

RITIS Functional Requirements

Barrier System Management

- 261 . 1 The center shall remotely control barrier systems for transportation facilities and infrastructure. Barrier systems include automated or remotely controlled gates, barriers and other systems that manage entry to roadways.
- 261 . 2 The center shall collect barrier system operational status.
- 261 . 3 The center shall collect barrier system fault data and send to the maintenance center for repair.
- 261 . 4 The center shall accept requests for barrier system activation from other centers and from center personnel to support emergency response and detours.

Basic Information Broadcast

- 3 . 1 The center shall collect, process, store, and disseminate traffic and highway condition information to travelers, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.
- 3 . 2 The center shall collect, process, store, and disseminate maintenance and construction information to travelers, including scheduled maintenance and construction work activities and work zone activities.
- 3 . 3 The center shall collect, process, store, and disseminate transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information to travelers.
- 3 . 4 The center shall collect, process, store, and disseminate parking information to travelers, including location, availability, and fees.
- 3 . 5 The center shall collect, process, store, and disseminate toll fee information to travelers.
- 3 . 6 The center shall collect, process, store, and disseminate weather information to travelers.
- 3 . 7 The center shall collect, process, store, and disseminate event information to travelers.
- 3 . 8 The center shall collect, process, store, and disseminate air quality information to travelers.
- 3 . 9 The center shall provide the capability to support requests from the media for traffic and incident data.
- 3 . 10 The center shall provide the capability for a system operator to control the type and update frequency of broadcast traveler information.

Center Secure Area Alarm Support

- 278 . 1 The center shall collect silent and audible alarms received from travelers in secure areas (such as transit stops, rest areas, park and ride lots, modal interchange facilities).
- 278 . 2 The center shall collect silent and audible alarms received from transit vehicles, originated by the traveler or the transit vehicle operator.

- 278. 3 After the alarm message has been received, the center shall generate an alarm acknowledgment to the sender.
- 278. 4 After the alarm message becomes a verified incident, the center shall determine the appropriate response.
- 278. 5 The center shall determine whether the alarm message indicates an emergency that requires the attention of public safety agencies, and forward alarm message data to the appropriate agency as necessary.
- 278. 6 The center shall forward the alarm message to center personnel and respond to the traveler or transit vehicle operator as directed by the personnel.

Center Secure Area Sensor Management

- 265. 1 The center shall remotely monitor and control security sensor data collected in secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways). The types of security sensor data include environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), infrastructure condition and integrity, intrusion and motion, and object detection sensors. The data may be raw or pre-processed in the field.
- 265. 2 The center shall remotely monitor and control security sensor data collected in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers). The types of security sensor data include environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors), intrusion and motion, and object detection sensors. The data may be raw or pre-processed in the field.
- 265. 3 The center shall remotely monitor and control security sensor data collected on-board transit vehicles. The types of security sensor data include environmental threat (e.g. chemical agent, toxic industrial chemical, biological, explosives, and radiological sensors) and object detection sensors. The data may be raw or pre-processed in the field.
- 265. 4 The center shall exchange security sensor data with other emergency centers.
- 265. 5 The center shall identify potential security threats based on collected security sensor data.
- 265. 6 The center shall verify potential security threats by correlating security sensor data from multiple sources.
- 265. 7 The center shall perform threat analysis based on correlations of security sensor and surveillance data.
- 265. 8 The center shall exchange threat analysis data with Alerting and Advisory Systems and use that data in local threat analysis processing.
- 265. 9 The center shall disseminate threat information to other agencies, including traffic, transit, maintenance, rail operations, and other emergency management centers.
- 265. 10 The center shall respond to control data from center personnel regarding security sensor data collection, processing, threat detection, and threat analysis.
- 265. 11 The center shall request activation of barriers and safeguards on request from center personnel.

Center Secure Area Surveillance

- 247. 1 The center shall remotely monitor video images and audio surveillance data collected in secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways). The data may be raw or pre-processed in the field.
- 247. 2 The center shall remotely monitor video images and audio surveillance data collected in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers). The data may be raw or pre-processed in the field.
- 247. 3 The center shall remotely monitor video images and audio surveillance data collected on-board transit vehicles. The data may be raw or pre-processed in the field.
- 247. 4 The center shall exchange surveillance data with other emergency centers.
- 247. 5 The center shall identify potential security threats based on collected security surveillance data.
- 247. 6 The center shall verify potential security threats by correlating security surveillance data from multiple sources.
- 247. 7 The center shall remotely control security surveillance devices in secure areas including facilities (e.g. transit yards) and transportation infrastructure (e.g. bridges, tunnels, interchanges, roadway infrastructure, and transit railways or guideways).
- 247. 8 The center shall remotely control security surveillance devices in traveler secure areas, which include transit stations, transit stops, rest areas, park and ride lots, and other fixed sites along travel routes (e.g., emergency pull-off areas and travel information centers).
- 247. 9 The center shall remotely control security surveillance devices on-board transit vehicles.
- 247. 10 The center shall match traveler video images against a database from the Alerting and Advisory Systems of known images that may represent criminals and terrorists.
- 247. 11 The center shall exchange traveler images with other emergency management centers to support traveler image matching.
- 247. 12 The center shall respond to control data from center personnel regarding security surveillance data collection, processing, threat detection, and image matching.

Collect Traffic Surveillance

- 6 . 1 The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center.
- 6 . 2 The center shall monitor, analyze, and distribute traffic images from CCTV systems under remote control of the center.
- 6 . 3 The center shall monitor, analyze, and store multimodal crossing and high occupancy vehicle (HOV) lane sensor data under remote control of the center.
- 6 . 4 The center shall distribute road network conditions data (raw or processed) based on collected and analyzed traffic sensor and surveillance data to other centers.
- 6 . 5 The center shall respond to control data from center personnel regarding sensor and surveillance data collection, analysis, storage, and distribution.

- 6 . 6 The center shall maintain a database of surveillance and sensors and the freeways, surface street and rural roadways, e.g. where they are located, to which part(s) of the network their data applies, the type of data, and the ownership of each link (that is, the agency or entity responsible for collecting and storing surveillance of the link) in the network.
- 6 . 7 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic data.

Commercial Vehicle and Freight Security

- 269 . 1 The center shall monitor the identity of a commercial vehicle driver and compare it with the planned driver, generating warnings if the tracked identities do not match the planned assignments.
- 269 . 2 The center shall monitor the freight equipment identity with the planned vehicle assignment, generating a warning if the tracked identities do not match the planned assignments.
- 269 . 3 The center shall receive data from commercial vehicles and freight equipment concerning potential critical security problem(s), including a breach or tamper event with information such as time, date, location, identities, and nature of the problem.
- 269 . 4 The center shall coordinate the response to security incidents and the sharing of security threat information involving commercial vehicles and freight equipment with other agencies including emergency management centers, intermodal freight shippers, and alerting/advisory systems.

Credentials and Taxes Administration

- 7 . 1 The center shall manage electronic credentials filing and processing for commercial vehicles.
- 7 . 2 The center shall manage the filing of appropriate taxes for the operation of commercial vehicles.
- 7 . 3 The center shall process requests for payments of electronic credentials and tax filing and maintain an interface to a Financial Institution.
- 7 . 4 The center shall exchange credentials and tax information with other commercial vehicle administration centers - either in other states or the federal government.
- 7 . 5 The center shall provide route restrictions information, including hazmat restrictions, to other centers and agencies for distribution to commercial vehicle operators. These centers and agencies may include commercial fleet and freight management operators, traveler information centers, digital map update providers, and other commercial vehicle administration centers.
- 7 . 6 The center shall use information on asset restrictions received from maintenance centers to develop the commercial vehicle route restrictions and process credentials applications.
- 7 . 7 The center shall provide an interface with commercial vehicle fleet and freight management centers to exchange audit and compliance review reports.
- 7 . 8 The center shall provide credentials information about commercial vehicle operators and carriers to authorized requestors such as insurance agencies.
- 7 . 9 The center shall receive and store information on commercial vehicle violations from enforcement agencies as part of the processing of credentials applications.

CV Data Collection

- 124 . 1 The center shall receive operational data from the roadside check systems as well as administration and credentials data.
- 124 . 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 124 . 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the commercial vehicle operations data or for the data itself.
- 124 . 4 The center shall be able to produce sample products of the data available.

CV Information Exchange

- 8 . 1 The center shall exchange information with roadside check facilities, including credentials and credentials status information, safety status information, daily site activity data, and citations.
- 8 . 2 The center shall exchange safety and credentials data among other commercial vehicle administration centers; includes border clearance status, credentials information, credentials status information, and safety status information.
- 8 . 3 The center shall package data concerning commercial vehicle safety and credentials into snapshots (top-level summary and critical status information).
- 8 . 4 The center shall package data concerning commercial vehicle safety and credentials into profiles (detailed and historical data).
- 8 . 5 The center shall provide commercial vehicle accident reports and citations to enforcement agencies.
- 8 . 6 The center shall provide commercial vehicle credentials and safety status information to authorized requestors such as insurance agencies.
- 8 . 7 The center shall provide reports to the commercial vehicle fleet manager regarding fleet activity through roadside facilities including accident reports, citations, credentials status information, and safety status information.

CV Safety Administration

- 9 . 1 The center shall provide commercial vehicle safety data to roadside check facilities.
- 9 . 2 The center shall collect and review safety inspection reports and violations from the roadside check facilities and pass on appropriate portions to other commercial vehicle administrative centers and commercial vehicle fleet operators.
- 9 . 3 The center shall notify enforcement agencies of commercial vehicle safety violations by individual commercial vehicles, drivers, or carriers.

Emergency Call-Taking

- 14 . 1 The center shall support the interface to the Emergency Telecommunications System (e.g. 911 or 7-digit call routing) to receive emergency notification information and provide it to the emergency system operator.
- 14 . 2 The center shall receive emergency call information from 911 services and present the possible incident information to the emergency system operator.
- 14 . 3 The center shall receive emergency call information from motorist call-boxes and present the possible incident information to the emergency system operator.

- 14 . 4 The center shall receive emergency call information from mayday service providers and present the possible incident information to the emergency system operator.
- 14 . 5 The center shall receive emergency notification information from other public safety agencies and present the possible incident information to the emergency system operator.
- 14 . 6 The center shall receive emergency notification information from public transit systems and present the possible incident information to the emergency system operator.
- 14 . 7 The center shall coordinate, correlate, and verify all emergency inputs, including those identified based on external calls and internal analysis of security sensor and surveillance data, and assign each a level of confidence.
- 14 . 8 The center shall send a request for remote control of CCTV systems from a traffic management center in order to verify the reported incident.
- 14 . 9 The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.
- 14 . 10 The center shall update the incident information log once the emergency system operator has verified the incident.
- 14 . 11 The center shall provide the capability for digitized map data to act as the background to the emergency information presented to the emergency system operator.

