible Lane Management (Equipment Packages*)

This Equipment package provides the capability for access and management of reversible lane facilities, including the direction of traffic flow changes during the day, especially between the peak hours and dedication of more lanes to the congestion direction during special events.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.2.7-Monitor Reversible Lanes
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.2.4.1-Output Control Data for Roads
1.2.4.2-Output Control Data for Freeways
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface
5.4.1-Process TM Detected Violations

1.15 ATMS19-Speed Monitoring

1.15.1 MCM Speed Monitoring

This equipment package manages remote devices that monitor vehicle speeds and optionally provide safe speed advisories to the motorist. This equipment package can monitor speeds and notify an enforcement agency if excessive speeds are identified.
This Equipment Package has the following Pspecs:

9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.3.2-Monitor Vehicle Speed in Work Zone

1.15.2 Roadway Equipment Coordination

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.15.3 Roadway Speed Monitoring

This equipment package monitors vehicle speeds. If the speed is determine to be excessive, then roadside equipment can suggest a safe driving speed. Environmental conditions may be monitored and factored into the safe speed advisories that are provided to the motorist. This equipment package can also provide an enforcement function, reporting speed violations to an enforcement agency.
This Equipment Package has the following Pspecs:

1.1.1.1-Process Traffic Sensor Data
1.2.7.9-Process Roadway Information Data

9.3.3.1-Collect Vehicle Speed
9.3.3.4-Support Vehicle Speed Enforcement

1.15.4 TMC Speed Monitoring

This equipment package manages remote devices that monitor vehicle speeds and optionally provide safe speed advisories to the motorist. This equipment package can monitor speeds and notify an enforcement agency if excessive speeds are identified.
This Equipment Package has the following Pspecs:

1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
9.3.3.3-Monitor Vehicle Speed on Roadway

1.16 APTS1-Transit Vehicle Tracking- Supporting Equipment Packages

1.16.1 Transit Center Tracking and Dispatch (Equipment Packages*)

This Equipment package provides the capabilities for monitoring transit vehicle locations and determining vehicle schedule adherence. The Equipment package shall also furnish users with real-time travel related information, continuously updated with real-time information from each transit system within the local area of jurisdiction, inclusive of all transportation modes, from all providers of transportation services, and provide users with the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents conditions, weather conditions, and special events. This Equipment package also supports the capability for two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations Data
4.2.3.9-Update Transit Map Data

1.16.2 On-board Transit Trip Monitoring (Equipment Packages*)

This Equipment package provides the capabilities to support fleet management with automatic vehicle location and automated mileage and fuel reporting and auditing. This package may also record other special events resulting from communication with roadside equipment. This includes only the equipment on board the vehicle to support this function including the vehicle location devices such as GPS equipment, communication interfaces, a processor to record trip length, and the sensors/actuators/interfaces necessary to record mileage and fuel usage.
This Equipment Package has the following Pspecs:

4.1.1-Process Transit Vehicle Sensor Data
4.1.3-Provide Transit Vehicle Location Data

1.16.3 Vehicle Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.17 APTS2-Transit Fixed-Route Operations- Supporting Equipment Packages

1.17.1 Transit Center Fixed-Route Operations (Equipment Packages*)

This Equipment package enhances the planning and scheduling associated with fixed route transit services. The package allows fixed-route services to develop, print and disseminate schedules and automatically updates customer service operator systems with the most current schedule information. Current vehicle schedule adherence and optimum scenarios for schedule adjustment shall also be provided.

This Equipment Package has the following Pspecs:

4.1.4-Manage Transit Vehicle Deviations
4.1.6-Manage Transit Vehicle Operations
4.2.2-Provide Transit Plans Store Interface
4.2.3.1-Generate Transit Routes
4.2.3.2-Generate Transit Schedules
4.2.3.4-Provide Transit Sys Operator Interface for Services Generation
4.2.3.5-Manage Transit Operational Data Store
4.2.3.6-Produce Transit Service Data for Manage Transit Use
4.5.5-Generate Transit Vehicle Operator Route Assignments
4.5.6-Update Transit Vehicle Operator Information

1.17.2 Transit Garage Operations (Equipment Packages*)

This Equipment package automates and supports the assignment of transit vehicles and drivers to enhance the daily operation of a transit service. It provides the capability to assign drivers to routes or service areas in a fair manner while minimizing labor and overtime services, considering driver preferences and qualifications, and automatically tracking and validating the number of work hours performed by each individual driver.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.5.1-Assess Transit Vehicle Operator Performance
4.5.2-Assess Transit Vehicle Operator Availability
4.5.3-Access Transit Vehicle Operator Cost Effectiveness
4.5.4-Assess Transit Vehicle Operator Eligibility
4.5.5-Generate Transit Vehicle Operator Route Assignments
4.5.6-Update Transit Vehicle Operator Information
4.5.7-Report Transit Vehicle Operator Information
4.5.8-Provide Transit Vehicle Operator Information Store Interface

1.17.3 On-board Fixed Route Schedule Management (Equipment Packages*)

This Equipment package provides the capabilities for automated planning and scheduling, by collecting data for schedule generation. Capability shall also be provided to automatically determine optimum scenarios for schedule adjustment. This Equipment package also supports the capability for two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, on-board safety sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis if desired.
This Equipment Package has the following Pspecs:

4.1.2.1-Determine Transit Vehicle Deviation and ETA
4.1.2.2-Determine Transit Vehicle Corrective Instructions
4.1.2.3-Provide Transit Vehicle Driver Interface

1.18 APTS3-Demand Responsive Transit Operations- Supporting Equipment Packages

1.18.1 Transit Center Paratransit Operations (Equipment Packages*)

This Equipment package provides the capability to automate the planning and scheduling, allowing improvements in paratransit routes and services to develop, printing and disseminating schedules, and automatically updating customer service operator systems with the most current schedule. In addition, this Equipment package provides the capability to assign drivers to routes in a fair manner while minimizing labor and overtime services, including driver preferences and qualifications, and automatically tracking and validating the number of work hours performed by

each individual driver. These capabilities shall be provided through the utilization of dispatch and fleet management software running on a workstation type processor.
This Equipment Package has the following Pspecs:

4.1.4-Manage Transit Vehicle Deviations
4.1.6-Manage Transit Vehicle Operations
4.2.1.1-Process Demand Responsive Transit Trip Request
4.2.1.2-Compute Demand Responsive Transit Vehicle Availability
4.2.1.3-Generate Demand Responsive Transit Schedule and Routes
4.2.1.4-Confirm Demand Responsive Transit Schedule and Route
4.2.3.4-Provide Transit Sys Operator Interface for Services Generation
4.5.5-Generate Transit Vehicle Operator Route Assignments
4.5.6-Update Transit Vehicle Operator Information

1.18.2 Transit Garage Operations (Equipment Packages*)

This Equipment package automates and supports the assignment of transit vehicles and drivers to enhance the daily operation of a transit service. It provides the capability to assign drivers to routes or service areas in a fair manner while minimizing labor and overtime services, considering driver preferences and qualifications, and automatically tracking and validating the number of work hours performed by each individual driver.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.5.1-Assess Transit Vehicle Operator Performance
4.5.2-Assess Transit Vehicle Operator Availability
4.5.3-Access Transit Vehicle Operator Cost Effectiveness
4.5.4-Assess Transit Vehicle Operator Eligibility
4.5.5-Generate Transit Vehicle Operator Route Assignments
4.5.6-Update Transit Vehicle Operator Information
4.5.7-Report Transit Vehicle Operator Information
4.5.8-Provide Transit Vehicle Operator Information Store Interface

1.18.3 On-board Paratransit Operations (Equipment Packages*)

This equipment package forwards paratransit dispatch requests to the driver and forwards acknowledgements to the center. It coordinates with, and assists the driver in managing multi-stop runs associated with demand responsive, flexibly routed transit services.
This Equipment Package has the following Pspecs:

4.2.1.5-Process Demand Responsive Transit Vehicle Availability Data
4.2.1.6-Provide Demand Responsive Transit Driver Interface

1.19 APTS4-Transit Passenger and Fare Management- Supporting Equipment Packages

1.19.1 Remote Transit Fare Management (Equipment Packages*)

This Equipment package provides the capability for the traveler to use a common fare medium for all applicable surface transportation services, to pay without stopping, have payment media automatically identified as void and/or invalid and eligibility verified. This may be implemented as a payment instrument reader at a kiosk. In addition, capability to provide expansion into other uses for payment medium such as retail and telephone and for off-line billing for fares paid by agencies shall be supported.
This Equipment Package has the following Pspecs:

4.7.2.1-Detect Transit User at Roadside
4.7.2.2-Determine Transit User Needs at Roadside

4.7.2.3-Determine Transit Fare at Roadside
4.7.2.4-Manage Transit Fare Billing at Roadside
4.7.2.5-Provide Transit User Roadside Fare Interface
4.7.2.6-Update Roadside Transit Fare Data
4.7.2.7-Provide Transit Roadside Passenger Data
7.3.4-Provide Remote Terminal Traveler Card Interface
7.5.2-Provide Transit User Roadside Traveler Card Interface

1.19.2 Transit Center Fare and Load Management (Equipment Packages*)

This Equipment package provides the capability to accept collected data required to determine accurate ridership levels and implement variable and flexible fare structures. Support shall be provided for the traveler for use of a fare medium for all applicable surface transportation services, to pay without stopping, have payment media automatically identified as void and/or invalid and eligibility verified, and allow for third party payment. In addition, capability to provide expansion into other uses for payment medium such as retail and telephone and for off-line billing for fares paid by agencies shall be supported. This Equipment package also supports the capability for two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis if desired. These capabilities shall be provided through a workstation type processor with GUI, high capacity storage, ride share software housed in a building with dialup lines and wireline telephone and require integration with an existing Transit Center Tracking and Dispatch Equipment package.
This Equipment Package has the following Pspecs:

4.2.3.5-Manage Transit Operational Data Store
4.2.3.7-Provide Interface for Other Transit Management Data
4.6.8-Manage Transit Vehicle Advanced Payments
5.4.4-Process Fare Payment Violations
5.4.5-Process Vehicle Fare Collection Violations
5.4.7-Process Roadside Fare Collection Violations
7.3.1.1-Register for Advanced Transit Fare Payment
7.3.1.2-Determine Advanced Transit Fares
7.3.1.3-Manage Transit Fare Financial Processing
7.3.1.4-Check for Advanced Transit Fare Payment
7.3.1.5-Bill Traveler for Transit Fare
7.3.1.6-Collect Bad Transit Fare Payment Data
7.3.1.7-Update Transit Fare Data
7.3.3-Get Traveler Image for Violation
7.4.1.5-Process Traveler Other Services Payments

1.19.3 On-board Transit Fare and Load Management (Equipment Packages*)

This Equipment package provides the capability to collect data required to determine accurate ridership levels and implement variable and flexible fare structures. Support shall be provided for the traveler for use of a fare medium for all applicable surface transportation services, to pay without stopping, have payment media automatically identified as void and/or invalid and eligibility verified, and allow for third party payment. In addition, capability to provide expansion into other uses for payment medium such as retail and telephone and for off-line billing for fares paid by agencies shall be supported. This Equipment package also supports the capability for two-way voice communication between the transit vehicle driver and a facility, two-way data communication between the transit vehicles and a facility, sensor data to be transmitted from the transit vehicles to a facility, and data transmission from individual facilities to a central facility for processing/analysis if desired. These capabilities require integration with an existing On-board Trip Monitoring Equipment package.
This Equipment Package has the following Pspecs:

4.6.1-Detect Transit User on Vehicle
4.6.2-Determine Transit User Needs on Vehicle
4.6.3-Determine Transit Fare on Vehicle

4.6.4-Manage Transit Fare Billing on Vehicle
4.6.5-Provide Transit User Fare Payment Interface on Vehicle
4.6.6-Update Transit Vehicle Fare Data
4.6.7-Provide Transit Vehicle Passenger Data
7.3.5-Provide Transit Vehicle Traveler Card Interface

1.20 APTS5-Transit Security- Supporting Equipment Packages

1.20.1 Center Secure Area Alarm Support

This equipment package receives traveler or transit vehicle operator alarm messages, provides acknowledgement of alarm receipt back to the originator of the alarm, and determines an appropriate response. The alarms received can be generated by silent or audible alarm systems and may originate from public areas (e.g. transit stops, park and ride lots, transit stations, rest areas) or transit vehicles. The nature of the emergency may be determined based on the information in the alarm message as well as other inputs.
This Equipment Package has the following Pspecs:

5.1.7.4-Manage Alarms

1.20.2 Center Secure Area Sensor Management

This equipment package manages sensors that monitor secure areas in the transportation system, processes the collected data, performs threat analysis in which data is correlated with other sensor, surveillance, and advisory inputs, and then disseminates resultant threat information to emergency personnel and other agencies. The sensors may be in secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. The types of sensors include acoustic, threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.1.4.1-Manage Secure Area Sensors
5.1.1.4.3-Analyze Threats
5.1.1.4.4-Disseminate Threat Info
5.1.1.4.6-Provide Operator Interface for Security
5.1.4-Manage Emergency Response

1.20.3 Center Secure Area Surveillance

This equipment package monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel. It automatically alerts emergency personnel of potential incidents.
This Equipment Package has the following Pspecs:

5.1.1.4.2-Manage Secure Area Surveillance
5.1.1.4.5-Analyze Traveler Image
5.1.1.4.6-Provide Operator Interface for Security
5.1.2-Determine Coordinated Response Plan
5.2-Provide Operator Interface for Emergency Data

1.20.4 Remote Traveler Security

This equipment package provides the capability to report an emergency and summon assistance from secure areas such as transit stops, transit stations, modal transfer facilities, rest stops and picnic areas, park-and-ride areas,

tourism and travel information areas, remote roadways and emergency pull off areas. This package includes interfaces that facilitate initiation of an alarm, which is communicated to the Emergency Management Subsystem. This package allows for an acknowledgement of the alarm as well as a broadcast message to advise or warn the traveler. This Equipment Package has the following Pspecs:

5.1.7.1.5-Report Traveler Emergencies
6.3.3-Provide Traveler Kiosk Interface

1.20.5 Traveler Secure Area Sensor Monitoring

This equipment package includes sensors that monitor conditions of secure areas that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). Included are acoustic, environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), and motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.7.1.3-Collect Traveler Secure Area Sensor Data
5.1.7.1.4-Process Traveler Secure Area Sensor Data

1.20.6 Traveler Secure Area Surveillance

This equipment package manages surveillance equipment that monitors secure areas in the transportation system that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). This package collects the images and audio inputs at the secure area and provides the surveillance information to the Emergency Management Subsystem. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Field Secure Area Surveillance equipment package.
This Equipment Package has the following Pspecs:

5.1.7.1.1-Surveil Traveler Secure Area
5.1.7.1.2-Process Traveler Secure Area Surveillance

1.20.7 Field Secure Area Sensor Monitoring

This equipment package includes sensors that monitor conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, and transit railways or guideways). Included are acoustic, environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity and motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.7.2.3-Collect Secure Area Sensor Data
5.1.7.2.4-Process Secure Area Sensor Data

1.20.8 Field Secure Area Surveillance

This equipment package includes video and audio surveillance equipment that monitors conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. as bridges, tunnels, interchanges, and transit railways or guideways). This package provides the surveillance information to the Emergency Management Subsystem for possible threat detection. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Traveler Secure Area Surveillance equipment package.
This Equipment Package has the following Pspecs:

5.1.7.2.1-Surveil Secure Area
5.1.7.2.2-Process Secure Area Surveillance

1.20.9 Transit Center Security (Equipment Packages*)

This Equipment package provides the capability to monitor key transit locations and transit vehicles with both video and audio systems automatically alerting operators and police of potential incidents and supporting traveler activated alarms. The monitoring equipment shall also include capabilities to assist in responding to terrorist incidents.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.2.3.7-Provide Interface for Other Transit Management Data
4.4.1-Provide Transit Security and Emergency Management
4.4.2-Coordinate Multiple Agency Responses to Transit Incidents
4.4.3-Generate Responses for Transit Incidents
4.4.4-Provide Transit System Operator Security Interface