Emergency Commercial Vehicle Response

- 285 . 1 The center shall receive emergency notification information from commercial vehicles, commercial vehicle check stations, or commercial fleet operators and present the possible incident information to the emergency system operator. This may include detection of non-permitted transport of security sensitive hazmat, hazardous cargo spills, etc.
- 285 . 2 The center shall receive details of the cargo being carried by commercial vehicles from their commercial fleet manager for incidents involving potential hazardous materials.
- 285 . 3 The center shall forward the verified emergency information to the responding agency based on the location and nature of the emergency.
- 285 . 4 The center shall provide the capability to request Fleet and Freight Management to disable a specific vehicle in their fleet.

Emergency Data Collection

- 133 . 1 The center shall collect emergency service data, emergency vehicle management data, emergency vehicle data, sensor and surveillance data, threat data, and incident data.
- 133 . 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 133 . 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the emergency management data or for the data itself.
- 133 . 4 The center shall be able to produce sample products of the data available.

Emergency Dispatch

- 15 . 1 The center shall dispatch emergency vehicles to respond to verified emergencies under center personnel control.
- 15 . 2 The center shall store the current status of all emergency vehicles available for dispatch and those that have been dispatched.
- 15 . 3 The center shall relay location and incident details to the responding vehicles.
- 15 . 4 The center shall track the location and status of emergency vehicles responding to an emergency based on information from the emergency vehicle.
- 15 . 5 The center shall store and maintain the emergency service responses in an action log.
- 15 . 6 The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.
- 15 . 7 The center shall receive traffic images to support dispatch of emergency vehicles.
- 15 . 8 The center shall provide the capability to request remote control of traffic surveillance devices
- 15 . 9 The center shall coordinate response to incidents with other Emergency Management centers to ensure appropriate resources are dispatched and utilized.

Emergency Early Warning System

- 257 . 1 The center shall monitor information from Alerting and Advisory Systems such as the Information Sharing and Analysis Centers (ISACs), the National Infrastructure Protection Center (NIPC), the Homeland Security Advisory System (HSAS), etc. The information may include assessments (general incident and vulnerability awareness information), advisories (identification of threats or recommendations to increase preparedness levels), or alerts (information on imminent or in-progress emergencies).
- 257 . 2 The center shall provide the capability to correlate alerts and advisories, incident information, and security sensor and surveillance data.
- 257 . 3 The center shall broadcast wide-area alerts and advisories to traffic management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.
- 257 . 4 The center shall broadcast wide-area alerts and advisories to transit management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.
- 257 . 5 The center shall broadcast wide-area alerts and advisories to toll administration centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.
- 257 . 6 The center shall broadcast wide-area alerts and advisories to traveler information service providers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.
- 257 . 7 The center shall broadcast wide-area alerts and advisories to maintenance centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.

- 257. 8 The center shall broadcast wide-area alerts and advisories to other emergency management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.
- 257. 9 The center shall process status information from each of the centers that have been sent the wide-area alert.
- 257. 10 The center shall coordinate the broadcast of wide-area alerts and advisories with other emergency management centers.
- 257. 11 The center shall receive incident information from other transportation management centers to support the early warning system.
- 257. 12 The center shall present the alert and advisory information and the status of the actions taken in response to the alert by the other centers to the emergency system operator as received from other system inputs.
- 257. 13 The center shall support the entry of alert and advisory information directly from the emergency system operator.

Emergency Environmental Monitoring

- 241. 1 The center shall collect current and forecast road and weather information from weather service providers (such as the National Weather Service and value-added sector specific meteorological services).
- 241. 2 The center shall receive environmental probe information from its fleet of emergency vehicles.
- 241. 3 The center shall collect current road and weather information from roadway maintenance operations.
- 241. 4 The center shall assimilate current and forecast road conditions and surface weather information to support incident management.
- 241. 5 The center shall present the current and forecast road and weather information to the emergency system operator.
- 241. 6 The center shall provide aggregated or processed environmental probe information from its fleet of emergency vehicles to traffic management and maintenance centers.

Emergency Evacuation Support

- 253. 1 The center shall manage inter-agency coordination of evacuation operations, from initial planning through the evacuation process and reentry.
- 253. 2 The center shall develop and exchange evacuation plans with allied agencies prior to the occurrence of a disaster.
- 253. 3 The center shall provide an interface to the emergency system operator to enter evacuation plans and procedures and present the operator with other agencies' plans.
- 253. 4 The center shall coordinate evacuation destinations and shelter needs with shelter providers (e.g., the American Red Cross) in the region.
- 253. 5 The center shall provide evacuation information to traffic, transit, maintenance and construction, rail operations, and other emergency management centers as needed.
- 253. 6 The center shall request resources from transit agencies as needed to support the evacuation.

- 253 . 7 The center shall request traffic management agencies to implement special traffic control strategies and to control evacuation traffic, including traffic on local streets and arterials as well as the major evacuation routes.
- 253 . 8 The center shall provide traveler information systems with evacuation guidance including basic information to assist potential evacuees in determining whether evacuation is necessary and when it is safe to return.
- 253 . 9 The center shall monitor the progress or status of the evacuation once it begins and exchange tactical plans, prepared during the incident, with allied agencies.
- 253 . 10 The center shall monitor the progress of the reentry process.
- 253 . 11 The center shall submit evacuation information to toll administration centers along with requests for changes in the toll services or fee collection during an evacuation.

Emergency Response Management

- 16 . 1 The center shall provide strategic emergency response capabilities such as that of an Emergency Operations Center for large-scale incidents and disasters.
- 16 . 2 The center shall manage coordinated inter-agency responses to and recovery from large-scale emergencies. Such agencies include traffic management, transit, maintenance and construction management, rail operations, and other emergency management agencies.
- 16 . 3 The center shall provide the capability to implement response plans and track progress through the incident by exchanging incident information and distributing response status to allied agencies.
- 16 . 4 The center shall develop, coordinate with other agencies, and store emergency response plans.
- 16 . 5 The center shall track the availability of resources (including vehicles, roadway cleanup, etc.), request additional resources from traffic, maintenance, or other emergency centers if needed.
- 16 . 6 The center shall allocate the appropriate emergency services, resources, and vehicle (s) to respond to incidents, and shall provide the capability to override the current allocation to suit the special needs of a current incident.
- 16 . 7 The center shall receive event scheduling information from Event Promoters.
- 16 . 8 The center shall support remote control of field equipment normally under control of the traffic management center including traffic signals, dynamic message signs, gates, and barriers.
- 16 . 9 The center shall provide the capability to remotely control and monitor CCTV systems normally operated by a traffic management center.
- 16 . 10 The center shall provide the capability to request transit resource availability from transit centers for use during disaster and evacuation operations.
- 16 . 11 The center shall assimilate the status of the transit, traffic, rail, maintenance, and other emergency center services and systems to create an overall transportation system status, and disseminate to each of these centers and the traveling public via traveler information providers.
- 16 . 12 The center shall provide information to the media concerning the status of an emergency response.
- 16 . 13 The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.

- 16 . 14 The center shall provide the capability for center personnel to provide inputs to the management of incidents, disasters and evacuations.

Emergency Routing

- 251 . 1 The center shall collect current traffic and road condition information from traffic management centers for emergency vehicle route calculation.
- 251 . 2 The center shall receive inputs from traffic management and maintenance centers on the location and status of traffic control equipment and work zones along potential emergency routes.
- 251 . 3 The center shall receive status information from care facilities to determine the appropriate facility and its location.
- 251 . 4 The center shall receive asset restriction information from maintenance centers to support the dispatching of appropriate emergency resources.
- 251 . 5 The center shall calculate emergency vehicle routes, under center personnel control, based on information from traffic management and maintenance centers.
- 251 . 6 The center shall request and receive ingress and egress routes or other specialized emergency access routes from the traffic management center.
- 251 . 7 The center shall provide the capability to request special traffic control measures, such as signal preemption, from the traffic management center to facilitate emergency vehicle progress along the suggested route.
- 251 . 8 Once the route is calculated the route shall be provided to the dispatch function.
- 251 . 9 The center shall provide the capability for digitized map data to act as the background to the information presented to the emergency system operator.

Emissions Data Collection

- 126 . 1 The center shall collect air quality and emissions management data from various sources, including emissions sensors distributed along the roadside and wide-area sensors detecting pollution over a larger geographical area.
- 126 . 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 126 . 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the emissions management data or for the data itself.
- 126 . 4 The center shall be able to produce sample products of the data available.

Emissions Data Management

- 17 . 1 The center shall collect, analyze, and store vehicle emissions data collected from roadside sensors.
- 17 . 2 The center shall collect, analyze, and store wide area pollution data collected from sensors that may the general (wide area) environment.
- 17 . 3 The center shall configure and control emissions and air quality sensors located in the field.
- 17 . 4 The center shall maintain a database of pollution reference data including acceptable and tolerable emissions and pollution levels for the area served by the center.
- 17 . 5 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for emissions.

- 17 . 6 The center shall establish violation parameters, detect emissions violators, obtain the vehicle registration data from the appropriate State Department of Motor Vehicles (DMV) office, and then provide the capability to send violation information to a law enforcement agency.
- 17 . 7 The center shall distribute air quality information to the media, traveler information service providers, and traffic management centers. This information may be used for information to travelers or part of demand management programs.

Fleet Administration

- 18 . 1 The center shall send data concerning enrollment of commercial vehicles for electronic clearance and tax filing to the appropriate commercial vehicle administration center. The data may include driver and vehicle identification, safety inspections/status, carrier credentials, related citations, and accident information.
- 18 . 2 The center shall obtain and manage commercial vehicle routes for its fleet of vehicles, taking into account route restrictions, advance payment of tolls, HAZMAT restrictions, and current traffic and road conditions provided by traveler information systems.
- 18 . 3 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as the background for commercial vehicle fleet administration - includes commercial vehicle specific data such as route or HAZMAT restrictions.
- 18 . 4 The center shall monitor the locations and progress of commercial vehicles against their planned routes and raise appropriate warnings based on route monitoring parameters.
- 18 . 5 The center shall coordinate the response to security incidents and the sharing of security threat information involving commercial vehicles with other agencies including emergency management centers and alerting/advisory systems.