1.20.10 On-board Transit Security (Equipment Packages*)

This Equipment package provides the capability to monitor the safety of transit vehicles using on-board safety sensors, processors and communications from the prerequisite On-board Trip Monitoring Equipment package.
This Equipment Package has the following Pspecs:

4.1.1-Process On-Board Systems Data
4.1.3-Provide Transit Vehicle Location Data
5.1.7.3.1-Surveil Secure Vehicle Area
5.1.7.3.2-Process Secure Vehicle Area Surveillance
5.1.7.3.3-Collect Secure Vehicle Area Sensor Data
5.1.7.3.4-Process Secure Vehicle Area Sensor Data
5.1.7.3.5-Manage Secure Vehicle Emergencies
5.1.7.3.6-Provide Transit Vehicle Operator Interface for Emergencies

1.21 APTS6-Transit Maintenance- Supporting Equipment Packages

1.21.1 Transit Garage Maintenance (Equipment Packages*)

This Equipment package provides advanced maintenance functions for the transit property. It collects operational and maintenance data from transit vehicles, manages vehicle service histories, and monitors drivers and vehicles. It collects vehicle mileage data and uses it to automatically generate preventative maintenance schedules for each vehicle by utilizing vehicle tracking data from a prerequisite vehicle tracking equipment package. In addition, it provides information to proper service personnel to support maintenance activities and records and verifies that maintenance work was performed. This equipment package receives special events and real-time incident data from the traffic management subsystem and assigns operators to vehicles and transit routes. Garage maintenance also receives information about incidents involving transit vehicles from the TMC in order to dispatch tow trucks and other repair vehicles.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.3.1-Monitor Transit Vehicle Condition
4.3.2-Generate Transit Vehicle Maintenance Schedules
4.3.3-Generate Technician Work Assignments
4.3.4-Monitor And Verify Maintenance Activity
4.3.5-Report Transit Vehicle Information
4.3.6-Update Transit Vehicle Information
4.3.7-Manage Transit Vehicle Operations Data Store

1.21.2 On-board Maintenance (Equipment Packages*)

This Equipment package provides the capability to use transit vehicle mileage data to automatically generate preventative maintenance schedules for each specific bus by utilizing vehicle tracking data and storing with a trip computer. It also provides the capability for real-time condition monitoring on board the vehicle, and transmission of this information via two-way communication to the management center.
This Equipment Package has the following Pspecs:

4.1.9-Process Transit Vehicle Sensor Maintenance Data

1.22 APTS7-Multi-Modal Coordination- Supporting Equipment Packages

1.22.1 Roadway Signal Priority (Equipment Packages*)

This Equipment package shall provide the capability to receive vehicle signal priority requests and control roadside signals accordingly.
This Equipment Package has the following Pspecs:

1.2.7.1-Process Indicator Output Data for Roads
1.2.7.3-Manage Indicator Preemptions

1.22.2 TMC Multimodal Coordination (Equipment Packages*)

This Equipment package provides traffic signal priority for transit vehicles. Two options are provided including a wide-area option based on center to center communications between the Traffic Management and Transit Managemetn Subsystems and a localized option based on direct communications between the transit vehicle and the individual intersection.
This Equipment Package has the following Pspecs:

1.2.2.1-Determine Indicator State for Freeway Management
1.2.2.2-Determine Indicator State for Road Management
1.2.3-Determine Ramp State
1.4.2-Collect Demand Forecast Data

1.22.3 Transit Center Multi-Modal Coordination (Equipment Packages*)

This Equipment package provides the transit management subsystem the capability to determine the need for transit priority on routes and at certain intersections and request transit vehicle priority at these locations. It also supports schedule coordination between transit properties and coordinates with other surface and air transportation modes.
This Equipment Package has the following Pspecs:

4.1.2.4-Provide Transit Vehicle Correction Data Output Interface
4.1.4-Manage Transit Vehicle Deviations
4.1.5-Provide Transit Vehicle Status Information
4.1.6-Manage Transit Vehicle Operations
4.1.7-Provide Transit Vehicle Deviation Data Output Interface
4.2.3.2-Generate Transit Schedules
4.2.3.3-Produce Transit Service Data for External Use
4.2.3.7-Provide Interface for Other Transit Management Data
4.2.3.8-Provide Interface for Transit Service Raw Data

1.22.4 On-board Transit Signal Priority (Equipment Packages*)

This Equipment package provides the capability for transit vehicles to request signal priority through short range communication directly with traffic control equipment at the roadside.
This Equipment Package has the following Pspecs:

4.1.2.1-Determine Transit Vehicle Deviation and ETA

4.1.2.2-Determine Transit Vehicle Corrective Instructions
4.1.2.5-Request Transit Vehicle Priorities
4.1.3-Provide Transit Vehicle Location Data

1.23 APTS8-Transit Traveler Information- Supporting Equipment Packages

1.23.1 Interactive Infrastructure Information (Equipment Packages*)

This Equipment package shall have as prerequisite the capabilities of the Basic Information Broadcast Equipment package. This Equipment package augments the Basic Information Broadcast Equipment package by providing the capabilities for interactive traveler information.
This Equipment Package has the following Pspecs:

1.1.4.5-Provide Media System Traffic Data Interface
1.1.4.6-Provide Traffic Data Retrieval Interface
4.1.8-Provide Transit Operations Data Distribution Interface
6.1.3-Manage Multimodal Service Provider Interface
6.2.1.2-Provide Traffic and Transit Advisory Messages
6.2.1.3-Collect Transit Data for Advisory Messages
6.2.1.5-Provide ISP Operator Broadcast Parameters Interface
6.2.4-Collect Yellow Pages Data
6.5.1-Collect and Update Traveler Information
6.5.4-Provide Traveler Event Information
6.6.1-Provide Multimodal Route Selection
6.6.2.3-Provide Route Segment Data for Other Areas
6.6.2.4-Update Vehicle Route Selection Map Data
6.6.4-Select Transit Route
6.6.5-Select Other Routes
7.1.6-Distribute Advanced Charges and Fares
7.2.6-Distribute Advanced Tolls and Fares
7.3.2-Distribute Advanced Tolls and Parking Lot Charges
7.4.1.3-Process Driver Map Update Payments
7.4.1.4-Process Traveler Map Update Payments
7.4.1.6-Process Traveler Trip and Other Services Payments
7.4.2-Collect Price Data for ITS Use
7.4.3-Route Traveler Advanced Payments

1.23.2 Personal Interactive Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, and the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Personal Information Access Subsystem equipment such as cellular telephone, interactive TV, Personal Computer, and pager with alpha display using communication medium and equipment such as two-way radio, CATV, and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.8.3.1-Get Traveler Personal Request
6.8.3.2-Provide Traveler with Personal Travel Information
6.8.3.3-Provide Traveler Personal Interface
7.5.3-Provide Personal Traveler Card Interface

1.23.3 Remote Transit Information Services (Equipment Packages*)

The Equipment package furnishes transit users with real-time travel-related information at transit stops, multi-modal transfer points, and other public transportation areas. It provides transit users with the latest available information on transit routes, schedules, transfer options, bicycle accessibility, fares, real-time schedule adherence, current

incidents, weather conditions, and special events. In addition to tailored information for individual transit users, this equipment package supports general annunciation and/or display of imminent arrival information and other information of general interest to transit users.
This Equipment Package has the following Pspecs:

4.7.1-Provide Transit User Roadside & Vehicle Data Interface

1.23.4 Transit Center Information Services (Equipment Packages*)

This equipment package collects the latest available information for a transit service and makes it available to transit customers and to Information Service Providers for further distribution. Customers are provided information at transit stops and other public transportation areas before they embark and on-board the transit vehicle once they are enroute. Information provided can include the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, and special events. In addition to general service information, tailored information (e.g, itineraries) are provided to individual transit users.
This Equipment Package has the following Pspecs:

4.1.5-Provide Transit Vehicle Status Information
4.1.6-Manage Transit Vehicle Operations
4.2.3.3-Produce Transit Service Data for External Use
4.2.3.6-Produce Transit Service Data for Manage Transit Use
4.2.3.7-Provide Interface for Other Transit Management Data
4.6.8-Manage Transit Vehicle Advanced Payments

1.23.5 On-board Transit Information Services (Equipment Packages*)

The Equipment package furnishes enroute transit users with real-time travel-related information. Current information that can be provided to transit users includes transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, non-motorized transportation services, and special events are provided. In addition to tailored information for individual transit users, this equipment package also supports general annunciation and/or display of general schedule information, imminent arrival information, and other information of general interest to transit users.
This Equipment Package has the following Pspecs:

6.2.3-Provide Transit User Advisory Interface
6.2.7-Provide Transit Advisory Data On Vehicle

1.24 EM1-Emergency Response- Supporting Equipment Packages

1.24.1 Emergency Call-Taking (Equipment Packages*)

This Equipment package supports the emergency call-taker, collecting available information about the caller and the reported emergency, and forwarding this information to other equipment packages that formulate and manage the emergency response. This equipment package receives 9-1-1, 7-digit local access, and motorist call-box calls and interfaces to other agencies to assist in the verification and assessment of the emergency and to forward the emergency information to the appropriate response agency.
This Equipment Package has the following Pspecs:

5.1.1.1-Coordinate Emergency Inputs
5.1.1.2-Identify Commercial Vehicle Emergencies
5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.2-Provide Operator Interface for Emergency Data
5.5-Update Emergency Display Map Data

1.24.2 Emergency Environmental Monitoring (Equipment Packages*)

This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively manage incidents.
This Equipment Package has the following Pspecs:

5.1.4-Manage Emergency Response
5.3.6-Maintain Vehicle Status

1.24.3 Emergency Response Management (Equipment Packages*)

This Equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This Equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident. It provides vital communications linkages which provide real-time information to emergency response personnel in the field.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.1.5-Manage Emergency Service Allocation Store
5.2-Provide Operator Interface for Emergency Data
5.3.1-Select Response Mode
5.5-Update Emergency Display Map Data
5.7.1-Assess System Status For Disasters
5.7.2-Provide Disaster Response Coordination
5.7.3-Assess System Status For Evacuation

1.24.4 On-board EV Incident Management Communication (Equipment Packages*)

This Equipment package provides a direct interface between the emergency vehicle and incident management personnel.
This Equipment Package has the following Pspecs:

5.3.5-Provide Emergency Personnel Interface

1.25 EM2-Emergency Routing- Supporting Equipment Packages

1.25.1 Emergency Dispatch (Equipment Packages*)

This Equipment package supports efficient dispatch of emergency vehicles. It tracks emergency vehicles, dispatches these vehicles to an incident, and provides safe and efficient routes based on real-time traffic information.
This Equipment Package has the following Pspecs:

5.1.2-Determine Coordinated Response Plan
5.1.4-Manage Emergency Response
5.2-Provide Operator Interface for Emergency Data
5.3.2-Dispatch Vehicle
5.3.4-Assess Response Status
5.3.6-Maintain Vehicle Status
5.3.7-Provide Emergency Vehicle Route
5.5-Update Emergency Display Map Data

1.25.2 On-board EV En Route Support (Equipment Packages*)

This Equipment package provides capabilities that support safe and expedient arrival to and departure from the incident scene. This package provides dispatch and routing information, tracks the vehicle, and preempt signals via short range communication directly with traffic control equipment at the roadside.
This Equipment Package has the following Pspecs:

5.3.3-Track Vehicle
5.3.5-Provide Emergency Personnel Interface

1.25.3 Roadway Signal Priority (Equipment Packages*)

This Equipment package shall provide the capability to receive vehicle signal priority requests and control roadside signals accordingly.
This Equipment Package has the following Pspecs:

1.2.7.1-Process Indicator Output Data for Roads
1.2.7.3-Manage Indicator Preemptions

1.25.4 TMC Signal Control (Equipment Packages*)

This Equipment package provides the capability for traffic managers to monitor and manage the traffic flow at signalized intersections. This capability includes analyzing and reducing the collected data from traffic surveillance equipment and developing and implementing control plans for signalized intersections. Control plans may be developed and implemented that coordinate signals at many intersections under the domain of a single traffic management subsystem. In advanced implementations, this package collects route planning information and integrates and uses this information in predicting future traffic conditions and optimizing the traffic control strategy for these conditions. These capabilities are achieved through real-time communication of logged routes from an Information Service Provider. The planned control strategies can be passed back to the Information Service Provider so that the intended strategies can be reflected in future route planning.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.2.1-Select Strategy
1.2.2.2-Determine Indicator State for Road Management
1.2.4.1-Output Control Data for Roads

1.25.5 Vehicle Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.26 EM3-Mayday Support – Supporting Equipment Packages

1.26.1 Center Secure Area Alarm Support (Equipment Packages*)

This equipment package receives traveler or transit vehicle operator alarm messages, provides acknowledgement of alarm receipt back to the originator of the alarm, and determines an appropriate response. The alarms received can be generated by silent or audible alarm systems and may originate from public areas (e.g. transit stops, park and ride lots, transit stations, rest areas) or transit vehicles. The nature of the emergency may be determined based on the information in the alarm message as well as other inputs.

This Equipment Package has the following Pspecs:

5.1.7.4-Manage Alarms

1.26.2 Center Secure Area Surveillance (Equipment Packages*)

This equipment package monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel. It automatically alerts emergency personnel of potential incidents.

This Equipment Package has the following Pspecs:

5.1.1.4.2-Manage Secure Area Surveillance
5.1.1.4.5-Analyze Traveler Image
5.1.1.4.6-Provide Operator Interface for Security
5.1.2-Determine Coordinated Response Plan
5.2-Provide Operator Interface for Emergency Data

1.26.3 Mayday Support (Equipment Packages*)

This equipment package receives Mayday messages and security alarms, determines an appropriate response, and either uses internal resources or contacts a local agency to provide that response. The nature of the emergency is determined based on the information in the mayday or alarm message as well as other inputs. This package effectively serves as an interface between automated mobile mayday systems and alarm systems and the local public safety answering point for messages which require a public safety response. This equipment package represents the general security services provided by telematics service providers as well as more specific services that focus on commercial vehicle safety and security.

This Equipment Package has the following Pspecs:

5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.6-Process Mayday Messages
5.2-Provide Operator Interface for Emergency Data

1.26.4 Personal Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.

This Equipment Package has the following Pspecs:

6.8.1.3-Process Personal Portable Device Location Data

1.26.5 Personal Mayday I/F (Equipment Packages*)

This equipment package shall provide the capability to initiate a distress signal and cancel a prior issued manual request for help using the Personal Information Access Subsystem. This capability shall be provided using equipment such as a processor to automatically dial the Emergency Management Subsystem and provide location.

This Equipment Package has the following Pspecs:

6.8.1.5-Provide Traveler Emergency Message Interface
6.8.2.1-Build Traveler Personal Security Message
6.8.2.2-Provide Traveler Emergency Communications Function

1.26.6 Remote Traveler Security (Equipment Packages*)

This equipment package provides the capability to report an emergency and summon assistance from secure areas such as transit stops, transit stations, modal transfer facilities, rest stops and picnic areas, park-and-ride areas, tourism and travel information areas, remote roadways and emergency pull off areas. This package includes interfaces that facilitate initiation of an alarm, which is communicated to the Emergency Management Subsystem. This package allows for an acknowledgement of the alarm as well as a broadcast message to advise or warn the traveler.

This Equipment Package has the following Pspecs:

5.1.7.1.5-Report Traveler Emergencies
6.3.3-Provide Traveler Kiosk Interface

1.26.7 Traveler Secure Area Surveillance (Equipment Packages*)

This equipment package manages surveillance equipment that monitors secure areas in the transportation system that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). This package collects the images and audio inputs at the secure area and provides the surveillance information to the Emergency Management Subsystem. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Field Secure Area Surveillance equipment package.

This Equipment Package has the following Pspecs:

5.1.7.1.1-Surveil Traveler Secure Area
5.1.7.1.2-Process Traveler Secure Area Surveillance

1.26.8 Vehicle Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.

This Equipment Package has the following Pspecs:

6.7.2.2 Process Vehicle Location Data

1.26.9 Vehicle Mayday I/F (Equipment Packages*)

This equipment package shall provide the capability for an in-vehicle manually initiated distress signal with cancel a prior issued manual request for help feature. This capability shall include automatically identifying that a collision had occurred using equipment such as collision detection sensors with interface to mayday type equipment that would automatically detect vehicle problems and for some cases, automatically send appropriate distress signals to the Emergency Management Subsystem.

This Equipment Package has the following Pspecs:

3.3.1-Provide Communications Function
3.3.2-Build Automatic Collision Notification Message
6.2.5-Provide Driver Information Interface
6.7.1.1-Build Driver Personal Security Message
6.7.1.2-Provide Driver In-vehicle Communications Function

1.27 EM04-Roadway Service Patrols – Supporting Equipment Packages

1.27.1 Service Patrol Management (Equipment Packages*)

This equipment package supports dispatch and communication with roadway service patrol vehicles.

This Equipment Package has the following Pspecs:

5.1.3-Communicate Emergency Status
5.2-Provide Operator Interface for Emergency Data
5.3.2-Dispatch Vehicle
5.3.4-Assess Response Status
5.3.6-Maintain Vehicle Status

1.27.2 On-board EV En Route Support (Equipment Packages*)

This equipment package provides capabilities that support safe and expedient arrival to and departure from the incident scene. This package provides dispatch and routing information, tracks the vehicle, and preempt signals via short range communication directly with traffic control equipment at the roadside.

This Equipment Package has the following Pspecs:

5.3.3-Track Vehicle
5.3.5-Provide Emergency Personnel Interface

1.27.3 On-board EV Incident Management Communication (Equipment Packages*)

This equipment package provides a direct interface between the emergency vehicle and incident management personnel.

This Equipment Package has the following Pspecs:

5.3.5-Provide Emergency Personnel Interface

1.28 EM05-Transportation Infrastructure Protection

1.28.1 Center Secure Area Sensor Management

This equipment package manages sensors that monitor secure areas in the transportation system, processes the collected data, performs threat analysis in which data is correlated with other sensor, surveillance, and advisory inputs, and then disseminates resultant threat information to emergency personnel and other agencies. The sensors may be in secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. The types of sensors include acoustic, threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.1.4.1-Manage Secure Area Sensors
5.1.1.4.3-Analyze Threats
5.1.1.4.4-Disseminate Threat Info
5.1.1.4.6-Provide Operator Interface for Security
5.1.4-Manage Emergency Response

1.28.2 Center Secure Area Surveillance

This equipment package monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel. It automatically alerts emergency personnel of potential incidents.
This Equipment Package has the following Pspecs:

5.1.1.4.2-Manage Secure Area Surveillance
5.1.1.4.5-Analyze Traveler Image
5.1.1.4.6-Provide Operator Interface for Security
5.1.2-Determine Coordinated Response Plan
5.2-Provide Operator Interface for Emergency Data

1.28.3 Field Barrier System Control

This equipment package provides the control of barrier systems for transportation facilities and infrastructure. Barrier systems include automatic or remotely controlled gates, barriers and other systems intended to preclude an attack or control access during and after an incident.
This Equipment Package has the following Pspecs:

1.2.7.10-Control Barrier Systems

1.28.4 Field Safeguard System Control

This equipment package provides the control of safeguard systems for transportation facilities and infrastructure. Safeguard systems include blast shielding, exhaust systems and other automatic or remotely controlled systems intended to mitigate the impact of an incident.
This Equipment Package has the following Pspecs:

5.7.6.1-Control Safeguard Systems

1.28.5 Traveler Secure Area Sensor Monitoring

This equipment package includes sensors that monitor conditions of secure areas that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). Included are acoustic, environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), and motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.7.1.3-Collect Traveler Secure Area Sensor Data
5.1.7.1.4-Process Traveler Secure Area Sensor Data

1.28.6 Traveler Secure Area Surveillance

This equipment package manages surveillance equipment that monitors secure areas in the transportation system that are frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, etc). This package collects the images and audio inputs at the secure area and provides the surveillance information to the Emergency Management Subsystem. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Field Secure Area Surveillance equipment package.
This Equipment Package has the following Pspecs:

5.1.7.1.1-Surveil Traveler Secure Area
5.1.7.1.2-Process Traveler Secure Area Surveillance

1.28.7 Field Secure Area Sensor Monitoring

This equipment package includes sensors that monitor conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, and transit railways or guideways). Included are acoustic, environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity and motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.7.2.3-Collect Secure Area Sensor Data
5.1.7.2.4-Process Secure Area Sensor Data

1.28.8 Field Secure Area Surveillance

This equipment package includes video and audio surveillance equipment that monitors conditions of secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. as bridges, tunnels, interchanges, and transit railways or guideways). This package provides the surveillance information to the Emergency Management Subsystem for possible threat detection. The equipment package also provides local processing of the video or audio information, providing processed or analyzed results to the Emergency Management Subsystem. This equipment package provides the same functions as the Traveler Secure Area Surveillance equipment package.
This Equipment Package has the following Pspecs:

5.1.7.2.1-Surveil Secure Area
5.1.7.2.2-Process Secure Area Surveillance

1.28.9 Barrier System Management

This equipment package provides the management of barrier systems for transportation facilities and infrastructure. Barrier systems include automatic or remotely controlled gates, barriers and other systems intended to preclude an attack or control access during and after an incident. When access to part of the transportation system is impacted by the activation of a barrier system, travelers and appropriate subsystems are notified.
This Equipment Package has the following Pspecs:

1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.2.4.5-Manage Barrier Systems

1.28.10 Safeguard System Management

This equipment package provides the management of safeguard systems for transportation facilities and infrastructure. Safeguard systems include blast shielding, exhaust systems and other automatic or remotely controlled systems intended to mitigate the impact of an incident. When access to a transportation facility is impacted by the activation of a safeguard system, travelers and appropriate subsystems are notified.
This Equipment Package has the following Pspecs:

5.7.6.2-Manage Safeguard Systems

1.29 EM06-Wide-Area Alert

1.29.1 Emergency Early Warning System

This equipment package monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies and uses this information to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other equipment packages that provide the emergency response, including public notification using ITS traveler information systems, where appropriate.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.8-Manage Wide Area Alerts and Advisories

1.29.2 ISP Emergency Traveler Information

This equipment package collects and provides emergency information to the public, including wide-area alerts and evacuation information. Building on functionality included in other ISP equipment packages, this equipment package provides emergency alerts, information on evacuation zones and evacuation requirements, evacuation destinations and shelter information, available transportation modes, and traffic and road conditions at the origin, destination, and along the evacuation routes. In addition to general evacuation information, personalized information including tailored evacuation routes, service information, and estimated travel times is also provided based on traveler specified origin, destination, and route parameters. Updated information is provided throughout the evacuation and subsequent reentry as status changes and plans are adapted.
This Equipment Package has the following Pspecs:

1.1.4.6-Provide Traffic Data Retrieval Interface
6.1.1-Provide Trip Planning Information to Traveler
6.1.4-Provide ISP Operator Interface for Trip Planning Parameters
6.5.1-Collect and Update Traveler Information
6.5.3-Register Yellow Pages Service Providers
6.5.5-Manage Emergency Traveler Information

1.29.3 Traveler Telephone Information

This equipment package services voice-based traveler requests for information that supports traveler telephone information systems like 511. The equipment package takes requests for traveler information, which could be voice-formatted traveler requests, dual-tone multifrequency (DTMF)-based requests, or a simple traveler information request, and returns the requested traveler information in the proper format. In addition to servicing requests for traveler information, this equipment package also collects and forwards alerts and advisories to traveler telephone information systems.
This Equipment Package has the following Pspecs:

6.5.5-Manage Emergency Traveler Information
6.5.6-Provide 511 Traveler Information

1.29.4 MCM Incident Management

This equipment package supports coordinated response to highway incidents. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response is coordinated among allied response organizations.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.2-Status Current M&C Activities
9.2.3.4-Manage M&C Resource Needs
9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.2.3-Generate Work Zone Information for Distribution

1.29.5 Personal Basic Information Reception

This equipment package shall provide the capability for travelers to interface with the ISP Subsystem Basic Information Broadcast equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information from their Personal Information Access Subsystem to include their homes, place of work, major trip generation sites, personal portable devices, and over multiple types of electronic media such as facsimile machines, portable AM/FM radios, and a pager processor.
This Equipment Package has the following Pspecs:

6.8.3.2-Provide Traveler with Personal Travel Information

6.8.3.3-Provide Traveler Personal Interface

1.29.6 Roadway Traffic Information Dissemination

This equipment package provides the roadside elements of traffic information dissemination including DMS, HAR, and talking pedestrian signs.
This Equipment Package has the following Pspecs:

1.2.7.1-Process Indicator Output Data for Roads
1.2.7.5-Process Indicator Output Data for Freeways
1.2.7.9-Process Roadway Information Data

1.29.7 Remote Basic Information Reception

This equipment package shall provide the capability for travelers to interface with the ISP Subsystem Basic Information Broadcast equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information at the Remote Traveler Support Subsystem.
This Equipment Package has the following Pspecs:

6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface

1.29.8 TMC Incident Dispatch Coordination/Communication

This equipment package provides the capability for an incident response formulation function minimizing 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.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.5-Exchange Data with Other Traffic Centers
1.2.1-Select Strategy
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents
1.3.2.3-Review and Classify Planned Events
1.3.2.6-Manage Traffic Routing
1.3.3-Respond to Current Incidents
1.3.4.1-Retrieve Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface
1.3.4.3-Provide Media Incident Data Interface
1.3.4.4-Update Incident Display Map Data
1.3.4.5-Manage Resources for Incidents
1.3.5-Manage Incident Response Planning
1.3.6-Traffic Disaster Response Control
1.3.7-Traffic Evacuation Control
1.6.2.1-Exchange Data with Rail Operations

1.29.9 TMC Traffic Information Dissemination

This equipment package provides the capability to disseminate traffic and road conditions information to travelers. Information is provided to drivers using DMS, HAR, and in-vehicle signing equipment. Information is provided to other travelers by making current road network conditions information available to information service providers and the media.
This Equipment Package has the following Pspecs:

1.1.4.1-Retrieve Traffic Data

1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.1.4.3-Provide Direct Media Traffic Data Interface
1.2.4.4-Output Roadway Information Data
1.3.4.3-Provide Media Incident Data Interface

1.29.10 Transit Center Information Services

This equipment package collects the latest available information for a transit service and makes it available to transit customers and to Information Service Providers for further distribution. Customers are provided information at transit stops and other public transportation areas before they embark and on-board the transit vehicle once they are enroute. Information provided can include the latest available information on transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, and special events. In addition to general service information, tailored information (e.g, itineraries) are provided to individual transit users.
This Equipment Package has the following Pspecs:

4.1.5-Provide Transit Vehicle Status Information
4.1.6-Manage Transit Vehicle Operations
4.2.3.3-Produce Transit Service Data for External Use
4.2.3.6-Produce Transit Service Data for Manage Transit Use
4.2.3.7-Provide Interface for Other Transit Management Data
4.6.8-Manage Transit Vehicle Advanced Payments

1.29.11 Transit Center Security

This equipment package provides the capability to monitor transit vehicle operator or transit user activated alarms received from on-board a transit vehicle. This package also includes the capability to support transit vehicle operator authentication and the capability to remotely disable a transit vehicle. This package also includes the capability to alert operators and police to potential incidents identified by these security features.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.2.3.7-Provide Interface for Other Transit Management Data
4.4.1-Provide Transit Security and Emergency Management
4.4.2-Coordinate Multiple Agency Responses to Transit Incidents
4.4.3-Generate Responses for Transit Incidents
4.4.4-Provide Transit System Operator Security Interface

1.29.12 Basic Vehicle Reception

This equipment package provides the capability for drivers to receive basic transportation information including formatted traffic advisories, accurate traveling information concerning available travel options and their availability, and alerts in their vehicle.
This Equipment Package has the following Pspecs:

6.2.2-Prepare and Output In-vehicle Displays
6.2.5-Provide Driver Information Interface

1.30 EM07-Early Warning System

1.30.1 Center Secure Area Sensor Management

This equipment package manages sensors that monitor secure areas in the transportation system, processes the collected data, performs threat analysis in which data is correlated with other sensor, surveillance, and advisory inputs, and then disseminates resultant threat information to emergency personnel and other agencies. The sensors may be in secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. The types of sensors include acoustic, threat (e.g. chemical agent, toxic industrial

chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, motion and object sensors.
This Equipment Package has the following Pspecs:

5.1.1.4.1-Manage Secure Area Sensors
5.1.1.4.3-Analyze Threats
5.1.1.4.4-Disseminate Threat Info
5.1.1.4.6-Provide Operator Interface for Security
5.1.4-Manage Emergency Response

1.30.2 Center Secure Area Surveillance

This equipment package monitors surveillance inputs from secure areas in the transportation system. The surveillance may be of secure areas frequented by travelers (i.e., transit stops, transit stations, rest areas, park and ride lots, modal interchange facilities, on-board a transit vehicle, etc.) or around transportation infrastructure such as bridges, tunnels and transit railways or guideways. It provides both video and audio surveillance information to emergency personnel. It automatically alerts emergency personnel of potential incidents.
This Equipment Package has the following Pspecs:

5.1.1.4.2-Manage Secure Area Surveillance
5.1.1.4.5-Analyze Traveler Image
5.1.1.4.6-Provide Operator Interface for Security
5.1.2-Determine Coordinated Response Plan
5.2-Provide Operator Interface for Emergency Data

1.30.3 Emergency Early Warning System

This equipment package monitors alerting and advisory systems, information collected by ITS surveillance and sensors, and reports from other agencies and uses this information to identify potential, imminent, or in-progress major incidents or disasters. Notification is provided to other equipment packages that provide the emergency response, including public notification using ITS traveler information systems, where appropriate.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.8-Manage Wide Area Alerts and Advisories

1.30.4 Emergency Environmental Monitoring

This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively manage incidents.
This Equipment Package has the following Pspecs:

5.1.4-Manage Emergency Response
5.3.6-Maintain Vehicle Status

1.30.5 MCM Incident Management

This equipment package supports coordinated response to highway incidents. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response is coordinated among allied response organizations.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.2-Status Current M&C Activities
9.2.3.4-Manage M&C Resource Needs

9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.2.3-Generate Work Zone Information for Distribution

1.30.6 TMC Incident Detection

This equipment package provides the capability to traffic managers to detect and verify incidents. This capability includes analyzing and reducing the collected data from traffic surveillance equipment, monitoring external alerting and advisory and incident reporting systems, collecting special event information, and monitoring for incidents and hazardous conditions through available sensor and surveillance systems.
This Equipment Package has the following Pspecs:

1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.3.1.1-Analyze Traffic Data for Incidents
1.3.1.2-Maintain Static Data for Incident Management
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents
1.3.2.3-Review and Classify Planned Events
1.3.2.4-Provide Planned Events Store Interface
1.3.2.5-Provide Current Incidents Store Interface
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface

1.30.7 Transit Center Security

This equipment package provides the capability to monitor transit vehicle operator or transit user activated alarms received from on-board a transit vehicle. This package also includes the capability to support transit vehicle operator authentication and the capability to remotely disable a transit vehicle. This package also includes the capability to alert operators and police to potential incidents identified by these security features.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.2.3.7-Provide Interface for Other Transit Management Data
4.4.1-Provide Transit Security and Emergency Management
4.4.2-Coordinate Multiple Agency Responses to Transit Incidents
4.4.3-Generate Responses for Transit Incidents
4.4.4-Provide Transit System Operator Security Interface