Fleet Credentials and Taxes Management and Reporti

- 19 . 1 The center shall send data concerning enrollment and purchase of commercial vehicles credentials and tax filing to the appropriate commercial vehicle administration center.
- 19 . 2 The center shall receive compliance review reports from the appropriate commercial vehicle administration centers concerning the operations of the commercial vehicle fleet, including concomitant out-of-service notifications, and carrier warnings/notifications.
- 19 . 3 The center shall provide audit data to the appropriate commercial vehicle administration center to support tax audits.
- 19 . 4 The center shall support an interface with a commercial vehicle driver that is acting in the role of a commercial vehicle fleet manager for the purposes of obtaining credentials, filing taxes and audit data, and receiving compliance reports and status information.

Fleet HAZMAT Management

- 20 . 1 The center shall track the routing and cargo information, including the manifest data plus the chemical characteristics of a hazardous materials (HAZMAT) load being carried by its fleet of commercial vehicles.

- 20 . 2 The center shall provide information concerning commercial vehicles carrying hazardous materials (HAZMAT) upon request from an emergency management center. The information includes the nature of the cargo being carried, identity of the vehicle and unloading instructions.

Fleet Maintenance Management

- 21 . 1 The center shall collect and process operational and safety data from its fleet of commercial vehicles - data includes mileage data, repairs, diagnostic data, and on-board safety system data.
- 21 . 2 The center shall use data from its fleet of commercial vehicles to schedule maintenance and repair activities.

Freight Administration and Management

- 22 . 1 The center shall collect data from the commercial vehicles carrying freight or from the freight equipment itself. Includes container, trailer, or chassis information regarding identity, type, location, brake wear data, mileage, seal number/type, door open/close status, chassis bare/covered status, tethered / untethered status, bill of lading, and sensor status.
- 22 . 2 The center shall provide the interface with intermodal freight shippers to setup transportation for freight equipment. Inputs to this include information about the shipper, consignee, commodities, pick-up and drop-off locations for freight equipment. Outputs include information about the driver and commercial vehicle that will be transporting the freight.
- 22 . 3 The center shall coordinate the shipment of cargo using freight equipment with intermodal freight depots. Information to be coordinated includes information regarding a freight transportation booking and the assigned driver and vehicle scheduled to transport the freight along with cargo movement logs, routing information, and cargo ID's.
- 22 . 4 The center shall track the progress of freight equipment as it moves from source to destination based on inputs from the commercial vehicles, the freight equipment, intermodal freight depots, shippers, and commercial vehicle administration centers that provide border clearance status information.
- 22 . 5 The center shall collect diagnostic information fro freight equipment to schedule preventative and corrective maintenance.
- 22 . 6 The center shall notify other security functions within the center of deviations in the movement of freight equipment from its planned route.

Government Reporting Systems Support

- 122 . 1 The center shall provide data from an ITS archive to federal, state, or local government reporting systems.
- 122 . 2 The center shall provide the capability to select data from an ITS archive for use in government reports.
- 122 . 3 The center shall provide the capability to format data from an ITS archive suitable for input into government reports.
- 122 . 4 The center shall support requests for ITS archived data from Government Reporting Systems.
- 122 . 5 The center shall provide the applicable meta-data for any ITS archived data to satisfy government reporting system requests. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.

HRI Traffic Management

- 23 . 1 The center shall remotely control highway-rail intersection (HRI) equipment located in the field.
- 23 . 2 The center shall accept collect highway-rail intersection (HRI) advisory or alert data from rail operations centers.
- 23 . 3 The center shall collect highway-rail intersection (HRI) equipment operational status and compare against the control information sent by the center.
- 23 . 4 The center shall provide the highway-rail intersection (HRI) equipment operational status to rail operations centers.
- 23 . 5 The center shall collect incident information related to a highway-rail intersection (HRI), such as intersection blockages or crashes or equipment malfunctions.
- 23 . 6 The center shall implement control plans to coordinate signalized intersections around highway-rail intersections (HRI), under control of center personnel, based on data from sensors and surveillance monitoring traffic conditions, incidents, equipment faults, pedestrian crossings, etc.

Incident Command

- 252 . 1 The center shall provide tactical decision support, resource coordination, and communications integration for Incident Commands that are established by first responders to support local management of an incident.
- 252 . 2 The center shall provide incident command communications with public safety, emergency management, transportation, and other allied response agency centers.
- 252 . 3 The center shall track and maintain resource information and action plans pertaining to the incident command.
- 252 . 4 The center shall share incident command information with other public safety agencies including resource deployment status, hazardous material information, rail incident information, evacuation advice as well as traffic, road, and weather conditions.
- 252 . 5 The center shall assess the status of responding emergency vehicles as part of an incident command.

Infrastructure Provided Dynamic Ridesharing

- 25 . 1 The center shall accept requests from traveler interface systems for ridesharing as part of a trip plan request.
- 25 . 2 The center shall provide a rideshare match based on origin and destination of the traveler's proposed trip, any routing constraints, preferences specified by the traveler, compatibility of this rideshare with rideshares confirmed by other travelers, the requesting traveler's eligibility data, and traffic data.
- 25 . 3 The center shall process rideshare requests by balancing the relative benefits of the rideshare to each rideshare participant.
- 25 . 4 The center shall arrange connections to transit or other multimodal services for portions of a multi-segment trip that includes ridesharing.
- 25 . 5 The center shall provide a confirmation of the traveler's rideshare match and provide the capability to support a payment transaction for the rideshare service.
- 25 . 6 The center shall store all rideshare matches and traveler eligibility data.

Infrastructure Provided Trip Planning

- 26 . 1 The center shall provide the capability to provide specific pre-trip and enroute directions to travelers (and drivers), including costs, arrival times, and transfer points.
- 26 . 2 The center shall include bicycle routes, walkways, skyways, and multi-use trails in the pre-trip and enroute directions it provides to travelers.
- 26 . 3 The center shall support on-line route guidance for travelers using personal devices (such as PDAs).
- 26 . 4 The center shall support on-line route guidance for drivers in vehicles.
- 26 . 5 The center shall support on-line route guidance for specialty vehicles, such as commercial vehicles.
- 26 . 6 The center shall generate route plans based on current and/or predicted conditions of the road network, scheduled maintenance and construction work activities, and work zone activities.
- 26 . 7 The center shall generate route plans based on transit services, including fares, schedules, and requirements for travelers with special needs.
- 26 . 8 The center shall generate route plans based on current asset restrictions, such as height and weight restrictions on tunnels or bridges.
- 26 . 9 The center shall generate route plans based on current or forecasted weather.
- 26 . 10 The center shall generate route plans based on ferry, rail, air, or other multimodal transportation data.
- 26 . 11 The center shall exchange route segment information with other centers outside the area served by the local center.
- 26 . 12 The center shall generate trips based on the use of more than one mode of transport.
- 26 . 13 The center shall use the preferences and constraints specified by the traveler in the trip request to select the most appropriate mode of transport.
- 26 . 14 The center shall provide the capability for the traveler to confirm the proposed trip plan.
- 26 . 15 The center shall log route plans, particularly for special vehicles such as those containing hazardous materials, over-sized vehicles, or motorcades, with a traffic center.
- 26 . 16 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used to determine vehicle and non-vehicle routes, trip planning, and on-line vehicle guidance.
- 26 . 17 The center shall provide the capability for center personnel to control route calculation parameters.

Infrastructure Provided Yellow Pages and Reservation

- 27 . 1 The center shall collect, process, store, and disseminate yellow pages information (such as lodging, restaurants, theaters, bicycle facilities, and other tourist activities) to travelers upon request.
- 27 . 2 The center shall support yellow pages service information and reservation requests from a vehicle.
- 27 . 3 The center shall support yellow pages service information and reservation requests from a traveler on-board a transit vehicle.

- 27 . 4 The center shall provide all yellow pages information based on the traveler's current location and filter the provided information accordingly.
- 27 . 5 The center shall manage registration of yellow pages service providers, store provider details, and transact payments for the provider's registration.
- 27 . 6 The center shall manage updates of digitized map data and provide periodic updates to traveler interface systems.
- 27 . 7 The center shall manage reservations and payment for yellow pages services and provide transaction success or failure details.

Interactive Infrastructure Information

- 28 . 1 The center shall collect, process, store, and disseminate customized traffic and highway condition information to travelers, including incident information, detours and road closures, recommended routes, and current speeds on specific routes upon request.
- 28 . 2 The center shall collect, process, store, and disseminate customized maintenance and construction information to travelers, including scheduled maintenance and construction work activities and work zone activities upon request.
- 28 . 3 The center shall collect, process, store, and disseminate customized transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information to travelers upon request.
- 28 . 4 The center shall collect, process, store, and disseminate customized parking information to travelers, including location, availability, and fees upon request.
- 28 . 5 The center shall collect, process, store, and disseminate customized toll fee information to travelers upon request.
- 28 . 6 The center shall collect, process, store, and disseminate customized weather information to travelers upon request.
- 28 . 7 The center shall collect, process, store, and disseminate customized multimodal transportation service information (for example, from ferry and airline operators), including transfer points and other information, to travelers upon request.
- 28 . 8 The center shall collect, process, store, and disseminate customized event information to travelers upon request.
- 28 . 9 The center shall collect, process, store, and disseminate customized air quality information to travelers upon request.
- 28 . 10 The center shall provide all traveler information based on the traveler's current location or a specific location identified by the traveler, and filter or customize the provided information accordingly.
- 28 . 11 The center shall accept traveler profiles for determining the type of personalized data to send to the traveler.
- 28 . 12 The center shall manage payment for services, such as tolls, transit fares, parking lot charges, map updates, and advanced payment for tolls, and provide transaction success or failure details.
- 28 . 13 The center shall support requests for traveler information and advanced payment for traveler services from commercial fleet operators.
- 28 . 14 The center shall provide the capability to exchange information with another traveler information service provider current or predicted data for road links that are outside the area served by the local supplier.

- 28 . 15 The center shall manage updates of digitized map data and provide updates to traveler interface systems upon request.
- 28 . 16 The center shall provide the capability to support requests from the media for traffic and incident data.
- 28 . 17 The center shall provide the capability for a system operator to control the type and update frequency of traveler information.