1.31 EM08-Disaster Response and Recovery

1.31.1 Emergency Response Management

This equipment package provides the strategic emergency response capabilities and broad inter-agency interfaces that are implemented for extraordinary incidents and disasters that require response from outside the local community. It provides the functional capabilities and interfaces commonly associated with Emergency Operations Centers. This equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident. It provides vital communications linkages which provide real-time information to emergency response personnel in the field.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response

5.1.5-Manage Emergency Service Allocation Store
5.2-Provide Operator Interface for Emergency Data
5.3.1-Select Response Mode
5.5-Update Emergency Display Map Data
5.7.1-Assess System Status For Disasters
5.7.2-Provide Disaster Response Coordination
5.7.3-Assess System Status For Evacuation

1.31.2 Incident Command

The equipment package provides tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident. The equipment package supports communications with public safety, emergency management, transportation, and other allied response agency centers, tracks and maintains resource information, action plans, and the incident command organization itself. Information is shared with agency centers including resource deployment status, hazardous material information, traffic, road, and weather conditions, evacuation advice, and other information that enables emergency or maintenance personnel in the field to implement an effective, safe incident response.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.3.4-Assess Response Status

1.31.3 MCM Incident Management

This equipment package supports coordinated response to highway incidents. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response is coordinated among allied response organizations.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.2-Status Current M&C Activities
9.2.3.4-Manage M&C Resource Needs
9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.2.3-Generate Work Zone Information for Distribution

1.31.4 MCM Roadway Maintenance and Construction

This equipment package provides overall management and support for routine maintenance on a roadway system or right-of-way. Services managed are landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling routine maintenance activities.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.1-Schedule M&C Activities
9.2.2-Status Current M&C Activities
9.2.3.2-Determine Roadway M&C Needs
9.2.3.4-Manage M&C Resource Needs
9.2.3.5-Collect Roadside Equipment Status
9.2.4-Manage M&C Map Data
9.2.5-Provide M&C Center Personnel Interface for Maint
9.2.6.3-Operate Infrastructure Monitoring Devices

9.2.8-Manage M&C Materials
9.4.2-Collect Environmental Data

1.31.5 TMC Incident Dispatch Communication/Coordination

This equipment package provides the capability for an incident response formulation function minimizing 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.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.5-Exchange Data with Other Traffic Centers
1.2.1-Select Strategy
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents
1.3.2.3-Review and Classify Planned Events
1.3.2.6-Manage Traffic Routing
1.3.3-Respond to Current Incidents
1.3.4.1-Retrieve Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface
1.3.4.3-Provide Media Incident Data Interface
1.3.4.4-Update Incident Display Map Data
1.3.4.5-Manage Resources for Incidents
1.3.5-Manage Incident Response Planning
1.3.6-Traffic Disaster Response Control
1.3.7-Traffic Evacuation Control
1.6.2.1-Exchange Data with Rail Operations

1.31.6 Transit Center Security

This equipment package provides the capability to monitor transit vehicle operator or transit user activated alarms received from on-board a transit vehicle. This package also includes the capability to support transit vehicle operator authentication and the capability to remotely disable a transit vehicle. This package also includes the capability to alert operators and police to potential incidents identified by these security features.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations
4.2.3.7-Provide Interface for Other Transit Management Data
4.4.1-Provide Transit Security and Emergency Management
4.4.2-Coordinate Multiple Agency Responses to Transit Incidents
4.4.3-Generate Responses for Transit Incidents
4.4.4-Provide Transit System Operator Security Interface

1.32 EM09-Evacuation and Reentry Management

1.32.1 Emergency Evacuation Support

This equipment package coordinates evacuation plans among allied agencies and manages evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety. Where appropriate, the affected population is evacuated in shifts, using more than one evacuation route, and including several evacuation destinations to spread demand and thereby expedite the evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, or along the evacuation route are informed of the plan. The public is provided with real-time evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary. Resource requirements are forecast based on the evacuation plans, and

the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times. The evacuation and reentry status are monitored
This Equipment Package has the following Pspecs:

5.1.4-Manage Emergency Response
5.2-Provide Operator Interface for Emergency Data
5.7.4-Provide Evacuation Coordination
5.7.5-Manage Evacuation

1.32.2 MCM Incident Management

This equipment package supports coordinated response to highway incidents. Incident notifications are shared, incident response resources are managed, and the overall incident situation and incident response is coordinated among allied response organizations.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.2-Status Current M&C Activities
9.2.3.4-Manage M&C Resource Needs
9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.2.3-Generate Work Zone Information for Distribution

1.32.3 TMC Evacuation Support

This equipment package supports development, coordination, and execution of special traffic management strategies during evacuation and subsequent reentry of a population in the vicinity of a disaster or major emergency. A traffic management strategy is developed based on anticipated demand, the capacity of the road network including access to and from the evacuation routes, and existing and forecast conditions. The strategy supports efficient evacuation and also protects and optimizes movement of response vehicles and other resources that are responding to the emergency.
This Equipment Package has the following Pspecs:

1.1.5-Exchange Data with Other Traffic Centers
1.2.1-Select Strategy
1.3.6-Traffic Disaster Response Control
1.3.7-Traffic Evacuation Control

1.32.4 Transit Evacuation Support

This equipment package manages transit resources to support evacuation and subsequent reentry of a population in the vicinity of a disaster or other emergency. It supports coordination of regional evacuation plans, identifying the transit role in a regional evacuation and identifying transit resources that would be used. During an evacuation, this equipment package coordinates the use of transit and school bus fleets, supporting evacuation of those with special needs and the general population. Transit service and fare schedules are adjusted and updated service and fare information is made available through traveler information systems. This equipment package coordinates the functions in other Transit equipment packages to support these requirements. This Equipment Package has the following Pspecs:

4.4.1-Provide Transit Security and Emergency Management
4.4.4-Provide Transit System Operator Security Interface

1.33 EM10-Disaster Traveler Information

1.33.1 Emergency Evacuation Support

This equipment package coordinates evacuation plans among allied agencies and manages evacuation and reentry of a population in the vicinity of a disaster or other emergency that poses a risk to public safety. Where appropriate, the

affected population is evacuated in shifts, using more than one evacuation route, and including several evacuation destinations to spread demand and thereby expedite the evacuation. All affected jurisdictions (e.g., states and counties) at the evacuation origin, evacuation destination, or along the evacuation route are informed of the plan. The public is provided with real-time evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary. Resource requirements are forecast based on the evacuation plans, and the necessary resources are located, shared between agencies if necessary, and deployed at the right locations at the appropriate times. The evacuation and reentry status are monitored
This Equipment Package has the following Pspecs:

5.1.4-Manage Emergency Response
5.2-Provide Operator Interface for Emergency Data
5.7.4-Provide Evacuation Coordination
5.7.5-Manage Evacuation

1.33.2 Emergency Response Management

This equipment package provides the strategic emergency response capabilities and broad inter-agency interfaces that are implemented for extraordinary incidents and disasters that require response from outside the local community. It provides the functional capabilities and interfaces commonly associated with Emergency Operations Centers. This equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident. It provides vital communications linkages which provide real-time information to emergency response personnel in the field.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.1.5-Manage Emergency Service Allocation Store
5.2-Provide Operator Interface for Emergency Data
5.3.1-Select Response Mode
5.5-Update Emergency Display Map Data
5.7.1-Assess System Status For Disasters
5.7.2-Provide Disaster Response Coordination
5.7.3-Assess System Status For Evacuation

1.33.3 ISP Emergency Traveler Information

This equipment package collects and provides emergency information to the public, including wide-area alerts and evacuation information. Building on functionality included in other ISP equipment packages, this equipment package provides emergency alerts, information on evacuation zones and evacuation requirements, evacuation destinations and shelter information, available transportation modes, and traffic and road conditions at the origin, destination, and along the evacuation routes. In addition to general evacuation information, personalized information including tailored evacuation routes, service information, and estimated travel times is also provided based on traveler specified origin, destination, and route parameters. Updated information is provided throughout the evacuation and subsequent reentry as status changes and plans are adapted.
This Equipment Package has the following Pspecs:

1.1.4.6-Provide Traffic Data Retrieval Interface
6.1.1-Provide Trip Planning Information to Traveler
6.1.4-Provide ISP Operator Interface for Trip Planning Parameters
6.5.1-Collect and Update Traveler Information
6.5.3-Register Yellow Pages Service Providers
6.5.5-Manage Emergency Traveler Information

1.33.4 Traveler Telephone Information

This equipment package services voice-based traveler requests for information that supports traveler telephone information systems like 511. The equipment package takes requests for traveler information, which could be voice-formatted traveler requests, dual-tone multifrequency (DTMF)-based requests, or a simple traveler information request, and returns the requested traveler information in the proper format. In addition to servicing requests for traveler information, this equipment package also collects and forwards alerts and advisories to traveler telephone information systems.
This Equipment Package has the following Pspecs:

6.5.5-Manage Emergency Traveler Information
6.5.6-Provide 511 Traveler Information

1.33.5 Personal Basic Information Reception

This equipment package shall provide the capability for travelers to interface with the ISP Subsystem Basic Information Broadcast equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information from their Personal Information Access Subsystem to include their homes, place of work, major trip generation sites, personal portable devices, and over multiple types of electronic media such as facsimile machines, portable AM/FM radios, and a pager processor.
This Equipment Package has the following Pspecs:

6.8.3.2-Provide Traveler with Personal Travel Information
6.8.3.3-Provide Traveler Personal Interface

1.33.6 Personal Interactive Information Reception

This equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure equipment packages including the Interactive Infrastructure Information equipment package, and the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing equipment packages. These capabilities shall be provided using the Personal Information Access Subsystem equipment such as cellular telephone, interactive TV, Personal Computer, and pager with alpha display using communication medium and equipment such as two-way radio, CATV, and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.8.3.1-Get Traveler Personal Request
6.8.3.2-Provide Traveler with Personal Travel Information
6.8.3.3-Provide Traveler Personal Interface
7.5.3-Provide Personal Traveler Card Interface

1.33.7 Remote Basic Information Reception

This equipment package shall provide the capability for travelers to interface with the ISP Subsystem Basic Information Broadcast equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information at the Remote Traveler Support Subsystem.
This Equipment Package has the following Pspecs:

6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface

1.33.8 Remote Interactive Information Reception

This equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure equipment packages including the Interactive Infrastructure Information equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing equipment packages. These

capabilities shall be provided using the Remote Traveler Support Subsystem equipment such as kiosks and other interactive displays.
This Equipment Package has the following Pspecs:

6.3.1-Get Traveler Request
6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface
6.3.4-Update Traveler Display Map Data at Kiosk
7.3.4-Provide Remote Terminal Traveler Card Interface
7.5.2-Provide Traveler Roadside Traveler Card Interface
7.5.4-Provide Traveler Kiosk Traveler Card Interface

1.33.9 Basic Vehicle Reception

This equipment package provides the capability for drivers to receive basic transportation information including formatted traffic advisories, accurate traveling information concerning available travel options and their availability, and alerts in their vehicle.
This Equipment Package has the following Pspecs:

6.2.2-Prepare and Output In-vehicle Displays
6.2.5-Provide Driver Information Interface

1.33.10 Interactive Vehicle Reception

This equipment package shall provide the capability for drivers to interface with the ISP Subsystem Infrastructure equipment packages including the Interactive Infrastructure Information equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing equipment packages. These capabilities shall be provided using the Vehicle Subsystem equipment.
This Equipment Package has the following Pspecs:

6.2.2-Prepare and Output In-vehicle Displays
6.2.5-Provide Driver Information Interface

1.34 MC01-Maintenance and Construction Vehicle and Equipment Tracking

1.34.1 MCM Vehicle Tracking

This equipment package tracks the location of maintenance and construction vehicles and other equipment. Vehicle location and associated information is presented to the operator.
This Equipment Package has the following Pspecs:

9.1.3-Track M&C Vehicles and Equipment
9.2.4-Manage M&C Map Data
9.2.5-Provide M&C Center Personnel Interface for Maint

1.34.2 MCV Vehicle Location Tracking

This equipment package tracks vehicle location and reports this location to a dispatch center. This Equipment Package has the following Pspecs:

9.1.2-Collect M&C Vehicle Data On-Board

1.34.3 Vehicle Location Determination

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services. This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.35 MC03-Road Weather Data Collection

1.35.1 Emergency Environmental Monitoring

This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively manage incidents.
This Equipment Package has the following Pspecs:

5.1.4-Manage Emergency Response
5.3.6-Maintain Vehicle Status

1.35.2 On-Board EV Environmental Monitoring

This equipment package collects current road and weather conditions using sensor systems. Environmental information including road surface temperature and air temperature is measured and spatially located and time stamped.
This Equipment Package has the following Pspecs:

5.3.8-Collect Environmental Data on Emergency Vehicle

1.35.3 ISP Probe Information Collection

This equipment package supports the collection of vehicle probe data by the ISP. It provides the capability to accept and process probe vehicle information. This capability shall be provided through the use of additional hardware and probe vehicle control and tracking software.
This Equipment Package has the following Pspecs:

6.2.1.6-Collect Environmental Probe Data
6.6.2.2-Provide Vehicle Route Calculation Data
6.6.2.6-Calculate Vehicle Probe Data for Guidance

1.35.4 MCM Environmental Information Collection

This equipment package collects current road and weather conditions using data collected from environmental sensors deployed on and about the roadway. In addition to fixed sensor stations at the roadside, this equipment package also collects environmental information from sensor systems located on Maintenance and Construction Vehicles, and sensor data that is made available by other systems.
This Equipment Package has the following Pspecs:

9.2.2-Status Current M&C Activities
9.4.2-Collect Environmental Data
9.4.5-Provide M&C Center Personnel Interface for Environment

1.35.5 MCV Environmental Monitoring

This equipment package collects current road and weather conditions using sensor systems. Environmental information including road surface temperature and air temperature is measured and spatially located and time stamped. Individual measures can be combined to generate a "thermal trace".
This Equipment Package has the following Pspecs:

9.1.6-Provide M&C Vehicle Operator Interface for Maint
9.4.1-Collect Environmental Data On-Board

1.35.6 Roadway Environmental Monitoring

This equipment package measures environmental conditions and communicates the collected information back to a center where it can be monitored and analyzed. A broad array of general weather and road surface information may be collected. Weather conditions that may be measured include temperature, wind, humidity, precipitation, and visibility. Surface and sub-surface sensors can measure road surface temperature, moisture, icing, salinity, and other measures.
This Equipment Package has the following Pspecs:

1.1.1.3-Process Environmental Sensor Data

1.35.7 Roadway Probe Beacons

This equipment package monitors traffic and road conditions by collecting information from passing vehicles that are equipped with a transponder or other short range communications device. The probe data collected by this equipment package may include link travel times, average speeds, road conditions, and any other data that can be measured and communicated by passing vehicles. This equipment package consists of roadside equipment that communicates with passing vehicles using dedicated short range communications, collects the information provided by the vehicles, and forwards this information back to the Traffic Management Subsystem.
This Equipment Package has the following Pspecs:

1.1.2.6-Process Collected Vehicle Smart Probe Data
1.1.6-Collect Vehicle Probe Data
1.1.7-Collect Vehicle Smart Probe Data
1.2.7.7-Process Vehicle Smart Probe Data for Output

1.35.8 TMC Environmental Monitoring

This equipment package assimilates current and forecast road conditions and surface weather information using a combination of weather service provider information and an array of environmental sensors deployed on and about the roadway. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively deploy road maintenance resources, issue general traveler advisories, and support location specific warnings to drivers. Other equipment packages process the collected information and provide decision support.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.3.2.1-Store Possible Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface

1.35.9 TMC Probe Information Collection

This equipment package provides the capability to accept and process probe vehicle information. This capability shall be provided through the use of additional hardware and probe vehicle control and tracking software.
This Equipment Package has the following Pspecs:

1.1.2.1-Process Traffic Data for Storage
1.1.2.5-Process Probe Data
1.1.4.1-Retrieve Traffic Data
1.2.8.1-Collect Indicator Fault Data

1.35.10 Transit Environmental Monitoring

This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental

information is monitored and presented to the operator. This information can be used to more effectively manage transit operations.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations

1.35.11 On-Board Environmental Monitoring

This equipment package collects current road and weather conditions using sensor systems. Environmental information including road surface temperature and air temperature is measured and spatially located and time stamped.
This Equipment Package has the following Pspecs:

4.1.1-Process On-Board Systems Data

1.35.12 Smart Probe

Vehicle Probes with added capability and intelligence to sense and send road conditions as the vehicle travels. The same vehicle equipment that improves stability in adverse conditions and provides driver information is a potential source for this information. Smart probe data may include road conditions and surface weather information.
This Equipment Package has the following Pspecs:

3.1.3-Process Vehicle On-board Data

1.36 MC04-Weather Information Processing and Distribution- Supporting Equipment Packages

1.36.1 Emergency Environmental Monitoring (Equipment Packages*)

This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively manage incidents.
This Equipment Package has the following Pspecs:

5.1.4-Manage Emergency Response
5.3.6-Maintain Vehicle Status

1.36.2 Basic Information Broadcast (Equipment Packages*)

This Equipment package provides the capabilities to collect, process, store, bill, and disseminate traveler information including traveler, transit, ride matching, traffic, and parking information. The traveler information shall include maintaining a database of local area services available to travelers with up-to-the-minute information and providing an interactive connectivity between, sponsors, and providers of services. The transit information shall include the latest available information on transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence. The traffic information shall include latest available information on traffic and highway conditions, and current situation information in real-time including incidents, road construction, recommended routes, current speeds on specific routes, current parking conditions in key areas, schedules for any current or soon to start events, and current weather situations. This Equipment package shall also provide users with real-time travel related information while they are traveling, and disseminate to assist the travelers in making decisions about transfers and modification of trips. These capabilities shall be provided using equipment such as a fixed facility with a communications system such as a data Subcarrier multiplexing device.
This Equipment Package has the following Pspecs:

1.1.4.5-Provide Media System Traffic Data Interface
1.1.4.6-Provide Traffic Data Retrieval Interface
4.1.8-Provide Transit Operations Data Distribution Interface
6.1.1-Provide Trip Planning Information to Traveler

6.2.1.1-Collect Traffic Data for Advisory Messages
6.2.1.3-Collect Transit Data for Advisory Messages
6.2.1.4-Provide Traffic and Transit Broadcast Messages
6.2.1.5-Provide ISP Operator Broadcast Parameters Interface
6.2.4-Collect Yellow Pages Data
6.5.1-Collect and Update Traveler Information
7.4.2-Collect Price Data for ITS Use

1.36.3 Interactive Infrastructure Information (Equipment Packages*)

This Equipment package shall have as prerequisite the capabilities of the Basic Information Broadcast Equipment package. This Equipment package augments the Basic Information Broadcast Equipment package by providing the capabilities for interactive traveler information.
This Equipment Package has the following Pspecs:

1.1.4.5-Provide Media System Traffic Data Interface
1.1.4.6-Provide Traffic Data Retrieval Interface
4.1.8-Provide Transit Operations Data Distribution Interface
6.1.3-Manage Multimodal Service Provider Interface
6.2.1.2-Provide Traffic and Transit Advisory Messages
6.2.1.3-Collect Transit Data for Advisory Messages
6.2.1.5-Provide ISP Operator Broadcast Parameters Interface
6.2.4-Collect Yellow Pages Data
6.5.1-Collect and Update Traveler Information
6.5.4-Provide Traveler Event Information
6.6.1-Provide Multimodal Route Selection
6.6.2.3-Provide Route Segment Data for Other Areas
6.6.2.4-Update Vehicle Route Selection Map Data
6.6.4-Select Transit Route
6.6.5-Select Other Routes
7.1.6-Distribute Advanced Charges and Fares
7.2.6-Distribute Advanced Tolls and Fares
7.3.2-Distribute Advanced Tolls and Parking Lot Charges
7.4.1.3-Process Driver Map Update Payments
7.4.1.4-Process Traveler Map Update Payments
7.4.1.6-Process Traveler Trip and Other Services Payments
7.4.2-Collect Price Data for ITS Use
7.4.3-Route Traveler Advanced Payments

1.36.4 MCM Environmental Information Processing (Equipment Packages*)

This equipment package processes current and forecast weather data, road condition information, local environmental data, and uses internal models to develop specialized detailed forecasts of local weather and surface conditions. The processed environmental information products are presented to the user.
This Equipment Package has the following Pspecs:

9.2.2-Status Current M&C Activities
9.4.2-Collect Environmental Data
9.4.3-Process Environmental Data
9.4.4-Disseminate Environmental Information
9.4.5-Provide M&C Center Personnel Interface for Environment

1.36.5 TMC Environmental Monitoring (Equipment Packages*)

This equipment package assimilates current and forecast road conditions and surface weather information using a combination of weather service provider information and an array of environmental sensors deployed on and about the roadway. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively deploy road maintenance resources, issue general traveler advisories, and support

location specific warnings to drivers. Other equipment packages process the collected information and provide decision support.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.4.2-Provide Traffic Operations Personnel Traffic Data Interface
1.3.2.1-Store Possible Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface

1.36.6 Transit Environmental Monitoring (Equipment Packages*)

This equipment package assimilates current and forecast road conditions and surface weather information from a variety of sources, including both weather service providers and vehicle probes. The collected environmental information is monitored and presented to the operator. This information can be used to more effectively manage transit operations.
This Equipment Package has the following Pspecs:

4.1.6-Manage Transit Vehicle Operations Data

1.37 MC05-Roadway Automated Treatment

1.37.1 MCM Automated Treatment System Control

This equipment package remotely monitors and manages automated road treatment systems, providing status to the operator.
This Equipment Package has the following Pspecs:

9.2.5-Provide M&C Center Personnel Interface for Maint
9.2.6.1-Operate Roadway Automated Treatment System

1.37.2 Roadway Automated Treatment

This equipment package automatically treats a roadway section based on environmental or atmospheric conditions. Treatments can be in the form of fog dispersion, anti-icing chemicals, etc
This Equipment Package has the following Pspecs:

9.2.6.2-Control Roadway Automated Treatment System

1.37.3 Roadway Equipment Coordination

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.37.4 Roadway Traffic Information Dissemination

This equipment package provides the roadside elements of traffic information dissemination including DMS, HAR, and talking pedestrian signs.
This Equipment Package has the following Pspecs:

1.2.7.1-Process Indicator Output Data for Roads
1.2.7.5-Process Indicator Output Data for Freeways
1.2.7.9-Process Roadway Information Data

1.38 MC06-Winter Maintenance

1.38.1 MCM Maintenance Decision Support

This equipment package recommends maintenance courses of action based on current and forecast environmental and road conditions and additional application specific information. Decisions are supported through understandable presentation of filtered and fused environmental and road condition information for specific time horizons as well as specific maintenance recommendations that are generated by the system based on this integrated information. The recommended courses of action are supported by information on the anticipated consequences of action or inaction, when available.
This Equipment Package has the following Pspecs:

9.2.3.3-Provide Maintenance Decision Support
9.2.5-Provide M&C Center Personnel Interface for Maint

1.38.2 MCM Winter Maintenance Management

This equipment package manages winter road maintenance, tracking and controlling snow plow operations, roadway treatment (e.g., salt spraying and other material applications) based on weather information.
This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.1-Schedule M&C Activities
9.2.2-Status Current M&C Activities
9.2.3.1-Determine Winter Roadway Treatment Needs
9.2.3.4-Manage M&C Resource Needs
9.2.4-Manage M&C Map Data
9.2.5-Provide M&C Center Personnel Interface for Maint
9.2.8-Manage M&C Materials
9.4.2-Collect Environmental Data

1.38.3 MCV Winter Maintenance

This equipment package supports snow plow operations and other roadway treatments (e.g., salt spraying and other material applications).
This Equipment Package has the following Pspecs:

9.1.1-Manage M&C Systems On-Board
9.1.2-Collect M&C Vehicle Data On-Board
9.1.6-Provide M&C Vehicle Operator Interface for Maint

1.38.4 TMC Incident Dispatch Coordination/Communication

This equipment package provides the capability for an incident response formulation function minimizing 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.
This Equipment Package has the following Pspecs:

1.1.2.2-Process Traffic Data
1.1.4.1-Retrieve Traffic Data
1.1.5-Exchange Data with Other Traffic Centers
1.2.1-Select Strategy
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents
1.3.2.3-Review and Classify Planned Events
1.3.2.6-Manage Traffic Routing

1.3.3-Respond to Current Incidents
1.3.4.1-Retrieve Incident Data
1.3.4.2-Provide Traffic Operations Personnel Incident Data Interface
1.3.4.3-Provide Media Incident Data Interface
1.3.4.4-Update Incident Display Map Data
1.3.4.5-Manage Resources for Incidents
1.3.5-Manage Incident Response Planning
1.3.6-Traffic Disaster Response Control
1.3.7-Traffic Evacuation Control
1.6.2.1-Exchange Data with Rail Operations

1.38.5 Vehicle Location Determination

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.39 MC07-Roadway Maintenance and Construction – Supporting Equipment Packages

1.39.1 MCM Maintenance Decision Support (Equipment Packages*)

This equipment package recommends maintenance courses of action based on current and forecast environmental and road conditions and additional application specific information. Decisions are supported through understandable presentation of filtered and fused environmental and road condition information for specific time horizons as well as specific maintenance recommendations that are generated by the system based on this integrated information. The recommended courses of action are supported by information on the anticipated consequences of action or inaction, when available.

This Equipment Package has the following Pspecs:

9.2.3.3-Provide Maintenance Decision Support
9.2.5-Provide M&C Center Personnel Interface for Maint

1.39.2 MCM Roadway Maintenance and Construction (Equipment Packages*)

This equipment package provides overall management and support for routine maintenance on a roadway system or right-of-way. Services managed are landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.). Environmental conditions information is also received from various weather sources to aid in scheduling routine maintenance activities.

This Equipment Package has the following Pspecs:

9.1.4-Manage M&C Vehicle Fleet
9.1.7-Process Road Network Information
9.2.1-Schedule M&C Activities
9.2.2-Status Current M&C Activities
9.2.3.2-Determine Roadway M&C Needs
9.2.3.4-Manage M&C Resource Needs
9.2.3.5-Collect Roadside Equipment Status
9.2.4-Manage M&C Map Data
9.2.5-Provide M&C Center Personnel Interface for Maint

9.2.6.3-Operate Infrastructure Monitoring Devices
9.2.8-Manage M&C Materials
9.4.2-Collect Environmental Data

1.39.3 MCV Infrastructure Monitoring (Equipment Packages*)

This on-board equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). It includes vehicle-based sensors that directly monitor the infrastructure, communications that allow roadway-based infrastructure monitoring sensors to be controlled and read, and data communications that allows collected infrastructure condition information to be reported back to a center.

This Equipment Package has the following Pspecs:

9.1.1-Manage M&C Systems On-Board

1.39.4 MCV Roadway Maintenance and Construction (Equipment Packages*)

This equipment package includes the on-board systems that support routine non-winter maintenance on a roadway system or right-of-way. Routine maintenance includes landscape maintenance, hazard removal (roadway debris, dead animals), routine maintenance activities (roadway cleaning, grass cutting), and repair and maintenance of both ITS and non-ITS equipment on the roadway (e.g., signs, traffic controllers, traffic detectors, dynamic message signs, traffic signals, etc.).

This Equipment Package has the following Pspecs:

9.1.1-Manage M&C Systems On-Board
9.1.2-Collect M&C Vehicle Data On-Board
9.1.6-Provide M&C Vehicle Operator Interface for Maint

1.39.5 Roadway Infrastructure Monitoring (Equipment Packages*)

This equipment package monitors the condition of pavement, bridges, tunnels, associated hardware, and other transportation-related infrastructure (e.g., culverts). It includes sensors that monitor the infrastructure and the communications necessary to report this data to a center or vehicle-based maintenance system.

This Equipment Package has the following Pspecs:

1.1.1.6-Collect Infrastructure Sensor Data

1.39.6 Traffic Maintenance (Equipment Packages*)

This equipment package provides monitoring and remote diagnostics of field equipment to detect field equipment failures, issues problem reports, and tracks the repair or replacement of the failed equipment.

This Equipment Package has the following Pspecs:

1.1.1.2-Collect and Process Sensor Fault Data
1.1.4.4-Update Traffic Display Map Data
1.2.8.1-Collect Indicator Fault Data
1.2.8.2-Maintain Indicator Fault Data Store
1.2.8.3-Provide Device Fault Interface for M and C
1.2.8.4-Provide Traffic Operations Personnel Indicator Fault Interface

1.39.7 Vehicle Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.

This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.40 MC08-Work Zone Management – Supporting Equipment Packages

1.40.1 MCM Work Zone Management (Equipment Packages*)

This equipment package remotely monitors and supports work zone activities, controlling traffic through portable dynamic message signs (DMS) and informing other groups of activity (e.g., ISP, TM, other maintenance and construction centers) for better coordination management. Work zone speeds and delays are provided to the motorist prior to the work zones.

This Equipment Package has the following Pspecs:

9.2.1-Schedule M&C Activities
9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.1.1-Operate Work Zone Devices
9.3.2.2-Collect Work Zone Data
9.3.2.3-Generate Work Zone Information for Distribution

1.40.2 MCV Work Zone Support (Equipment Packages*)

This equipment package provides communications and support for local management of a work zone.

This Equipment Package has the following Pspecs:

9.3.1.2-Operate WZ Devices On-Board
9.3.2.1-Status Work Zone Activity
9.3.2.4-Provide M&C Field Personnel Interface for Work Zones

1.40.3 Roadway Work Zone Traffic Control (Equipment Packages*)

This equipment package directs activity in work zones, controlling traffic through portable dynamic message signs (DMS) and informing other groups of activity (e.g., ISP, TM, other maintenance and construction centers) for better coordination management. Work zone speeds and delays are provided to the motorist prior to the work zones

This Equipment Package has the following Pspecs:

1.2.7.9-Process Roadway Information Data
1.3.1.3-Process Traffic Images

1.40.4 TMC Work Zone Traffic Management (Equipment Packages*)

This equipment package supports coordination with maintenance systems so that work zones are established that have minimum traffic impact. Traffic control strategies are implemented to further mitigate traffic impacts associated with work zones that are established.

This Equipment Package has the following Pspecs:

1.2.4.4-Output Roadway Information Data
1.3.1.1-Analyze Traffic Data for Incidents
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents

1.41 MC09-Work Zone Safety Monitoring

1.41.1 MCM Work Zone Safety Management

This equipment package remotely monitors work zone safety systems that detect vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone.
This Equipment Package has the following Pspecs:

9.2.5-Provide M&C Center Personnel Interface for Maint
9.3.1.1-Operate Work Zone Devices
9.3.2.2-Collect Work Zone Data

1.41.2 MCV Vehicle Safety Monitoring

This equipment package detects vehicle intrusions in the vicinity of the vehicle and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone. This equipment package can be used for stationary work zones or in mobile applications where a safe zone is maintained around the moving vehicle.
This Equipment Package has the following Pspecs:

9.1.6-Provide M&C Vehicle Operator Interface for Maint
9.3.1.4-Monitor Crew Movement On-Board
9.3.2.1-Status Work Zone Activity
9.3.4.3-Detect Work Zone Intrusion On-Board
9.3.4.4-Provide On-Board Work Zone Intrusion Alert

1.41.3 Roadway Equipment Coordination

This equipment package coordinates field equipment that is distributed along the roadway by supporting direct communications between field equipment. This includes coordination between remote sensors and field devices (e.g., Dynamic Message Signs) and coordination between the field devices themselves (e.g., coordination between traffic controllers that are controlling adjacent intersections.).
This Equipment Package has the following Pspecs:

1.1.1.5-Provide Sensor Interface to Other Roadway Devices
1.2.7.8-Provide Device Interface to Other Roadway Devices

1.41.4 Roadway Work Zone Safety

This equipment package detects vehicle intrusions in work zones and warns crew workers and drivers of imminent encroachment. Crew movements are also monitored so that the crew can be warned of movement beyond the designated safe zone.
This Equipment Package has the following Pspecs:

9.3.1.3-Monitor Crew Movement
9.3.4.1-Detect Work Zone Intrusion
9.3.4.2-Provide Work Zone Intrusion Alert

1.42 MC10-Maintenance and Construction Activity Coordination – Supporting Equipment Packages

1.42.1 Emergency Response Management (Equipment Packages*)

This equipment package provides the strategic emergency response capabilities and broad inter-agency interfaces that are implemented for extraordinary incidents and disasters that require response from outside the local community. It provides the functional capabilities and interfaces commonly associated with Emergency Operations Centers. This equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This equipment package provides coordination between multiple allied agencies before and during emergencies to implement emergency response plans and track progress through the incident. It provides vital communications linkages which provide real-time information to emergency response personnel in the field.

This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.1.5-Manage Emergency Service Allocation Store
5.2-Provide Operator Interface for Emergency Data
5.3.1-Select Response Mode
5.5-Update Emergency Display Map Data
5.7.1-Assess System Status For Disasters
5.7.2-Provide Disaster Response Coordination
5.7.3-Assess System Status For Evacuation

1.42.2 MCM Work Activity Coordination (Equipment Packages*)

This equipment package disseminates work activity schedules to other agencies. Work schedules are coordinated, factoring in the needs and activities of other agencies and adjacent jurisdictions.

This Equipment Package has the following Pspecs:

9.2.1-Schedule M&C Activities
9.2.2-Status Current M&C Activities
9.2.3.4-Manage M&C Resource Needs
9.2.5-Provide M&C Center Personnel Interface for Maint

1.42.3 TMC Work Zone Traffic Management (Equipment Packages*)

This equipment package supports coordination with maintenance systems so that work zones are established that have minimum traffic impact. Traffic control strategies are implemented to further mitigate traffic impacts associated with work zones that are established.

This Equipment Package has the following Pspecs:

1.2.4.4-Output Roadway Information Data
1.3.1.1-Analyze Traffic Data for Incidents
1.3.2.1-Store Possible Incident Data
1.3.2.2-Review and Classify Possible Incidents

1.42.4 Transit Center Multi-Modal Coordination (Equipment Packages*)

This equipment package provides the transit management subsystem the capability to determine the need for transit priority on routes and at certain intersections and request transit vehicle priority at these locations. It also supports schedule coordination between transit properties and coordinates with other surface and air transportation modes. As part of schedule coordination, this equipment package shares transit transfer cluster (a collection of stops, stations, or terminals where transfers can be made conveniently) and transfer point information between Multimodal Transportation Service Providers, Transit Agencies, and ISPs.

This Equipment Package has the following Pspecs:

- 4.1.2.4-Provide Transit Vehicle Correction Data Output Interface
- 4.1.4-Manage Transit Vehicle Deviations
- 4.1.5-Provide Transit Vehicle Status Information
- 4.1.6-Manage Transit Vehicle Operations
- 4.1.7-Provide Transit Vehicle Deviation Data Output Interface
- 4.2.3.2-Generate Transit Schedules
- 4.2.3.3-Produce Transit Service Data for External Use
- 4.2.3.7-Provide Interface for Other Transit Management Data
- 4.2.3.8-Provide Interface for Transit Service Raw Data

1.43 ATIS1-Broadcast Traveler Information- Supporting Equipment Packages

1.43.1 Basic Information Broadcast (Equipment Packages*)

This Equipment package provides the capabilities to collect, process, store, bill, and disseminate traveler information including traveler, transit, ride matching, traffic, and parking information. The traveler information shall include maintaining a database of local area services available to travelers with up-to-the-minute information and providing an interactive connectivity between, sponsors, and providers of services. The transit information shall include the latest available information on transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence. The traffic information shall include latest available information on traffic and highway conditions, and current situation information in real-time including incidents, road construction, recommended routes, current speeds on specific routes, current parking conditions in key areas, schedules for any current or soon to start events, and current weather situations. This Equipment package shall also provide users with real-time travel related information while they are traveling, and disseminate to assist the travelers in making decisions about transfers and modification of trips. These capabilities shall be provided using equipment such as a fixed facility with a communications system such as a data Subcarrier multiplexing device.
This Equipment Package has the following Pspecs:

1.1.4.5-Provide Media System Traffic Data Interface
1.1.4.6-Provide Traffic Data Retrieval Interface
4.1.8-Provide Transit Operations Data Distribution Interface
6.1.1-Provide Trip Planning Information to Traveler
6.2.1.1-Collect Traffic Data for Advisory Messages
6.2.1.3-Collect Transit Data for Advisory Messages
6.2.1.4-Provide Traffic and Transit Broadcast Messages
6.2.1.5-Provide ISP Operator Broadcast Parameters Interface
6.2.4-Collect Yellow Pages Data
6.5.1-Collect and Update Traveler Information
7.4.2-Collect Price Data for ITS Use

1.43.2 Personal Basic Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Basic Information Broadcast Equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information from their Personal Information Access Subsystem to include their homes, place of work, major trip generation sites, personal portable devices, and over multiple types of electronic media such as facsimile machines, portable AM/FM radios, and a pager processor.
This Equipment Package has the following Pspecs:

6.8.3.2-Provide Traveler with Personal Travel Information
6.8.3.3-Provide Traveler Personal Interface

1.43.3 Remote Basic Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Basic Information Broadcast Equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information at the Remote Traveler Support Subsystem.
This Equipment Package has the following Pspecs:

6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface

1.43.4 Basic Vehicle Reception (Equipment Packages*)

This Equipment package shall provide the capability for drivers to interface with the ISP Subsystem Basic Information Broadcast Equipment package and receive formatted traffic advisories including accurate traveling information concerning available travel options and their availability, and congestion information in their vehicle. These capabilities shall be based upon the reception of infrastructure information using in-vehicle devices such as an in-vehicle AM/FM radio with data Subcarrier connected with the existing audio system and a dash-mounted LCD.
This Equipment Package has the following Pspecs:

6.2.2-Prepare and Output In-vehicle Displays
6.2.5-Provide Driver Information Interface

1.44 ATIS2-Interactive Traveler Information- Supporting Equipment Packages

1.44.1 Interactive Infrastructure Information (Equipment Packages*)

This Equipment package shall have as prerequisite the capabilities of the Basic Information Broadcast Equipment package. This Equipment package augments the Basic Information Broadcast Equipment package by providing the capabilities for interactive traveler information.
This Equipment Package has the following Pspecs:

1.1.4.5-Provide Media System Traffic Data Interface
1.1.4.6-Provide Traffic Data Retrieval Interface
4.1.8-Provide Transit Operations Data Distribution Interface
6.1.3-Manage Multimodal Service Provider Interface
6.2.1.2-Provide Traffic and Transit Advisory Messages
6.2.1.3-Collect Transit Data for Advisory Messages
6.2.1.5-Provide ISP Operator Broadcast Parameters Interface
6.2.4-Collect Yellow Pages Data
6.5.1-Collect and Update Traveler Information
6.5.4-Provide Traveler Event Information
6.6.1-Provide Multimodal Route Selection
6.6.2.3-Provide Route Segment Data for Other Areas

6.6.2.4-Update Vehicle Route Selection Map Data
6.6.4-Select Transit Route
6.6.5-Select Other Routes
7.1.6-Distribute Advanced Charges and Fares
7.2.6-Distribute Advanced Tolls and Fares
7.3.2-Distribute Advanced Tolls and Parking Lot Charges
7.4.1.3-Process Driver Map Update Payments
7.4.1.4-Process Traveler Map Update Payments
7.4.1.6-Process Traveler Trip and Other Services Payments
7.4.2-Collect Price Data for ITS Use
7.4.3-Route Traveler Advanced Payments

1.44.2 Personal Interactive Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, and the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Personal Information Access Subsystem equipment such as cellular telephone, interactive TV, Personal Computer, and pager with alpha display using communication medium and equipment such as two-way radio, CATV, and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.8.3.1-Get Traveler Personal Request
6.8.3.2-Provide Traveler with Personal Travel Information
6.8.3.3-Provide Traveler Personal Interface
7.5.3-Provide Personal Traveler Card Interface

1.44.3 Remote Interactive Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Remote Traveler Support Subsystem equipment such as interactive TV and kiosk using communication medium and equipment such as CATV and wireline and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.3.1-Get Traveler Request
6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface
6.3.4-Update Traveler Display Map Data at Kiosk
7.3.4-Provide Remote Terminal Traveler Card Interface
7.5.2-Provide Transit User Roadside Traveler Card Interface
7.5.4-Provide Traveler Kiosk Traveler Card Interface

1.44.4 Interactive Vehicle Reception (Equipment Packages*)

This Equipment package shall provide the capability for drivers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Vehicle Subsystem equipment.
This Equipment Package has the following Pspecs:

6.2.2-Prepare and Output In-vehicle Displays
6.2.5-Provide Driver Information Interface

1.45 ATIS5-ISP Base Route Guidance- Supporting Equipment Packages

1.45.1 Infrastructure Provided Route Selection (Equipment Packages*)

This Equipment package shall have as prerequisite the capabilities of the Interactive Infrastructure Information Equipment package. In addition, this Equipment package provides the capability to provide specific directions to travelers by receiving origin and destination requests from travelers, generating route plans, returning the calculated plans to the users, and then potentially logging the route plans with Traffic Management Subsystem. Route plans can include bicycle routes, walkways, skyways, and multi-use trails. This additional capability shall be provided using equipment such as a workstation type processor and software for route planning and traffic measurements along with additional communications capabilities including dialup lines, PCS telephones, and wireless data transceivers.
This Equipment Package has the following Pspecs:

1.1.4.6-Provide Traffic Data Retrieval Interface
6.1.1-Provide Trip Planning Information to Traveler
6.1.2-Confirm Traveler's Trip Plan
6.1.3-Manage Multimodal Service Provider Interface
6.6.1-Provide Multimodal Route Selection
6.6.2.1-Calculate Vehicle Route
6.6.2.2-Provide Vehicle Route Calculation Data
6.6.2.3-Provide Route Segment Data for Other Areas
6.6.2.4-Update Vehicle Route Selection Map Data
6.6.2.5-Provide ISP Operator Route Parameters Interface
6.6.3-Update Other Routes Selection Map Data
6.6.4-Select Transit Route
6.6.5-Select Other Routes

1.45.2 Personal Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.8.1.3-Process Personal Portable Device Location Data

1.45.3 Personal Provider-Based Route Guidance (Equipment Packages*)

This Equipment package coordinates with an ISP-Based route planning service to select a suggested route plan that is tailored to the traveler's preferences. Coordination may continue during the trip so that the route plan can be modified to account for new information. Many equipment configurations are possible including systems that provide a basic route plan to the traveler as well as more sophisticated systems that can provide transition by transition guidance to the traveler along a multi-modal route plan.
This Equipment Package has the following Pspecs:

6.8.1.1.1-Determine Personal Portable Device Guidance Method
6.8.1.1.2-Provide Personal Portable Device Dynamic Guidance
6.8.1.2-Provide Personal Portable Device Guidance Interface
6.8.1.4-Update Traveler Navigable Map Database
6.8.3.3-Provide Traveler Personal Interface

1.45.4 Remote Interactive Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Remote Traveler Support Subsystem equipment such as interactive TV and kiosk using communication medium and equipment such as CATV and wireline and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.3.1-Get Traveler Request
6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface
6.3.4-Update Traveler Display Map Data at Kiosk
7.3.4-Provide Remote Terminal Traveler Card Interface
7.5.2-Provide Transit User Roadside Traveler Card Interface
7.5.4-Provide Traveler Kiosk Traveler Card Interface

1.45.5 Vehicle Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.45.6 Vehicle Provider-Based Route Guidance (Equipment Packages*)

This Equipment package coordinates with an ISP-Based route planning service to select a suggested route plan that is tailored to the driver's preferences. Coordination continues during the trip so that the route plan can be modified to account for new information and vehicle probe data can be returned to the ISP. Many equipment configurations are possible including basic systems that provide only a route plan to the driver as well as systems that include the necessary on-board equipment to provide turn by turn route guidance following the selected route.
This Equipment Package has the following Pspecs:

6.7.2.1.1-Determine In-Vehicle Guidance Method
6.7.2.1.2-Provide Dynamic In-Vehicle Guidance
6.7.2.3-Provide Driver Guidance Interface
6.7.2.4-Update Vehicle Navigable Map Database

1.46 ATIS7-Yellow Pages and Reservation- Supporting Equipment Packages

1.46.1 Infrastructure Provided Yellow Pages & Reservation (Equipment Packages*)

This Equipment package shall have as prerequisite the capabilities of the Interactive Infrastructure Information Equipment package. In addition, this Equipment package provides the capability to provide specific traveler information, such as Yellow Pages information, with reservation capabilities and information on non-motorized transportation services (e.g., bicycle shops and parking accommodations).
This Equipment Package has the following Pspecs:

6.1.2-Confirm Traveler's Trip Plan
6.2.4-Collect Yellow Pages Data
6.2.6-Provide Yellow Pages Data and Reservations
6.5.1-Collect and Update Traveler Information
6.5.2-Provide Traveler Yellow Pages Information and Reservations
6.5.3-Register Yellow Pages Service Providers
6.6.2.3-Provide Route Segment Data for Other Areas
6.6.2.4-Update Vehicle Route Selection Map Data
7.2.6-Distribute Advanced Tolls and Fares
7.4.1.2-Process Yellow Pages Services Provider Payments
7.4.1.3-Process Driver Map Update Payments
7.4.1.4-Process Traveler Map Update Payments
7.4.1.6-Process Traveler Trip and Other Services Payments
7.4.3-Route Traveler Advanced Payments

1.46.2 Personal Interactive Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, and the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Personal Information Access Subsystem equipment such as cellular telephone, interactive TV, Personal Computer, and pager with alpha display using communication medium and equipment such as two-way radio, CATV, and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.8.3.1-Get Traveler Personal Request
6.8.3.2-Provide Traveler with Personal Travel Information
6.8.3.3-Provide Traveler Personal Interface
7.5.3-Provide Personal Traveler Card Interface

1.46.3 Remote Interactive Information Reception (Equipment Packages*)

This Equipment package shall provide the capability for travelers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Remote Traveler Support Subsystem equipment such as interactive TV and kiosk using communication medium and equipment such as CATV and wireline and wireless data transceivers.
This Equipment Package has the following Pspecs:

6.3.1-Get Traveler Request
6.3.2-Inform Traveler
6.3.3-Provide Traveler Kiosk Interface
6.3.4-Update Traveler Display Map Data at Kiosk
7.3.4-Provide Remote Terminal Traveler Card Interface
7.5.2-Provide Transit User Roadside Traveler Card Interface
7.5.4-Provide Traveler Kiosk Traveler Card Interface

1.46.4 Interactive Vehicle Reception (Equipment Packages*)

This Equipment package shall provide the capability for drivers to interface with the ISP Subsystem Infrastructure Equipment packages including the Interactive Infrastructure Information Equipment package, the Infrastructure Provided Route Selection, Yellow Pages and Reservation, and Dynamic Ridesharing Equipment packages. These capabilities shall be provided using the Vehicle Subsystem equipment.
This Equipment Package has the following Pspecs:

6.2.2-Prepare and Output In-vehicle Displays
6.2.5-Provide Driver Information Interface