International CV Administration

- 31 . 1 The center shall receive domestic transportation and declaration information from Trade Regulatory Agencies such as U.S. Bureau of Immigration and Customs Enforcement(ICE), the U.S. Bureau of Customs and Border Protection (CBP), and their counterparts in Canada and Mexico.
- 31 . 2 The center shall provide an assessment regarding a commercial vehicle and driver at a border crossing. The assessment or clearance data will be forwarded on to the appropriate regulatory agencies and roadside check facilities operating at the border crossing.
- 31 . 3 The center shall provide border clearance status concerning commercial vehicles and their shipments to the roadside check facilities, the commercial vehicle fleet and freight management centers, intermodal freight shippers, other commercial vehicle administration centers, and the trade regulatory agencies.
- 31 . 4 The center shall receive and store border clearance event data from the roadside check facilities that are located near border crossings.

ISP Advanced Integrated Control Support

- 32 . 1 The center shall provide the capability to provide specific pre-trip and enroute guidance to travelers using personal devices (such as PDAs) and drivers based on current and/or predicted conditions of the road network.
- 32 . 2 The center shall exchange route segment information with other centers outside the area served by the local center.
- 32 . 3 The center shall use the preferences and constraints specified by the traveler in the trip request to select the most appropriate route.
- 32 . 4 The center shall provide the capability for the traveler to confirm the proposed trip plan.
- 32 . 5 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used to determine vehicle routes, trip planning, and on-line vehicle guidance.
- 32 . 6 The center shall provide route guidance plans and status information to traffic centers and other traveler information centers for the vehicles it is guiding.
- 32 . 7 The center shall provide the capability for center personnel to control route calculation parameters.

ISP Data Collection

- 125 . 1 The center shall collect traveler information data, such as parking lot data, rideshare data, road network use data, vehicle probe data, and other data from traveler information system operations.
- 125 . 2 The center shall collect traveler requests, confirmations, and payment transaction data for traveler services provided.

- 125 . 3 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 125 . 4 The center shall receive and respond to requests from ITS Archives for either a catalog of the traveler information data or for the data itself.
- 125 . 5 The center shall be able to produce sample products of the data available.

ISP Emergency Traveler Information

- 255 . 1 The center shall collect and provide to the traveler interface systems emergency evacuation information, including evacuation zones, shelter information, available transportation modes, road closures and detours, changes to transit services, and traffic and road conditions at the origin, destination, and along the evacuation routes.
- 255 . 2 The center shall provide evacuation information to shelter providers.
- 255 . 3 The center shall collect and provide wide-area alert information to the traveler interface system with region-specific data, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.
- 255 . 4 The center shall provide the capability for a system operator to control the type and update frequency of emergency and wide-area alert information distributed to travelers.

ISP Probe Information Collection

- 33 . 1 The center shall collect vehicle probe data from various sources, including vehicles under infrastructure-based route guidance and electronic toll collection points.
- 33 . 2 The center shall aggregate collected vehicle probe data (route segment identity and the time), calculate route segment travel times, route segment speeds, and route usage, and disseminate to other centers.
- 33 . 3 The center shall collect environmental probe data (air temperature, wind speed, surface temperature, etc.) from appropriately equipped vehicles.
- 33 . 4 The center shall aggregate collected environmental probe data, and disseminate environmental conditions to other centers.

ISP Traveler Data Collection

- 284 . 1 The center shall collect, process, and store traffic and highway condition information, including incident information, detours and road closures, event information, recommended routes, and current speeds on specific routes.
- 284 . 2 The center shall collect, process, and store maintenance and construction information, including scheduled maintenance and construction work activities and work zone activities.
- 284 . 3 The center shall collect, process, and store transit routes and schedules, transit transfer options, transit fares, and real-time schedule adherence information.
- 284 . 4 The center shall collect, process, and store parking information, including location, availability, and fees.
- 284 . 5 The center shall collect, process, and store toll fee information.
- 284 . 6 The center shall collect, process, and store weather information.
- 284 . 7 The center shall collect, process, and store event information.

284 . 8 The center shall collect, process, and store air quality information.

ITS Data Repository

10 . 1 The center shall collect data to be archived from one or more data sources.

10 . 2 The center shall collect data catalogs from one or more data sources. A catalog describes the data contained in the collection of archived data and may include descriptions of the schema or structure of the data, a description of the contents of the data; e.g., time range of entries, number of entries; or a sample of the data (e. g. a thumbnail).

10 . 3 The center shall store the archived data in a focused repository that is suited to a particular set of ITS data users.

10 . 4 The center shall include capabilities for performing quality checks on the incoming archived data.

10 . 5 The center shall include capabilities for error notification on the incoming archived data.

10 . 6 The center shall include capabilities for archive to archive coordination.

10 . 7 The center shall support a broad range of archived data management implementations, ranging from simple data marts that collect a focused set of data and serve a particular user community to large-scale data warehouses that collect, integrate, and summarize transportation data from multiple sources and serve a broad array of users within a region.

10 . 8 The center shall perform quality checks on received data.

10 . 9 The center shall provide the capability to execute methods on the incoming data such as cleansing, summarizations, aggregations, or transformations applied to the data before it is stored in the archive.

10 . 10 The center shall respond to requests from the administrator interface function to maintain the archive data.

10 . 11 When data or a catalog of data is received from the archive, the center shall generate the requested data product for the users systems.

10 . 12 For archive data requiring financial payment, the center shall process the financial requests and manage an interface to a Financial Institution.

Manage CV Driver Identification

276 . 1 The center shall send driver assignment data to the fleet of commercial vehicles including unique identification information that is used to authenticate a driver. This may include biometric parameters for a driver or an encoded Personal Identification Number (PIN) used to identify a driver.

276 . 2 The center shall receive the identities of the commercial vehicle drivers as they attempt to access a commercial vehicle.

276 . 3 The center shall send an alarm to the appropriate emergency management center when an unauthorized access has been attempted on a commercial vehicle.

276 . 4 The center shall send a command to the commercial vehicle to disable the vehicle when an unauthorized access has been attempted - this may be initiated within the center or based on inputs from the emergency management center.

Mayday Support

34 . 1 The center shall collect mayday messages from vehicles and drivers.

- 34 . 2 The center shall collect mayday messages from travelers via personal handheld devices.
- 34 . 3 The center shall acknowledge the request for emergency assistance, whether originated by the driver, automatically by the vehicle's safety systems, or by a traveler via a personal handheld device.
- 34 . 4 After the mayday becomes a verified incident, the center shall determine the appropriate response to the mayday message.
- 34 . 5 The center shall determine whether the mayday message indicates an emergency that requires the attention of public safety agencies, and forward mayday emergency data to the appropriate agency as necessary.
- 34 . 6 The center shall support the activation of remote controlled functions requested by a vehicle, such as requests to unlock doors.
- 34 . 7 The center shall request additional emergency details from or issue commands to the vehicle's security systems or vehicle driver if needed.
- 34 . 8 The center shall maintain a log of all mayday signals received from vehicles.
- 34 . 9 The center shall provide all mayday data to center personnel and respond to the vehicle, driver, or traveler using the portable handheld device as directed by the personnel.

MCM Automated Treatment System Control

- 210 . 1 The center shall remotely control automated roadway treatment systems. Treatments can be in the form of fog dispersion, anti-icing chemicals, etc.
- 210 . 2 The center shall remotely control the environmental sensors that upon detecting changes in environmental or atmospheric conditions, automatically activate roadway treatment systems.
- 210 . 3 The center shall collect automated roadway treatment system and associated environmental sensor operational status.
- 210 . 4 The center shall collect automated roadway treatment system and associated environmental sensor fault data and request repair.
- 210 . 5 The center shall accept requests for automated roadway treatment system activation from center personnel.

MCM Data Collection

- 211 . 1 The center shall collect maintenance and construction data (such as field equipment status, infrastructure status, maintenance and construction activity data) gathered from roadway, traffic, and other maintenance and construction sources.
- 211 . 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 211 . 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the maintenance and construction data or for the data itself.
- 211 . 4 The center shall be able to produce sample products of the data available.
- 211 . 5 The center shall provide data to Asset Management to be used in updating the status of assets in the inventory.

MCM Environmental Information Collection

- 212. 1 The center shall remotely control environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.
- 212. 2 The center shall remotely control environmental sensors that measure weather conditions including temperature, wind, humidity, precipitation, and visibility.
- 212. 3 The center shall remotely control environmental sensors on-board maintenance and construction vehicles that measure road and weather conditions including air and surface temperatures, wind speed, humidity, precipitation, visibility and other measures.
- 212. 4 The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services), data from traffic, emergency, and transit management, traveler information providers, and environmental data collected from sensors deployed on and about the roadway as well as the fleet of maintenance and construction vehicles.
- 212. 5 The center shall provide weather and road condition information to weather service providers and center personnel.
- 212. 6 The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.
- 212. 7 The center shall collect operational status for the roadside and vehicle-based environmental sensor equipment.
- 212. 8 The center shall collect fault data for the roadside and vehicle-based environmental sensor equipment for repair.

MCM Environmental Information Processing

- 143. 1 The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.
- 143. 2 The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services) and local environmental sensor data.
- 143. 3 The center shall use the various data inputs of environmental sensors and road weather data to develop a view of current and predicted road weather and road conditions.
- 143. 4 The center shall disseminate current and forecasted road weather and road condition information to weather service providers (such as the National Weather Service and value-added sector specific meteorological services) as well as other agencies including traffic, emergency, and transit management, traveler information providers, rail operations centers, media, and other maintenance management centers.
- 143. 5 The center shall provide value-added sector specific meteorological services with information on basic road facility and treatment information that supports forecasts for road conditions.

MCM Incident Management

- 213. 1 The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.

- 213. 2 The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, etc.
- 213. 3 The center shall exchange incident and threat information with emergency management centers as well as traffic management centers; including notification of existence of incident and expected severity, location, time and nature of incident.
- 213. 4 The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.
- 213. 5 The center shall respond to requests from emergency management to provide maintenance and construction resources to implement response plans, assist in clean up, verify an incident, etc. This may also involve coordination with traffic management centers and other maintenance centers.
- 213. 6 The center shall exchange road network status assessment information with emergency management and traffic management centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.
- 213. 7 The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.
- 213. 8 The center shall receive information indicating the damage sustained by transportation assets, derived from aerial surveillance, field reports, inspections, tests, and analyses to support incident management.

MCM Maintenance Decision Support

- 142. 1 The center shall provide the center personnel with tailored external information, including weather or road condition observations, forecasted weather information or road conditions, current usage of treatments and materials, available resources, equipment and vehicle availability, road network information, and source reliability information.
- 142. 2 The center shall tailor the decision support information to include filtering (selection from a large amount of external information), error reduction ('smoothing' the information), fusion (combination of disparate information to match the decision needs), and analysis (creating the decision).
- 142. 3 The center shall provide an interface to the center personnel to input control parameters for the decision support process and receive decisions or information presentation.
- 142. 4 The center shall provide dispatch information to maintenance and construction vehicles based on the outputs of the decision support system, including recommended roadway treatment actions.