1.47 ATIS08-Dynamic Ridesharing

1.48 CVO3-Electronic Clearance- Supporting Equipment Packages

1.48.1 CV Information Exchange (Equipment Packages*)

This equipment package supports the exchange of safety and credentials data among jurisdiction. The package also supports the exchange of safety and credentials data between agencies (for example, an administrative center and the roadside check facilities) within a single jurisdiction. Data are collected from multiple authoritative sources and packaged into snapshots (top-level summary and critical status information) and profiles (detailed and historical data).
This Equipment Package has the following Pspecs:

2.5.10-Manage CV Database Store

2.5.4-Communicate with Other Commercial Vehicle Administration System
2.5.6-Output Commercial Vehicle Enrollment Data to Roadside Facilities
2.5.8-Process Data Received from Roadside Facilities

1.48.2 CV Safety Administration (Equipment Packages*)

This Equipment package augments the Credentials and Taxes Administration Equipment package with safety data. This package ensures that safety criteria are available for automated roadside safety checks. It supports the collection and review of carrier safety data and determines the carrier safety rating.
This Equipment Package has the following Pspecs:

2.5.4-Communicate with Other Commercial Vehicle Administration System
2.5.5-Manage Commercial Vehicle Credentials and Enrollment
2.5.8-Process Data Received from Roadside Facilities
5.4.6-Process CV Violations

1.48.3 Citation and Accident Electronic Recording (Equipment Packages*)

The equipment package documents violations and forwards the information to the Commercial vehicle if available and to the CVAS for processing as part of the normal credentials processing package
This Equipment Package has the following Pspecs:

2.3.3.5-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.6-Provide Commercial Vehicle Reports

1.48.4 Roadside Electronic Screening (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Check Subsystem the capabilities for two-way communication with approaching properly equipped commercial vehicles at mainline speeds, reading tags for automated vehicle identification and credential checking. There will be a capability to appropriately screen all vehicles, not just those that are equipped. This Equipment package shall be able to process the data from the commercial vehicles along with accessed database information to determine whether a pull-in message is needed or to generate random pull-in messages with provisions for facility operators and enforcement officials to have manual override capabilities. Support shall be provided to both interstate and intrastate carriers.
This Equipment Package has the following Pspecs:

2.3.1-Produce Commercial Vehicle Driver Message at Roadside
2.3.2.1-Administer Commercial Vehicle Roadside Credentials Database
2.3.2.2-Process Screening Transactions
2.3.3.4-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.4-Detect Commercial Vehicle
2.3.5-Provide Commercial Vehicle Roadside Operator Interface
2.3.6-Provide Commercial Vehicle Reports

1.48.5 On-board CV Electronic Data (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Subsystem the capability for two-way data exchange between the vehicle and the roadside facility with the transmission of information such as status of driver, vehicle, and carrier IDs and cargo information. The driver, vehicle and carrier are identified via the tag so that actual weight from roadside mainline weigh-in-motion may be checked. This includes only the equipment on the commercial vehicle including a processor/tag for identification, especially a HAZMAT identification. The actual reading and processing required for the credential checking and weigh-in-motion will be performed by the roadside.
This Equipment Package has the following Pspecs:

2.2.3-Provide CV Driver Electronic Credential and Tax Filing Interface
2.3.7-Produce Commercial Vehicle Driver Message on Vehicle
2.4.1-Communicate Commercial Vehicle On-board Data to Roadside
2.4.6-Provide Commercial Vehicle On-board Data Store Interface
2.6.2-Transmit Commercial Vehicle Tag Data

2.6.3-Provide Commercial Driver Tag Data Interface
2.6.4-Provide Lock Tag Data Interface
2.6.5-Manage Commercial Vehicle Tag Data Store

1.49 CVO4-CV Administrative Processes- Supporting Equipment Packages

1.49.1 Credentials and Taxes Administration (Equipment Packages*)

This Equipment package provides administrative capabilities for commercial vehicle operations including database management and administrator-to-roadside and administrator-to-administrator interfaces. For example, this Equipment package would manage the electronic credentials database for a state, perform reconciliation of mileage and fuel taxes (possibly post trip), and interface with roadsides performing credential checks. This equipment package communicates with similar packages in other CVAS locations to exchange credentials database information. Example locations would be state agency or regional offices that are involved with commercial vehicle operations.
This Equipment Package has the following Pspecs:

2.5.1-Manage Commercial Vehicle Trips and Clearances
2.5.10-Manage CV Database Store
2.5.2-Obtain Electronic Credential and Tax Filing Payment
2.5.4-Communicate with Other Commercial Vehicle Administration System
2.5.5-Manage Commercial Vehicle Credentials and Enrollment
2.5.6-Output Commercial Vehicle Enrollment Data to Roadside Facilities
2.5.7-Process Commercial Vehicle Violations
2.5.8-Process Data Received from Roadside Facilities
7.4.1.1-Process Commercial Vehicle Payments

1.49.2 CV Information Exchange (Equipment Packages*)

This equipment package supports the exchange of safety and credentials data among jurisdiction. The package also supports the exchange of safety and credentials data between agencies (for example, an administrative center and the roadside check facilities) within a single jurisdiction. Data are collected from multiple authoritative sources and packaged into snapshots (top-level summary and critical status information) and profiles (detailed and historical data).
This Equipment Package has the following Pspecs:

2.5.10-Manage CV Database Store
2.5.4-Communicate with Other Commercial Vehicle Administration System
2.5.6-Output Commercial Vehicle Enrollment Data to Roadside Facilities
2.5.8-Process Data Received from Roadside Facilities

1.49.3 Fleet Administration (Equipment Packages*)

This Equipment package provides vehicle tracking, dispatch, and reporting capabilities to fleet management center personnel. It gathers current road conditions and traffic information, prepares vehicle routes, and provides a fleet interface for toll collection. It also provides route plan information for network performance evaluation.
This Equipment Package has the following Pspecs:

2.1.1.1-Manage Commercial Fleet Electronic Credentials and Tax Filing
2.1.1.2-Manage Commercial Vehicle Routes
2.1.1.3-Provide Commercial Fleet Static Route
2.1.1.5-Manage Commercial Vehicle Fleet Map Data
2.1.1.6-Monitor Commercial Vehicle Route
2.1.2-Provide Commercial Vehicle Fleet Manager Interface
2.1.3-Provide Fleet Manager Commercial Vehicle Communications
2.1.5-Manage Driver Instruction Store
2.1.6-Manage Commercial Vehicle Incidents
2.6.1-Provide Commercial Vehicle Manager Tag Data Interface

1.49.4 Fleet Credentials and Taxes Management and Reporting (Equipment Packages*)

This Equipment package provides the Fleet and Freight Management Subsystem the capabilities to purchase credentials and file trip reports electronically by the fleet managers, to perform automated enrollment at the roadside facilities, and electronically manage the credentials checking by the roadside commercial vehicle inspectors. The electronic purchase shall be performed in accordance with developing standards such that a single integrated system for electronic payments might develop ensuring that deployment across multiple agency political boundaries is performed without degradation. Inherent to credential management shall be the management of the vehicles, with a prerequisite of the vehicle tracking software from the Fleet Administration Equipment package.
This Equipment Package has the following Pspecs:

2.1.1-Manage Commercial Fleet Electronic Credentials and Tax Filing
2.1.3-Provide Flt Mgr Electronic Credentials and Tax Filing Interface
2.2.1-Manage CV Electronic Credential and Tax Filing Interface

1.50 CVO6-Weigh-in-Motion- Supporting Equipment Packages

1.50.1 Roadside WIM (Equipment Packages*)

This Equipment package allows for roadside high speed weigh in motion. This package can be fixed to a location or mobile. It can include an interface to the credential check package and augment electronic credentials check with electronic weight check or it can be a stand alone package with display.
This Equipment Package has the following Pspecs:

2.3.1-Produce Commercial Vehicle Driver Message at Roadside
2.3.2.2-Process Screening Transactions
2.3.4-Detect and Classify Commercial Vehicles and Freight Equipment

1.50.2 On-board CV Electronic Data (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Subsystem the capability for two-way data exchange between the vehicle and the roadside facility with the transmission of information such as status of driver, vehicle, and carrier IDs and cargo information. The driver, vehicle and carrier are identified via the tag so that actual weight from roadside mainline weigh-in-motion may be checked. This includes only the equipment on the commercial vehicle including a processor/tag for identification, especially a HAZMAT identification. The actual reading and processing required for the credential checking and weigh-in-motion will be performed by the roadside.
This Equipment Package has the following Pspecs:

2.2.3-Provide CV Driver Electronic Credential and Tax Filing Interface
2.3.7-Produce Commercial Vehicle Driver Message on Vehicle
2.4.1-Communicate Commercial Vehicle On-board Data to Roadside
2.4.6-Provide Commercial Vehicle On-board Data Store Interface
2.6.2-Transmit Commercial Vehicle Tag Data
2.6.3-Provide Commercial Driver Tag Data Interface
2.6.4-Provide Lock Tag Data Interface
2.6.5-Manage Commercial Vehicle Tag Data Store

1.51 CVO7-Roadside CVO Safety- Supporting Equipment Packages

1.51.1 CV Information Exchange (Equipment Packages*)

This equipment package supports the exchange of safety and credentials data among jurisdiction. The package also supports the exchange of safety and credentials data between agencies (for example, an administrative center and the roadside check facilities) within a single jurisdiction. Data are collected from multiple authoritative sources and packaged into snapshots (top-level summary and critical status information) and profiles (detailed and historical data).
This Equipment Package has the following Pspecs:

2.5.10-Manage CV Database Store
2.5.4-Communicate with Other Commercial Vehicle Administration System
2.5.6-Output Commercial Vehicle Enrollment Data to Roadside Facilities
2.5.8-Process Data Received from Roadside Facilities

1.51.2 CV Safety Administration (Equipment Packages*)

This Equipment package augments the Credentials and Taxes Administration Equipment package with safety data. This package ensures that safety criteria are available for automated roadside safety checks. It supports the collection and review of carrier safety data and determines the carrier safety rating.
This Equipment Package has the following Pspecs:

2.5.4-Communicate with Other Commercial Vehicle Administration System
2.5.5-Manage Commercial Vehicle Credentials and Enrollment
2.5.8-Process Data Received from Roadside Facilities
5.4.6-Process CV Violations

1.51.3 Citation and Accident Electronic Recording (Equipment Packages*)

The equipment package documents violations and forwards the information to the Commercial vehicle if available and to the CVAS for processing as part of the normal credentials processing package
This Equipment Package has the following Pspecs:

2.3.3.5-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.6-Provide Commercial Vehicle Reports

1.51.4 Roadside Electronic Screening (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Check Subsystem the capabilities for two-way communication with approaching properly equipped commercial vehicles at mainline speeds, reading tags for automated vehicle identification and credential checking. There will be a capability to appropriately screen all vehicles, not just those that are equipped. This Equipment package shall be able to process the data from the commercial vehicles along with accessed database information to determine whether a pull-in message is needed or to generate random pull-in messages with provisions for facility operators and enforcement officials to have manual override capabilities. Support shall be provided to both interstate and intrastate carriers.
This Equipment Package has the following Pspecs:

2.3.1-Produce Commercial Vehicle Driver Message at Roadside
2.3.2.1-Administer Commercial Vehicle Roadside Credentials Database
2.3.2.2-Process Screening Transactions
2.3.3.4-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.4-Detect Commercial Vehicle
2.3.5-Provide Commercial Vehicle Roadside Operator Interface
2.3.6-Provide Commercial Vehicle Report

1.51.5 Roadside Safety and Security Inspection (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Check Subsystem the capabilities for operators to automate the roadside safety inspection process including the support of use of hand held devices to rapidly inspect the vehicle and driver. In addition this Equipment package provides the Roadside Check Subsystem the capabilities for operators to automate the roadside safety inspection process including the support of automated mainline speed reading of on-board safety data to rapidly screen the vehicle and driver. This Equipment package shall also provide the capabilities to collect, store, maintain, and provide safety data and access historical safety data after receiving identification from vehicles at mainline speeds or while stopped at the roadside. Results of screening and summary safety inspection can be written back onto the tag. The capabilities to process safety data and issue pull-in messages or provide warnings to the driver, carrier, and enforcement agencies shall be provided. These capabilities have a prerequisite of the Roadside Electronic Screening Equipment package and shall be provided primarily through the utilization of an additional safety database. Since a vehicle may cross jurisdiction boundaries during a trip, this

equipment package supports the concept of a last clearance event record (aka trip ticket) carried on the vehicle s tag. The last clearance event record reflects the results of the roadside verification action. For example, if the vehicle is pulled over in State A and undergoes credential, weight, and safety checks, the results of the clearance process are written to the vehicle s tag. If the vehicle continues the trip and passes a roadside station in State B, the State B station has access to the results of the previous pull-in because it can read the last clearance event record written by the State A roadside station.
This Equipment Package has the following Pspecs:

2.3.1-Produce Commercial Vehicle Driver Message at Roadside
2.3.3.1-Provide Commercial Vehicle Checkstation Communications
2.3.3.2-Provide Commercial Vehicle Inspector Handheld Terminal Interface
2.3.3.3-Administer Commercial Vehicle Roadside Safety Database
2.3.3.4-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.3.5-Carry-out Commercial Vehicle Roadside Inspection
2.3.4-Detect and Classify Commercial Vehicles and Freight Equipment
2.3.5-Provide Commercial Vehicle Roadside Operator Interface
2.3.6-Provide Commercial Vehicle Reports

1.51.6 On-board CV Electronic Data (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Subsystem the capability for two-way data exchange between the vehicle and the roadside facility with the transmission of information such as status of driver, vehicle, and carrier IDs and cargo information. The driver, vehicle and carrier are identified via the tag so that actual weight from roadside mainline weigh-in-motion may be checked. This includes only the equipment on the commercial vehicle including a processor/tag for identification, especially a HAZMAT identification. The actual reading and processing required for the credential checking and weigh-in-motion will be performed by the roadside.
This Equipment Package has the following Pspecs:

2.2.3-Provide CV Driver Electronic Credential and Tax Filing Interface
2.3.7-Produce Commercial Vehicle Driver Message on Vehicle
2.4.1-Communicate Commercial Vehicle On-board Data to Roadside
2.4.6-Provide Commercial Vehicle On-board Data Store Interface
2.6.2-Transmit Commercial Vehicle Tag Data
2.6.3-Provide Commercial Driver Tag Data Interface
2.6.4-Provide Lock Tag Data Interface
2.6.5-Manage Commercial Vehicle Tag Data Store

1.51.7 Fleet Administration (Equipment Packages*)

This Equipment package provides vehicle tracking, dispatch, and reporting capabilities to fleet management center personnel. It gathers current road conditions and traffic information, prepares vehicle routes, and provides a fleet interface for toll collection. It also provides route plan information for network performance evaluation.
This Equipment Package has the following Pspecs:

2.1.1.1-Manage Commercial Fleet Electronic Credentials and Tax Filing
2.1.1.2-Manage Commercial Vehicle Routes
2.1.1.3-Provide Commercial Fleet Static Route
2.1.1.5-Manage Commercial Vehicle Fleet Map Data
2.1.1.6-Monitor Commercial Vehicle Route
2.1.2-Provide Commercial Vehicle Fleet Manager Interface
2.1.3-Provide Fleet Manager Commercial Vehicle Communications
2.1.5-Manage Driver Instruction Store
2.1.6-Manage Commercial Vehicle Incidents
2.6.1-Provide Commercial Vehicle Manager Tag Data Interface

1.52 CVO8-On-Board CVO Safety- Supporting Equipment Packages

1.52.1 Citation and Accident Electronic Recording (Equipment Packages*)

The equipment package documents violations and forwards the information to the Commercial vehicle if available and to the CVAS for processing as part of the normal credentials processing package
This Equipment Package has the following Pspecs:

2.3.3.5-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.6-Provide Commercial Vehicle Reports