MCM Roadway Maintenance and Construction

- 214. 1 The center shall maintain an interface with asset management systems to track the inventory, restrictions, repair needs and status updates of transportation assets (pavement, bridges, signs, etc.) including location, installation and materials information, vendor/contractor, current maintenance status, standard height, width, and weight restrictions.

- 214. 2 The center shall respond to requests from emergency management and traffic management centers for hazard removal, field equipment repair, and other roadway maintenance.

- 214. 3 The center shall exchange information with administrative systems to support the planning and scheduling of maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.

- 214. 4 The center shall provide emergency management and traffic management centers with information about scheduled maintenance and construction work activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations.

- 214. 5 The center shall collect the status and fault data from roadside equipment, such as traffic, infrastructure, and environmental sensors, highway advisory radio and dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, beacons, security sensors and surveillance equipment, etc., and provide a cohesive view of equipment repair needs.

- 214. 6 The center shall collect the status and fault data from traffic management centers, including data for traffic, infrastructure, and environmental sensors, highway advisory radio and dynamic message signs, automated roadway treatment systems, barrier and safeguard systems, cameras, traffic signals and override equipment, ramp meters, beacons, security sensors and surveillance equipment, etc., and provide a cohesive view of equipment repair needs.

- 214. 7 The center shall remotely control and collect data from infrastructure monitoring sensors located along the roadway infrastructure or on maintenance and construction vehicles.

- 214. 8 The center shall receive equipment availability and materials storage status information from storage facilities to support the scheduling of roadway maintenance and construction activities.

- 214. 9 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for the scheduling of roadway maintenance and construction activities.

- 214. 10 The center shall collect current and forecast traffic and weather information from traffic management centers and weather service providers (such as the National Weather Service and value-added sector specific meteorological services).

- 214. 11 The center shall dispatch and route maintenance and construction vehicle drivers and support them with route- specific environmental, incident, advisory, threat, alert, and traffic congestion information.

- 214. 12 The center shall manage an interface with center personnel to accept vehicle systems control information and remotely control maintenance and construction vehicle on-board equipment.

214. 13 The center shall track the status of roadway maintenance and construction activities by monitoring collected data from the dispatched vehicles and equipment.

MCM Speed Monitoring

215. 1 The center shall remotely control vehicle speed sensors typically placed in work zones; control parameters may include environmental and traffic conditions.
215. 2 The center shall collect operational status for the vehicle speed sensors; the status shall include logged information including measured speeds, warning messages displayed, and violation records.
215. 3 The center shall provide the capability to notify an enforcement agency when vehicle speeds in the work zone are in excess of the posted speed limit or are creating an unsafe condition based upon the current environmental or traffic conditions.
215. 4 The center shall collect fault data for the vehicle speed sensors for repair.

MCM Vehicle and Equipment Maintenance Managemem

216. 1 The center shall collect and analyze vehicle diagnostics information from maintenance and construction vehicles. The information includes engine temperature, mileage, tire wear, brake wear, belt wear, and any warnings or alarms concerning the operational condition of the vehicle and ancillary equipment.
216. 2 The center shall exchange information with equipment repair facilities including status and history of repairs concerning maintenance and construction vehicles. This information includes vehicle status and diagnostic information, vehicle utilization, and coordination of when vehicles will be available for preventative and corrective maintenance.
216. 3 The center shall schedule preventive and corrective vehicle maintenance with the equipment repair facility based on fleet health reports, maintenance records, vehicle utilization and vehicle availability schedules.

MCM Vehicle Tracking

217. 1 The center shall monitor the locations of all maintenance and construction vehicles and other equipment under its jurisdiction.
217. 2 The center shall present location data to center personnel for the fleet of maintenance and construction vehicles and other equipment.
217. 3 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for maintenance and construction vehicle tracking.

MCM Winter Maintenance Management

218. 1 The center shall respond to requests from emergency management and traffic management centers for hazard removal, field equipment repair, and other winter roadway maintenance.
218. 2 The center shall exchange information with administrative systems to support the planning and scheduling of winter maintenance activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.

- 218. 3 The center shall provide status information about scheduled winter maintenance activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, and the media.
- 218. 4 The center shall receive equipment availability and materials storage status information from storage facilities to support the scheduling of winter maintenance activities.
- 218. 5 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for the scheduling of winter maintenance activities.
- 218. 6 The center shall collect current and forecast traffic and weather information from traffic management centers and weather service providers (such as the National Weather Service and value-added sector specific meteorological services).
- 218. 7 The center shall dispatch and route winter maintenance vehicle drivers and support them with route- specific environmental, incident, advisory, threat, alert, and traffic congestion information.
- 218. 8 The center shall determine the need for roadway treatment based on current and forecasted weather information, current usage of treatments and materials, available resources, requests for action from other agencies, and recommendations from the Maintenance Decision Support system, specifically under winter conditions. This supports winter maintenance such as plowing, treating, anti-icing, etc.
- 218. 9 The center shall provide dispatch instructions for vehicle operators based on input parameters from center personnel, specifically for winter conditions. This could include a treatment route, treatment application rates, start and end times, and other treatment instructions.
- 218. 10 The center shall support remote control of on-board maintenance and construction vehicle systems and field equipment that is remotely controlled by the vehicle such as adjusting material application rates and spread patterns.
- 218. 11 The center shall assess the current status of all winter maintenance activities, including actual work activities performed, current locations and operational conditions of vehicles, materials and equipment inventories, field equipment status, environmental information, etc.

MCM Work Activity Coordination

- 219. 1 The center shall provide work zone activities affecting the road network including the nature of the maintenance or construction activity, location, impact to the roadway, expected time(s) and duration of impact, anticipated delays, alternate routes, and suggested speed limits. This information may be augmented with images that provide a visual indication of current work zone status and traffic impacts.
- 219. 2 The center shall provide status information about scheduled maintenance and construction activities including anticipated closures and impact to the roadway, alternate routes, anticipated delays, closure times, and durations. The information is provided to other management centers such as traffic, emergency, transit, traveler information providers, other maintenance centers, multimodal transportation providers, rail operations, and the media.

- 219. 3 The center shall collect and respond to feedback concerning scheduled maintenance and construction activities with other management centers such as traffic, emergency, transit, and rail operations.
- 219. 4 The center shall collect and disseminate asset restriction information levied on transportation asset usage based on infrastructure design, surveys, tests, or analyses. This includes standard facility design height, width, and weight restrictions, special restrictions such as spring weight restrictions, and temporary facility restrictions that are imposed during maintenance and construction.
- 219. 5 The center shall exchange information with administrative systems to support the planning and scheduling of maintenance and construction activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.
- 219. 6 The center shall exchange rail schedules and work plans with rail operations centers.

MCM Work Zone Management

- 220. 1 The center shall generate new work zone activity schedules for use by maintenance and construction vehicles, maintenance and construction operators, and for information coordination purposes.
- 220. 2 The center shall control the collection of work zone status information including video images from cameras located in or near the work zone.
- 220. 3 The center shall disseminate work zone information to other agencies and centers including traffic, transit, emergency management centers, other maintenance centers, traveler information providers, and the media.
- 220. 4 The center shall control traffic in work zones by providing remote control of dynamic message signs, highway advisory radio systems, gates, and barriers located in or near the work zone.
- 220. 5 The center shall exchange information with administrative systems to support the planning and scheduling of work zone activities. This information includes: equipment and consumables resupply purchase request status, personnel qualifications including training and special certifications, environmental regulations and rules that may impact maintenance activities, and requests and project requirements from contract administration.

MCM Work Zone Safety Management

- 221. 1 The center shall provide remote monitoring and control of work zone safety devices - including intrusion detection devices that have been installed in work zones or maintenance areas.
- 221. 2 The center shall provide remote monitoring and control of intrusion alert devices that have been installed in work zones or maintenance areas.
- 221. 3 The center shall collect status information of work zone safety device status from field equipment or the maintenance and construction vehicles.
- 221. 4 The center shall collect and store work zone data collected from work zone monitoring devices (such as intrusion detection or alert devices and speed monitoring devices) on-board the vehicle and at the roadside.

On-Line Analysis and Mining

- 123 . 1 The center shall support the interface with Archive Data User Systems for requests for analysis of the archive data.
- 123 . 2 The center shall provide the capability to perform activities such as data mining, data fusion, summarizations, aggregations, and recreation from archive data. This may include multidimensional analysis, selective summarization and expansion of data details, and many other advanced analysis services.
- 123 . 3 The center shall receive the user's systems requests and develop the request to retrieve the data from the archive.
- 123 . 4 The center shall respond to users systems requests for a catalog of the archived data analysis products available.
- 123 . 5 For archive analysis and data mining products requiring financial payment the center shall process the financial requests and manage an interface to a Financial Institution.

Rail Operations Coordination

- 55 . 1 The center shall exchange highway-rail intersection (HRI) information with rail operations centers. This information may include event schedules, requests for information from the Rail Operators, incident notification based on rail operations messages, and priority messages like notifications of a HAZMAT spill, equipment failure, or an intersection blockage.
- 55 . 2 The center shall receive highway-rail intersection (HRI) maintenance schedules, train schedules, and incident notifications from rail operations centers.
- 55 . 3 The center shall use the rail operations information to develop forecast HRI closure times and durations which may be applied in advanced traffic control strategies or delivered as enhanced traveler information.

Safeguard System Management

- 262 . 1 The center shall remotely control safeguard systems, equipment used to mitigate the impact of incidents on transportation infrastructure (e.g., blast shields, tunnel exhaust systems, etc.)
- 262 . 2 The center shall collect safeguard system operational status.
- 262 . 3 The center shall collect safeguard system fault data and send to the maintenance center for repair.
- 262 . 4 The center shall accept requests for safeguard system activation from other centers and from center personnel to support emergency response.

Service Patrol Management

- 236 . 1 The center shall dispatch roadway service patrol vehicles to identified incident locations.
- 236 . 2 The center shall store the current status of all service patrol vehicles available for dispatch and those that have been dispatched.
- 236 . 3 The center shall share incident information collected by the service patrol with traffic, maintenance and construction, and traveler information centers for incident management, incident notification to travelers, and incident cleanup.
- 236 . 4 The center shall track the location and status of service patrol vehicles.

TMC Environmental Monitoring

- 91 . 1 The center shall remotely control environmental sensors that measure road surface temperature, moisture, icing, salinity, and other measures.

- 91 . 2 The center shall remotely control environmental sensors that measure weather conditions including temperature, wind, humidity, precipitation, and visibility.
- 91 . 3 The center shall assimilate current and forecast road conditions and surface weather information using a combination of weather service provider information (such as the National Weather Service and value-added sector specific meteorological services), data from roadway maintenance operations, and environmental data collected from sensors deployed on and about the roadway.
- 91 . 4 The center shall provide weather and road condition information to weather service providers and center personnel.
- 91 . 5 The center shall respond to control data from center personnel regarding environmental sensor control and weather data collection and processing.

TMC Evacuation Support

- 254 . 1 The center shall coordinate planning for evacuation with emergency management centers - including pre-planning activities such as establishing routes, areas to be evacuated, timing, etc.
- 254 . 2 The center shall support requests from emergency management centers to preempt the current traffic control strategy, activate traffic control and closure systems such as gates and barriers, activate safeguard systems, or use driver information systems to support evacuation traffic control plans.
- 254 . 3 The center shall coordinate information and controls with other traffic management centers.
- 254 . 4 The center shall coordinate execution of evacuation strategies with emergency management centers - including activities such as setting closures and detours, establishing routes, updating areas to be evacuated, timing the process, etc.

TMC for AHS

- 81 . 1 The center shall remotely control AHS system field elements, by providing lane changing parameters, parameters for determination of vehicle suitability for particular AHS lanes, and other control information required for AHS operation.
- 81 . 2 The center shall maintain a log of all AHS check-in and check-out transactions received from the field AHS system regardless of whether they are successful or not.

TMC Freeway Management

- 82 . 1 The center shall remotely control systems to manage use of the freeways, including ramp meters, mainline metering, and lane controls.
- 82 . 2 The center shall collect operational status from ramp meters, mainline metering, and lane controls and compare against the control information sent by the center.
- 82 . 3 The center shall collect fault data from ramp meters, mainline metering, and lane controls.
- 82 . 4 The center shall implement control strategies, under control of center personnel, on some or all of the freeway network devices (e.g. ramp meters, mainline metering, and lane controls), based on data from sensors monitoring traffic conditions upstream, downstream, and queue data on the ramps themselves.

TMC HOV Lane Management

- 83 . 1 The center shall remotely control sensors to detect high-occupancy vehicle (HOV) lane usage.

- 83 . 2 The center shall remotely control driver information systems to notify users of lane status for lanes that become HOV or High Occupancy Toll (HOT) lanes during certain times of the day on freeways.
- 83 . 3 The center shall remotely control freeway control devices, such as ramp signals and mainline metering and other systems associated with freeway operations that control use of HOV lanes.
- 83 . 4 The center shall collect traffic flow measures and information regarding vehicle occupancy (i.e., lane usage) in HOV lanes.
- 83 . 5 The center shall monitor the use of HOV lanes and detect vehicles that do not have the required number of occupants.
- 83 . 6 The center shall collect operational status for the freeway control devices associated with HOV lane control.
- 83 . 7 The center shall collect fault data for the freeway control devices associated with HOV lane control for repair.
- 83 . 8 The center shall store violation parameters, detect HOV lane violators, obtain the vehicle registration data from the appropriate State Department of Motor Vehicles (DMV) office, and then provide the capability to send violation information to a law enforcement agency.

TMC Incident Detection

- 84 . 1 The center shall receive inputs from the Alerting and Advisory System concerning the possibility or occurrence of severe weather, terrorist activity, or other major emergency, including information provided by the Emergency Alert System.
- 84 . 2 The center shall collect and store traffic flow and image data from the field equipment to detect and verify incidents.
- 84 . 3 The center shall receive inputs concerning upcoming events that would effect the traffic network from event promoters, traveler information service providers, and intermodal freight depots.
- 84 . 4 The center shall exchange incident and threat information with emergency management centers as well as maintenance and construction centers; including notification of existence of incident and expected severity, location, time and nature of incident.
- 84 . 5 The center shall support requests from emergency management centers to remotely control sensor and surveillance equipment located in the field.
- 84 . 6 The center shall provide road network conditions and traffic images to emergency management centers to support the detection, verification, and classification of incidents.
- 84 . 7 The center shall provide video and traffic sensor control commands to the field equipment to detect and verify incidents.

TMC Incident Dispatch Coordination/Communication

- 85 . 1 The center shall exchange alert information and status with emergency management centers. The information includes notification of a major emergency such as a natural or man-made disaster, civil emergency, or child abduction for distribution to the public. The information may include the alert originator, the nature of the emergency, the geographic area affected by the emergency, the effective time period, and information and instructions necessary for the public to respond to the alert. This may also identify specific information that should not be released to the public.

- 85 . 2 The center shall coordinate planning for incidents with emergency management centers - including pre-planning activities for disaster response, evacuation, and recovery operations.
- 85 . 3 The center shall support requests from emergency management centers to remotely control sensor and surveillance equipment located in the field, provide special routing for emergency vehicles, and to provide responding emergency vehicles with signal preemption.
- 85 . 4 The center shall exchange incident and threat information with emergency management centers as well as maintenance and construction centers; including notification of existence of incident and expected severity, location, time and nature of incident.
- 85 . 5 The center shall respond to requests from emergency management to provide traffic management resources to implement special traffic control measures, assist in clean up, verify an incident, etc. This may also involve coordination with maintenance centers.
- 85 . 6 The center shall receive inputs concerning upcoming events that would effect the traffic network from event promoters, traveler information service providers, media, and rail operations centers.
- 85 . 7 The center shall provide road network conditions and traffic images to emergency management centers, maintenance and construction centers, and traveler information service providers.
- 85 . 8 The center shall exchange road network status assessment information with emergency management and maintenance centers including an assessment of damage sustained by the road network including location and extent of the damage, estimate of remaining capacity, required closures, alternate routes, necessary restrictions, and time frame for repair and recovery.
- 85 . 9 The center shall coordinate information and controls with other traffic management centers.
- 85 . 10 The center shall receive inputs from emergency management and transit management centers to develop an overall status of the transportation system including emergency transit schedules in effect and current status and condition of the transportation infrastructure.
- 85 . 11 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic incident management.

TMC Input to In-Vehicle Signing

- 86 . 1 The center shall format and output road condition and environmental information to field equipment that supports in-vehicle signage communications.
- 86 . 2 The center shall format and output advisory information, such as evacuation information, wide-area alerts, incident information, work zone intrusion information, and other special information to field equipment that supports in-vehicle signage communications.
- 86 . 3 The center shall format and output indicator and fixed sign information, such as actual intersection traffic signal states, stop, or yield signs to field equipment that supports in-vehicle signage communications.
- 86 . 4 The center shall receive system operational status from field equipment that supports in-vehicle signage communications.

- 86 . 5 The center shall receive system fault data from field equipment that supports in-vehicle signage communications.

TMC Multimodal Coordination

- 87 . 1 The center shall respond to requests from transit management centers for signal priority at one or more intersections along a particular transit route.
- 87 . 2 The center shall exchange information with transit management centers including details current transit routes, the level of service on each route, and the progress of individual vehicles along their routes.

TMC Multimodal Crossing Management

- 249 . 1 The center shall receive requests from non-highway traffic to cross at multimodal crossings for specified durations (such as draw bridges and miscellaneous other interference crossings between highway traffic and other modes such as river traffic, aircraft, etc.)
- 249 . 2 The center shall remotely control traffic signal controllers for use at major multimodal crossings.
- 249 . 3 The center shall remotely control driver information systems (such as dynamic messages signs, highway advisory radios (HAR), and equipment that controls warning lights and gates) to notify drivers of closure durations and times at multimodal crossings.
- 249 . 4 The center shall collect operational status for the equipment at multimodal crossings.
- 249 . 5 The center shall collect fault data for the equipment at multimodal crossings for repair.
- 249 . 6 The center shall receive and respond to requests for right-of-way at multimodal crossings.
- 249 . 7 The center shall collect and analyze the planned multimodal crossing closures as a possible incident.
- 249 . 8 The center shall distribute multimodal crossing information to other centers for dissemination to travelers.

TMC Probe Information Collection

- 88 . 1 The center shall collect probe data including traffic and road conditions from vehicles via roadside beacon field elements; the data may be aggregated and initial link time calculations performed in the field.
- 88 . 2 The center shall collect road condition data from probe-equipped transit vehicles via transit management centers; the data may be aggregated and preliminarily processed at the sending center.
- 88 . 3 The center shall collect traffic data from probe-equipped emergency vehicles via emergency management centers; the data may be aggregated and initial link time calculations performed at the sending center.
- 88 . 4 The center shall collect traffic data from traveler information centers based on data from their subscriber vehicles; the data may be aggregated and initial link time calculations performed at the sending center.
- 88 . 5 The center shall collect traffic data from toll administrative centers containing journey times between toll collection points for those vehicles equipped for electronic toll collection; the data may be aggregated and processed at the sending center.

- 88 . 6 The center shall assimilate current and forecast traffic and road conditions based on collected probe data and distribute to other centers for dissemination to travelers.
- 88 . 7 The center shall collect operational status for the roadside probe data collection equipment.
- 88 . 8 The center shall collect fault data for the roadside probe data collection equipment for repair.

TMC Regional Traffic Control

- 89 . 1 The center shall exchange traffic information with other traffic management centers, includes incident information, congestion data, traffic data, signal timing plans, and real-time signal control information.
- 89 . 2 The center shall exchange traffic control information with other traffic management centers, includes remote monitoring and control of traffic management devices (e.g. signs, sensors, signals, cameras, etc.).

TMC Reversible Lane Management

- 90 . 1 The center shall remotely control devices to detect traffic in reversible lanes, including wrong-way vehicles.
- 90 . 2 The center shall monitor the use of reversible lanes and detect wrong-way vehicles in reversible lanes using sensor and surveillance information, and the current lane control status (which direction the lane is currently operating).
- 90 . 3 The center shall remotely control automated reversible lane equipment and driver information systems (such as lane control signals) that control traffic in reversible lanes on surface streets.
- 90 . 4 The center shall remotely control automated reversible lane equipment and driver information systems (such as lane control signals) that control traffic in reversible lanes on freeways.
- 90 . 5 The center shall collect operational status for the reversible lane field equipment.
- 90 . 6 The center shall collect fault data for the reversible lane field equipment and send to the maintenance center for repair.
- 90 . 7 The center shall provide the capability for center personnel to control 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.