1.52.2 Roadside Safety and Security Inspection (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Check Subsystem the capabilities for operators to automate the roadside safety inspection process including the support of use of hand held devices to rapidly inspect the vehicle and driver. In addition this Equipment package provides the Roadside Check Subsystem the capabilities for operators to automate the roadside safety inspection process including the support of automated mainline speed reading of on-board safety data to rapidly screen the vehicle and driver. This Equipment package shall also provide the capabilities to collect, store, maintain, and provide safety data and access historical safety data after receiving identification from vehicles at mainline speeds or while stopped at the roadside. Results of screening and summary safety inspection can be written back onto the tag. The capabilities to process safety data and issue pull-in messages or provide warnings to the driver, carrier, and enforcement agencies shall be provided. These capabilities have a prerequisite of the Roadside Electronic Screening Equipment package and shall be provided primarily through the utilization of an additional safety database. Since a vehicle may cross jurisdiction boundaries during a trip, this equipment package supports the concept of a last clearance event record (aka trip ticket) carried on the vehicle s tag. The last clearance event record reflects the results of the roadside verification action. For example, if the vehicle is pulled over in State A and undergoes credential, weight, and safety checks, the results of the clearance process are written to the vehicle s tag. If the vehicle continues the trip and passes a roadside station in State B, the State B station has access to the results of the previous pull-in because it can read the last clearance event record written by the State A roadside station.
This Equipment Package has the following Pspecs:

2.3.1-Produce Commercial Vehicle Driver Message at Roadside
2.3.3.1-Provide Commercial Vehicle Checkstation Communications
2.3.3.2-Provide Commercial Vehicle Inspector Handheld Terminal Interface
2.3.3.3-Administer Commercial Vehicle Roadside Safety Database
2.3.3.4-Carry-out Commercial Vehicle Roadside Safety Screening
2.3.3.5-Carry-out Commercial Vehicle Roadside Inspection
2.3.4-Detect and Classify Commercial Vehicles and Freight Equipment
2.3.5-Provide Commercial Vehicle Roadside Operator Interface
2.3.6-Provide Commercial Vehicle Reports

1.52.3 On-board Cargo Monitoring (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Subsystem the capability to monitor both interstate and intrastate cargo safety such that enforcement and HAZMAT response teams can be provided with timely and accurate information. This includes only the equipment on board the cargo container such as a communication device, possibly the addition of a cell-based radio, and equipment for the processing and storage of cargo material. This can also include optional sensors for temperature, pressure, load leveling, or acceleration depending upon the items monitored. It is already expected that the cargo location devices such as GPS equipment and an integration processor already exist. These items are presented as part of the On-board Trip Monitoring Equipment package.
This Equipment Package has the following Pspecs:

2.4.2-Collect On-board Commercial Vehicle Sensor Data
2.4.3-Analyze Commercial Vehicle On-board Data
2.4.7-Manage CV On-board Data

1.52.4 On-board CV Safety and Security (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Subsystem the capability to collect and process on board vehicle and driver safety information to monitor the safety status and supply this information to the roadside facilities both at mainline speeds and while stopped for inspections. The capability to alert the commercial vehicle driver whenever there is a critical safety problem or potential emergency shall also be provided. These capabilities include only the equipment on the commercial vehicle including the sensors and processors to monitor the vehicle and driver with the information stored on the vehicle. When the information is transmitted to the roadside facility or after the trip, it will utilize the communication devices already in place. The package will also support onboard driver safety log maintenance and checking.
This Equipment Package has the following Pspecs:

2.3.7-Produce Commercial Vehicle Driver Message on Vehicle
2.4.1-Communicate Commercial Vehicle On-board Data to Roadside
2.4.2-Collect On-board Commercial Vehicle Sensor Data
2.4.3-Analyze Commercial Vehicle On-board Data
2.4.4-Provide Commercial Vehicle Driver Interface
2.4.5-Communicate Commercial Vehicle On-board Data to Vehicle Manager
2.4.6-Provide Commercial Vehicle On-board Data Store Interface
2.4.7-Manage CV On-board Data
2.6.2-Transmit Commercial Vehicle Tag Data

1.52.5 Fleet Maintenance Management (Equipment Packages*)

This Equipment package provides the capability to use vehicle mileage data to automatically generate preventative maintenance schedules for each specific vehicle by utilizing vehicle tracking data from the prerequisite tracking Equipment package. In addition, capability to automatically ensure that proper service personnel are provided information for maintenance activities and to record and verify that maintenance work was performed shall be provided.
This Equipment Package has the following Pspecs:

2.1.1.6-Monitor Commercial Vehicle Route
2.1.2-Provide Commercial Vehicle Fleet Manager Interface
2.1.3-Provide Fleet Manager Commercial Vehicle Communications

1.53 CVO10-HAZMAT Management- Supporting Equipment Packages

1.53.1 On-board Cargo Monitoring (Equipment Packages*)

This Equipment package provides the Commercial Vehicle Subsystem the capability to monitor both interstate and intrastate cargo safety such that enforcement and HAZMAT response teams can be provided with timely and accurate information. This includes only the equipment on board the cargo container such as a communication device, possibly the addition of a cell-based radio, and equipment for the processing and storage of cargo material. This can also include optional sensors for temperature, pressure, load leveling, or acceleration depending upon the items monitored. It is already expected that the cargo location devices such as GPS equipment and an integration processor already exist. These items are presented as part of the On-board Trip Monitoring Equipment package.
This Equipment Package has the following Pspecs:

2.4.2-Collect On-board Commercial Vehicle Sensor Data
2.4.3-Analyze Commercial Vehicle On-board Data
2.4.7-Manage CV On-board Data

1.53.2 Emergency Response Management (Equipment Packages*)

This Equipment package develops and stores emergency response plans and manages overall coordinated response to emergencies. It tracks the availability of resources and assists in the appropriate allocation of these resources for a particular emergency response. This Equipment package provides coordination between multiple allied agencies

before and during emergencies to implement emergency response plans and track progress through the incident. It provides vital communications linkages which provide real-time information to emergency response personnel in the field.
This Equipment Package has the following Pspecs:

5.1.1.3-Collect Incident And Event Data
5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.4-Manage Emergency Response
5.1.5-Manage Emergency Service Allocation Store
5.2-Provide Operator Interface for Emergency Data
5.3.1-Select Response Mode
5.5-Update Emergency Display Map Data
5.7.1-Assess System Status For Disasters
5.7.2-Provide Disaster Response Coordination
5.7.3-Assess System Status For Evacuation

1.53.3 Mayday Support (Equipment Packages*)

This Equipment package receives Mayday messages, determines an appropriate response, and either uses internal resources or contacts a local agency to provide that response. The nature of the emergency is determined based on the information in the mayday message as well as other inputs. This package effectively serves as an interface between automated mobile mayday systems and the local public safety answering point for messages which require a public safety response.
This Equipment Package has the following Pspecs:

5.1.2-Determine Coordinated Response Plan
5.1.3-Communicate Emergency Status
5.1.6-Process Mayday Messages
5.2-Provide Operator Interface for Emergency Data

1.53.4 Fleet HAZMAT Management (Equipment Packages*)

This Equipment package provides the Fleet and Freight Management Subsystem the capabilities to enhance the Fleet Administration Equipment package functions by adding HAZMAT tracking. The additional requirements to perform this function include enhanced processing and enhanced fleet management software. In order to effectively track HAZMAT cargo, communication interfaces to Information Service Providers, and Emergency Management Subsystems shall be provided, including additional communication software.
This Equipment Package has the following Pspecs:

2.1.1.4-Provide HAZMAT Incident Support

1.53.5 Vehicle Location Determination (Equipment Packages*)

This equipment package determines current location information and provides this information to other equipment packages that use the location information to provide various ITS services.
This Equipment Package has the following Pspecs:

6.7.2.2-Process Vehicle Location Data

1.53.6 Vehicle Mayday I/F (Equipment Packages*)

This Equipment package shall provide the capability for an in-vehicle manually initiated distress signal with cancel a prior issued manual request for help feature. This capability shall include automatically identifying that a collision had occurred using equipment such as collision detection sensors with interface to mayday type equipment that would automatically detect vehicle problems and for some cases, automatically send appropriate distress signals to the Emergency Management Subsystem.
This Equipment Package has the following Pspecs:

3.3.1-Provide Communications Function
3.3.2-Build Automatic Collision Notification Message
6.2.5-Provide Driver Information Interface
6.7.1.1-Build Driver Personal Security Message
6.7.1.2-Provide Driver In-vehicle Communications Function

1.54 AD01-ITS Data Mart

1.54.1 Government Reporting Systems Support (Equipment Packages*)

This equipment package selects and formats data residing in an ITS archive to facilitate local, state, and federal government data reporting requirements.
This Equipment Package has the following Pspecs:

8.8-Prepare Government Reporting Inputs

1.54.2 ITS Data Repository (Equipment Packages*)

This equipment package collects data and data catalogs from one or more data sources and stores the data in a focused repository that is suited to a particular set of ITS data users. This equipment package includes capabilities for performing quality checks on the incoming data, error notification, and archive to archive coordination. This equipment package supports a broad range of 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.
This Equipment Package has the following Pspecs:

8.1-Get Archive Data
8.2-Manage Archive
8.3-Manage Archive Data Administrator Interface
8.5-Process Archived Data User System Requests
8.7-Process On Demand Archive Requests
8.9-Manage Roadside Data Collection

1.54.3 Traffic and Roadside Data Archival (Equipment Packages*)

This equipment package collects and archives traffic, roadway, and environmental information for use in off-line planning, research, and analysis. The equipment package controls and collects information directly from equipment at the roadside, reflecting the deployment of traffic detectors that are used primarily for traffic monitoring and planning purposes rather than for traffic management.
This Equipment Package has the following Pspecs:

8.9-Manage Roadside Data Collection

1.54.4 CV Data Collection (Equipment Packages*)

This equipment package collects and stores commercial vehicle information that is collected in the course of Commercial Vehicle Administration Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

2.5.9-Manage Commercial Vehicle Archive Data

1.54.5 Emergency Data Collection (Equipment Packages*)

This equipment package collects and stores emergency information that is collected in the course of operations by the Emergency Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

5.6-Manage Emergency Services Data

1.54.6 Emissions Data Collection (Equipment Packages*)

This equipment package collects and stores air quality and emissions management information that is collected in the course of Emissions Management Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

1.5.9-Manage Pollution Archive Data

1.54.7 ISP Data Collection (Equipment Packages*)

This equipment package collects and stores traveler information that is collected in the course of operation of the ISP subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

6.1.5-Collect Service Requests and Confirmation for Archive
6.1.6-Manage Traveler Info Archive Data
7.4.1.7-Collect Payment Transaction Records

1.54.8 MCM Data Collection (Equipment Packages*)

This equipment package collects and stores maintenance and construction information that is collected in the course of operations by the Maintenance and Construction Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

9.2.7-Manage M&C Archive Data

1.54.9 Parking Data Collection (Equipment Packages*)

This equipment package collects and stores parking information that is collected in the course of parking system operations performed by the Parking Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

1.2.5.5-Manage Parking Archive Data

1.54.10 Roadway Data Collection (Equipment Packages*)

This equipment package collects traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications where data quality and completeness take precedence over real-time performance. This equipment package includes the sensors, supporting roadside infrastructure, and communications equipment that collects and transfers information to a center for archival.
This Equipment Package has the following Pspecs:

1.1.1.4-Manage Data Collection and Monitoring

1.54.11 Toll Data Collection (Equipment Packages*)

This equipment package collects and stores toll information that is collected in the course of toll operations performed by the Toll Administration Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

7.1.1.11-Manage Toll Archive Data

1.54.12 Traffic Data Collection (Equipment Packages*)

This equipment package collects and stores traffic information that is collected in the course of traffic operations performed by the Traffic Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

1.1.4.7-Manage Traffic Archive Data

1.54.13 Transit Data Collection (Equipment Packages*)

This equipment package collects and stores transit information that is collected in the course of transit operations performed by the Transit Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

4.2.4-Manage Transit Archive Data

1.55 AD02-ITS Data Warehouse- Supporting Equipment Packages

1.55.1 Government Reporting Systems Support (Equipment Packages*)

This equipment package selects and formats data residing in an ITS archive to facilitate local, state, and federal government data reporting requirements.
This Equipment Package has the following Pspecs:

8.8-Prepare Government Reporting Inputs

1.55.2 ITS Data Repository (Equipment Packages*)

This equipment package collects data and data catalogs from one or more data sources and stores the data in a focused repository that is suited to a particular set of ITS data users. This equipment package includes capabilities for performing quality checks on the incoming data, error notification, and archive to archive coordination. This equipment package supports a broad range of 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.
This Equipment Package has the following Pspecs:

8.1-Get Archive Data
8.2-Manage Archive
8.3-Manage Archive Data Administrator Interface
8.5-Process Archived Data User System Requests
8.7-Process On Demand Archive Requests
8.9-Manage Roadside Data Collection

1.55.3 On-Line Analysis and Mining (Equipment Packages*)

This equipment package provides advanced data analysis, summarization, and mining features that facilitate discovery of information, patterns, and correlations in large data sets. Multidimensional analysis, selective summarization and expansion of data details, and many other advanced analysis services may be offered by various implementations of this equipment package.
This Equipment Package has the following Pspecs:

8.6-Analyze Archive

1.55.4 Traffic and Roadside Data Archival (Equipment Packages*)

This equipment package collects and archives traffic, roadway, and environmental information for use in off-line planning, research, and analysis. The equipment package controls and collects information directly from equipment

at the roadside, reflecting the deployment of traffic detectors that are used primarily for traffic monitoring and planning purposes rather than for traffic management.
This Equipment Package has the following Pspecs:

8.9-Manage Roadside Data Collection

1.55.5 CV Data Collection (Equipment Packages*)

This equipment package collects and stores commercial vehicle information that is collected in the course of Commercial Vehicle Administration Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

2.5.9-Manage Commercial Vehicle Archive Data

1.55.6 Emergency Data Collection (Equipment Packages*)

This equipment package collects and stores emergency information that is collected in the course of operations by the Emergency Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

5.6-Manage Emergency Services Data

1.55.7 Emissions Data Collection (Equipment Packages*)

This equipment package collects and stores air quality and emissions management information that is collected in the course of Emissions Management Subsystem operations. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

1.5.9-Manage Pollution Archive Data

1.55.8 ISP Data Collection (Equipment Packages*)

This equipment package collects and stores traveler information that is collected in the course of operation of the ISP subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

6.1.5-Collect Service Requests and Confirmation for Archive
6.1.6-Manage Traveler Info Archive Data
7.4.1.7-Collect Payment Transaction Records

1.55.9 MCM Data Collection (Equipment Packages*)

This equipment package collects and stores maintenance and construction information that is collected in the course of operations by the Maintenance and Construction Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

9.2.7-Manage M&C Archive Data

1.55.10 Parking Data Collection (Equipment Packages*)

This equipment package collects and stores parking information that is collected in the course of parking system operations performed by the Parking Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

1.2.5.5-Manage Parking Archive Data

1.55.11 Roadway Data Collection (Equipment Packages*)

This equipment package collects traffic, road, and environmental conditions information for use in transportation planning, research, and other off-line applications where data quality and completeness take precedence over real-time performance. This equipment package includes the sensors, supporting roadside infrastructure, and communications equipment that collects and transfers information to a center for archival.
This Equipment Package has the following Pspecs:

1.1.1.4-Manage Data Collection and Monitoring

1.55.12 Toll Data Collection (Equipment Packages*)

This equipment package collects and stores toll information that is collected in the course of toll operations performed by the Toll Administration Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

7.1.1.11-Manage Toll Archive Data

1.55.13 Traffic Data Collection (Equipment Packages*)

This equipment package collects and stores traffic information that is collected in the course of traffic operations performed by the Traffic Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

1.1.4.7-Manage Traffic Archive Data

1.55.14 Transit Data Collection (Equipment Packages*)

This equipment package collects and stores transit information that is collected in the course of transit operations performed by the Transit Management Subsystem. This data can be used directly by operations personnel or it can be made available to other data users and archives in the region.
This Equipment Package has the following Pspecs:

4.2.4-Manage Transit Archive Data