TMC Signal Control

- 92 . 1 The center shall remotely control traffic signal controllers.
- 92 . 2 The center shall accept notifications of right-of-way requests from pedestrians.
- 92 . 3 The center shall collect traffic signal controller operational status and compare against the control information sent by the center.
- 92 . 4 The center shall collect traffic signal controller fault data from the field.
- 92 . 5 The center shall implement control plans to coordinate signalized intersections, under control of center personnel, based on data from sensors and surveillance monitoring traffic conditions, incidents, emergency vehicle preemptions, the passage of commercial vehicles with unusual loads, equipment faults, pedestrian crossings, etc.

TMC Speed Monitoring

- 238 . 1 The center shall remotely control vehicle speed sensors typically placed in work zones; control parameters may include environmental and traffic conditions.
- 238 . 2 The center shall collect operational status for the vehicle speed sensors; the status shall include logged information including measured speeds, warning messages displayed, and violation records.
- 238 . 3 The center shall provide the capability to notify an enforcement agency when vehicle speeds in the work zone are in excess of the posted speed limit or are creating an unsafe condition based upon the current environmental or traffic conditions.
- 238 . 4 The center shall collect fault data for the vehicle speed sensors for repair.

TMC Toll/Parking Coordination

- 93 . 1 The center shall collect and store toll pricing data from toll administration centers, including the price for each road segment to which a toll applies, with the time and date for when it applies.
- 93 . 2 The center shall collect and store parking information from parking management providers including lot locations, features (e.g. ability to handle oversized vehicles), capacity, type, hours of operation and rates.
- 93 . 3 The center shall collect and store transit fare and schedule information from transit management centers.
- 93 . 4 The center shall collect and store current transit, parking, and toll fee schedule information provided by regional traveler information systems.
- 93 . 5 The center shall send requests to toll administration centers to change pricing, modify restrictions, or modify operations of a toll road facility.
- 93 . 6 The center shall send requests to parking management providers to change the current parking lot charging structure.
- 93 . 7 The center shall send requests to transit management centers to change the current transit services - schedules or fares of the transit services including park-and-ride lots.

TMC Traffic Information Dissemination

- 94 . 1 The center shall remotely control dynamic messages signs for dissemination of traffic and other information to drivers.
- 94 . 2 The center shall remotely control driver information systems that communicate directly from a center to the vehicle radio (such as Highway Advisory Radios) for dissemination of traffic and other information to drivers.
- 94 . 3 The center shall collect operational status for the driver information systems equipment (DMS, HAR, etc.).
- 94 . 4 The center shall collect fault data for the driver information systems equipment (DMS, HAR, etc.) for repair.
- 94 . 5 The center shall retrieve locally stored traffic information, including current and forecasted traffic information, road and weather conditions, traffic incident information, information on diversions and alternate routes, closures, and special traffic restrictions (lane/shoulder use, weight restrictions, width restrictions, HOV requirements), etc.
- 94 . 6 The center shall distribute traffic data to maintenance and construction centers, transit centers, emergency management centers, and traveler information providers.

- 94 . 7 The center shall distribute traffic data to the media upon request; the capability to provide the information in both data stream and graphical display shall be supported.
- 94 . 8 The center shall provide the capability for center personnel to control the nature of the data that is available to non-traffic operations centers and the media.

TMC Traffic Network Performance Evaluation

- 95 . 1 The center shall monitor, analyze, and store traffic sensor data (speed, volume, occupancy) collected from field elements under remote control of the center to support overall network performance evaluations.
- 95 . 2 The center shall collect wide-area pollution data from emissions management centers to support overall network performance evaluations.
- 95 . 3 The center shall collect and store plans from event promoters for major future events possibly impacting traffic to support overall network performance evaluations.
- 95 . 4 The center shall collect and store anticipated route information from information service providers to support overall network performance evaluations and predictions.
- 95 . 5 The center shall exchange information with transit management centers including details current transit routes, the level of service on each route, and the progress of individual vehicles along their routes for use in forecasting demand and estimating current transportation network performance.
- 95 . 6 The center shall exchange traffic information with other traffic management centers, including incidents, congestion data, traffic data, signal timing plans, and real-time signal control information to support overall network performance evaluations.
- 95 . 7 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for network performance evaluations.

TMC Work Zone Traffic Management

- 239 . 1 The center shall receive work zone images from a maintenance center.
- 239 . 2 The center shall analyze work zone images for indications of a possible incident.
- 239 . 3 The center shall remotely control driver information systems (such as dynamic messages signs, highway advisory radios) to advise drivers of activity around a work zone.
- 239 . 4 The center shall collect operational status for the driver information systems equipment in work zones.
- 239 . 5 The center shall collect fault data for the driver information systems equipment in work zones for repair.
- 239 . 6 The center shall receive proposed maintenance and construction work plans, analyze the activity as a possible incident, and provide work plan feedback to the sending center.

Toll Administration

- 96 . 1 The center shall manage toll transactions, including maintaining a log of all transactions and toll pricing structure information.

- 96 . 2 The center shall dynamically price tolls based on current traffic condition information.
- 96 . 3 For electronic toll payments requiring financial payment, the center shall process the financial information from toll plazas and manage an interface to a Financial Institution.
- 96 . 4 The center shall manage a local billing database for toll customers.
- 96 . 5 The center shall manage the details of toll payment violations based on tag information from the toll plaza, vehicle registration information from the Department of Motor Vehicles, invalid tag information from a Financial Institution, and previous violation information stored locally, and report such violations to appropriate law enforcement agencies.
- 96 . 6 The center shall calculate traffic flow based on timestamped toll transactions for vehicle travel between successive toll plazas and send to other agencies.
- 96 . 7 The center shall respond to changes in toll prices from the Toll Administrator.
- 96 . 8 The center shall exchange data with other toll agencies to coordinate toll transactions and pricing.
- 96 . 9 The center shall support requests for advanced toll payment and provide this information to its toll plazas.
- 96 . 10 The center shall support wide-area alerts from emergency centers by passing on the information to its toll plazas and the Toll Administrator.
- 96 . 11 The center shall support toll transactions by commercial fleet operators.

Toll Data Collection

- 129 . 1 The center shall collect toll operational data and pricing data.
- 129 . 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 129 . 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the toll data or for the data itself.
- 129 . 4 The center shall be able to produce sample products of the data available.

Toll Operator Alert

- 279 . 1 The center shall receive wide-area alerts and advisories from emergency management centers for emergency situations such as severe weather events, civil emergencies, child abduction (AMBER alert system), military activities, and other situations that pose a threat to life and property.
- 279 . 2 The center shall provide an interface with the toll administration center personnel to present wide-area alert notifications and to allow the center personnel to acknowledge the input and control the dissemination of the information.
- 279 . 3 The center shall distribute wide-area alert notifications to toll plazas to keep toll operators informed of identified threats that may impact toll operations or public safety on a toll facility.
- 279 . 4 The center shall return status back to the emergency management center that initiated the wide-area alert with information indicating the status of the alert from the toll operators including the information systems that are being used to provide the alert notification.

Traffic and Roadside Data Archival

- 135 . 1 The center shall manage the collection of archive data directly from collection equipment located at the roadside.
- 135 . 2 The center shall collect traffic sensor information from roadside devices.
- 135 . 3 The center shall collect environmental sensor information that from roadside devices.
- 135 . 4 The center shall respond to requests from the Archive Data Administer to input the parameters that control the collection process.
- 135 . 5 The center shall send the request for data and control parameters to the field equipment where the information is collected and returned.
- 135 . 6 The center shall record the status about the imported traffic and roadside data.
- 135 . 7 The center shall use the status information to adjust the collection of traffic and roadside data.

Traffic Data Collection

- 128 . 1 The center shall collect traffic management data such as operational data, event logs, etc.
- 128 . 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 128 . 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the traffic data or for the data itself.
- 128 . 4 The center shall be able to produce sample products of the data available.

Traffic Maintenance

- 98 . 1 The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) operational status.
- 98 . 2 The center shall collect and store CCTV surveillance system (traffic, pedestrian) operational status.
- 98 . 3 The center shall collect and store sensor (traffic, pedestrian, multimodal crossing) fault data and send to the maintenance center for repair.
- 98 . 4 The center shall collect and store CCTV surveillance system (traffic, pedestrian) fault data send to the maintenance center for repair.
- 98 . 5 The center shall collect environmental sensor operational status.
- 98 . 6 The center shall collect environmental sensor equipment fault data and send to the maintenance center for repair.
- 98 . 7 The center shall exchange data with maintenance centers concerning the reporting of faulty equipment and the schedule/status of their repair. Information exchanged includes details of new equipment faults, and clearances when the faults are cleared.
- 98 . 8 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for traffic maintenance data.

Transit Center Fare and Load Management

- 99 . 1 The center shall manage the actual value of transit fares for each segment of each regular transit route, including the transmission of the information to transit vehicles and transit stops or stations.

- 99 . 2 The center shall provide the capability for a system operator to manage the transit fares and control the exchange of transit fare information.
- 99 . 3 The center shall process the financial requests from the transit vehicles or roadside and manage an interface to a Financial Institution.
- 99 . 4 The center shall support the payment of transit fare transactions using data provided by the traveler cards / payment instruments.
- 99 . 5 The center shall collect data on fare payment violations and send the data, including images of the violator, to the appropriate enforcement agency.
- 99 . 6 The center shall process requests for transit fares to be paid in advance.
- 99 . 7 The center shall process requests for the advanced payment of tolls and parking lot charges as well as other non-transportation services, e.g. yellow-pages services.
- 99 . 8 The center shall be capable of establishing emergency fare structures to override all other fares during disasters, states of emergency, or evacuations.
- 99 . 9 The center shall maintain a list of invalid traveler credit identities, or bad tag lists that can be forwarded to transit vehicles and transit stops or stations.
- 99 . 10 The center shall collect passenger loading and fare statistics data to implement variable and flexible fare structures.
- 99 . 11 The center shall exchange fare and load information with other transit management centers, including potential Centralized Payments facilities.
- 99 . 12 The center shall provide transit fare information to other centers, including traveler information providers upon request.

Transit Center Fixed-Route Operations

- 100 . 1 The center shall generate transit routes and schedules based on such factors as parameters input by the system operator, road network conditions, operational data on current routes and schedules, and digitized map data.
- 100 . 2 The center shall provide the interface to the system operator to control the generation of new routes and schedules (transit services) including the ability to review and update the parameters used by the routes and schedules generation processes and to initiate these processes
- 100 . 3 The center shall be able to generate special routes and schedules to support an incident, disaster, evacuation, or other emergency.
- 100 . 4 The center shall dispatch fixed route or flexible route transit vehicles
- 100 . 5 The center shall collect transit operational data for use in the generation of routes and schedules.
- 100 . 6 The center shall provide instructions or corrective actions to the transit vehicle operators based upon operational needs.
- 100 . 7 The center shall manage large deviations of individual transit vehicles, deviations in rural areas, and deviations of large numbers of vehicles.
- 100 . 8 The center shall generate the necessary corrective actions which may involve more than the vehicles concerned and more far reaching action, such as, the introduction of extra vehicles, wide area signal priority by traffic management, the premature termination of some services, etc.

- 100. 9 The center shall exchange information with Maintenance and Construction Operations concerning work zones, roadway conditions, asset restrictions, work plans, etc.
- 100. 10 The center shall disseminate up-to-date schedules and route information to other centers for fixed and flexible route services.

Transit Center Information Services

- 101. 1 The center shall provide travelers using public transportation with traffic and advisory information upon request. Such information may include transit routes, schedules, transfer options, fares, real-time schedule adherence, current incidents, weather conditions, and special events.
- 101. 2 The center shall provide transit information to the media including details of deviations from schedule of regular transit services.
- 101. 3 The center shall exchange transit schedules, real-time arrival information, fare schedules, and general transit service information with other transit organizations to support transit traveler information systems.
- 101. 4 The center shall provide transit service information to traveler information service providers including routes, schedules, schedule adherence, and fare information as well as transit service information during evacuation.
- 101. 5 The center shall enable yellow pages (including non-motorized transportation) information to be output to the traveler.
- 101. 6 The center shall broadcast transit advisory data, including alerts and advisories pertaining to major emergencies, or man made disasters.

Transit Center Multi-Modal Coordination

- 102. 1 The center shall analyze transit vehicle schedule performance to determine the need for priority along certain routes or at certain intersections.
- 102. 2 The center shall send requests for priority along routes or at intersections to traffic management.
- 102. 3 The center shall coordinate schedules and services between transit agencies, traffic management, maintenance and construction operations, parking management, and other surface or air transportation modes.
- 102. 4 The center shall share transfer cluster and transfer point information with multimodal transportation service providers, other transit agencies, and traveler information service providers. A transfer cluster is a collection of stops, stations, or terminals where transfers can be made conveniently.
- 102. 5 The center shall accept requests from traffic management to change routes and schedules as part of the implementation of demand management strategies.

Transit Center Paratransit Operations

- 103. 1 The center shall process trip requests for demand responsive transit services, i.e. paratransit. Sources of the requests may include traveler information service providers.
- 103. 2 The center shall monitor the operational status of the demand response vehicles including status of passenger pick-up and drop-off.

- 103. 3 The center shall generate demand response transit (including paratransit) routes and schedules based on such factors as parameters input by the system operator, what other demand responsive transit schedules have been planned, the availability and location of vehicles, the relevance of any fixed transit routes and schedules, and road network information.
- 103. 4 The center shall dispatch demand response (paratransit) transit vehicles.
- 103. 5 The center shall exchange information with Maintenance and Construction Operations concerning work zones, roadway conditions, asset restrictions, work plans, etc.
- 103. 6 The center shall disseminate up-to-date schedules and route information to other centers for demand responsive transit services (paratransit).

Transit Center Security

- 104. 1 The center shall monitor transit vehicle operational data to determine if the transit vehicle is off-route and assess whether a security incident is occurring.
- 104. 2 The center shall receive reports of emergencies on-board transit vehicles entered directly by the transit vehicle operator or from a traveler through interfaces such as panic buttons or alarm switches.
- 104. 3 The center shall support the back-office portion of functionality to authenticate transit vehicle operators.
- 104. 4 The center shall exchange transit incident information along with other service data with other transit agencies.
- 104. 5 The center shall receive information pertaining to a wide-area alert such as weather alerts, disaster situations, or child abductions. This information may come from Emergency Management or from other Alerting and Advisory Systems.
- 104. 6 The center shall send wide-area alert information to travelers (on-board transit vehicles or at stations/stops) and transit vehicle operators.
- 104. 7 The center shall coordinate the response to security incidents involving transit with other agencies including Emergency Management, other transit agencies, media, traffic management, and traveler information service providers.
- 104. 8 The center shall receive threat information and status on the integrity of the transit infrastructure.
- 104. 9 The center shall provide support to remotely disable (or reset the disabling of) a transit vehicle in service.

Transit Center Vehicle Tracking

- 105. 1 The center shall monitor the locations of all transit vehicles within its network.
- 105. 2 The center shall determine adherence of transit vehicles to their assigned schedule.
- 105. 3 The center shall support an interface with a map update provider, or other appropriate data sources, through which updates of digitized map data can be obtained and used as a background for transit tracking and dispatch.
- 105. 4 The center shall provide transit operational data to traveler information service providers.

Transit Data Collection

- 132. 1 The center shall collect transit management data such as transit fares and passenger use, transit services, paratransit operations, transit vehicle maintenance data, etc.
- 132. 2 The center shall assign quality control metrics and meta-data to be stored along with the data. Meta-data may include attributes that describe the source and quality of the data and the conditions surrounding the collection of the data.
- 132. 3 The center shall receive and respond to requests from ITS Archives for either a catalog of the transit data or for the data itself.
- 132. 4 The center shall be able to produce sample products of the data available.

Transit Environmental Monitoring

- 244. 1 The center shall assimilate current and forecast road conditions and surface weather information to more effectively manage transit operations.
- 244. 2 The center shall collect current and forecast road and weather information from weather service providers and vehicle probes.
- 244. 3 The center shall receive road network probe information from its fleet of transit vehicles.
- 244. 4 The center shall provide road network probe information from its fleet of transit vehicles to traffic management as well as maintenance and construction management.

Transit Evacuation Support

- 256. 1 The center shall manage the use of transit resources to support evacuation and subsequent reentry of a population in the vicinity of a disaster or other emergency.
- 256. 2 The center shall coordinate regional evacuation plans with Emergency Management - identifying the transit role in an evacuation and the transit resources that would be used.
- 256. 3 The center shall coordinate the use of transit and school bus fleets during an evacuation, supporting evacuation of those with special needs and the general population.
- 256. 4 The center shall adjust and update transit service and fare schedules and provide that information to other agencies as they coordinate evacuations.

Transit Garage Maintenance

- 106. 1 The center shall collect operational and maintenance data from transit vehicles.
- 106. 2 The center shall monitor the condition of a transit vehicle to analyze brake, drive train, sensors, fuel, steering, tire, processor, communications equipment, and transit vehicle mileage to identify mileage based maintenance, out-of-specification or imminent failure conditions.
- 106. 3 The center shall generate transit vehicle maintenance schedules, includes what and when the maintenance or repair is to be performed.
- 106. 4 The center shall generate transit vehicle availability listings, current and forecast, to support transit vehicle assignment planning based, in part, on the transit vehicle maintenance schedule.
- 106. 5 The center shall assign technicians to a transit vehicle maintenance schedule, based upon such factors as personnel eligibility, work assignments, preferences and seniority.

- 106. 6 The center shall verify that the transit vehicle maintenance activities were performed correctly, using the transit vehicle's status, the maintenance personnel's work assignment, and the transit maintenance schedules.
- 106. 7 The center shall generate a time-stamped maintenance log of all maintenance activities performed on a transit vehicle.
- 106. 8 The center shall provide the transit system operator with the capability to update transit vehicle maintenance information and receive reports on all transit vehicle operations data.

Transit Vehicle Operator Scheduling

- 107. 1 The center shall maintain records of a transit vehicle operator's performance. This may be done utilizing standardized performance evaluation criteria set forth by governmental regulations and transit operating company policies, assessing the transit vehicle operator's driving history, and assessing comments from the transit vehicle operator's supervisor(s) as well as noting any moving violations or accidents, supervisor comments, government regulations, and company policies.
- 107. 2 The center shall assess the transit vehicle operator's availability based on previous work assignments, accumulated hours, plus health and vacation commitments.
- 107. 3 The center shall assign transit vehicle operators to transit schedules based on their eligibility, route preferences, seniority, and transit vehicle availability.
- 107. 4 The center shall provide an interface through which the transit vehicle operator information can be maintained - either from the transit vehicle operator, a transit system operator (i.e. center personnel), or other functions.

Traveler Telephone Information

- 277. 1 The center shall provide the capability to process voice-formatted requests for traveler information from a traveler telephone information system, and return the information in the requested format.
- 277. 2 The center shall provide the capability to process dual-tone multifrequency (DTMF)-based requests (touch-tone) for traveler information from a traveler telephone information system.
- 277. 3 The center shall provide the capability to process traveler information requests from a traveler telephone information system.
- 277. 4 The center shall collect and provide information on traffic conditions in the requested voice format and for the requested location.
- 277. 5 The center shall collect and provide work zone and roadway maintenance information in the requested voice format and for the requested location.
- 277. 6 The center shall collect and provide roadway environment conditions information in the requested voice format and for the requested location.
- 277. 7 The center shall collect and provide weather and event information in the requested voice format and for the requested location.
- 277. 8 The center shall collect and provide transit service information in the requested voice format and for the requested location.
- 277. 9 The center shall collect and provide yellow pages services information in the requested voice format and for the requested location.
- 277. 10 The center shall collect and provide current ferry and rail schedule and airport status information in the requested voice format and for the requested location.

- 277 . 11 The center shall provide the capability to support both specific caller requests as well as bulk upload of regional traveler information.
- 277 . 12 The center shall receive and forward region-specific wide-area alert and advisory information to the traveler telephone information system, including major emergencies such as a natural or man-made disaster, civil emergency, child abductions, severe weather watches and warnings, military activities, and law enforcement warnings.

Virtual Data Warehouse Services

- 131 . 1 The center shall provide capabilities to access "in-place" data from geographically dispersed archives. These capabilities may include analysis, data fusion, or data mining.
- 131 . 2 The center shall coordinate information exchange with a local data warehouse.
- 131 . 3 The center shall provide the specialized publishing, directory services, and transaction management functions associated with coordinating remote archives.
- 131 . 4 The center shall support the collection of archived data from other archives on an as-needed basis. (This minimizes the need to duplicate the comprehensive set of data from the remote archives in the local data warehouse.)
- 131 . 5 The center shall use data collected from different archives to build a set of global schema including the data archive definitions for the local archive plus any archives known to the local archive.
- 131 . 6 The center shall provide the local archived data schema to other archive systems.