Crash Prevention and Safety

Road Geometry Warning Systems

1. Does your state deploy any Road Geometry Warning Systems using roadside detectors and electronic warning systems to warn drivers of potentially dangerous speeds?
   Yes
   Where are the systems located? (Check all that apply)
   - Freeway ramps
   - Curves on highways
   - Downhill grades
   - Other locations (please specify):
   No

2. Does your state deploy automated Over height/Over width warning systems that use roadside detectors and electronic warning signs to warn drivers of vehicles that are too tall or wide to pass under bridges or through tunnels?
   Yes
   No

Highway-Rail Crossing Systems

3. Does your state deploy sensors to detect and warn vehicles of approaching trains at highway rail crossings?
   Yes
   No

4. Does your state deploy automated enforcement systems to detect drivers violating railroad crossing traffic controls?
   Yes
   No

Other Safety Systems

5. Does your state deploy Intersection Collision Warning Systems using sensors to monitor traffic approaching dangerous intersections and warn vehicles of approaching cross traffic?
   Yes
   No
6. Does your state deploy Pedestrian Safety Systems to protect pedestrians by alerting drivers as pedestrians enter crosswalks?
   Yes
   No

7. Does your state deploy Bicycle Warning Systems that use detectors and electronic warning signs to identify bicycle traffic and notify drivers when a cyclist is in an upcoming segment of roadway to improve safety on narrow bridges and tunnels?
   Yes
   No

8. Does your state deploy Animal Warning Systems to detect large animals approaching the roadway, and provide warnings to travelers?
   Yes
   No

Integration

9. Do any of your crash prevention systems communicate information (e.g., status, activation), in real-time, to any agencies/systems?
   Yes.
   Check all that apply:
   - Data archiving
   - Public safety
   - State police
   - Local agencies
   - Traffic management
   - Incident management
   - Traveler information
   - Information service providers
   - Tourism boards
   - Other states
   - Other (please specify):

   No

Roadway Operations and Maintenance

Asset Management

10. Does your state employ ITS technologies (e.g., fleet tracking applications such as automated vehicle location and computer aided dispatch systems, as well as handheld computers supporting data entry and reporting from the field) to manage maintenance vehicles?
    Yes
    No
11. Does your state employ sensors or automated data collection systems (e.g., weigh-in-motion, traffic volumes, pavement condition, bridge condition, etc.) to monitor the condition of highway infrastructure?
   Yes
   No

**Work Zone Management**

12. Which of the following technologies does your state use to inform travelers about work zones? (Check all that apply)
   - Portable dynamic message signs (DMS)
   - Highway advisory radio (HAR)
   - Internet web site
   - None of these technologies

13. Does your state deploy ITS technologies, either as stand-alone implementations or to supplement existing systems, to support temporary traffic management at work zones?
   Yes
   No

14. Does your state deploy temporary Incident Management Systems to facilitate the safe clearance of incidents that occur near work zones?
   Yes
   No

15. Does your state deploy ITS technologies (e.g., lane control signs, portable dynamic message signs, dynamic lane merge systems, or other applications) to notify travelers of lane configuration changes approaching work zones?
   Yes
   No

16. Does your state implement variable speed limits within work zones?
   Yes
   No

17. Does your state employ automated enforcement systems to enforce speed limits at work zones?
   Yes
   No

18. Does your state deploy automated intrusion detection and warning systems to alert highway workers and drivers when vehicles or construction equipment enter sensitive sections of the work area within work zones?
   Yes
   No
19. Does your state use ITS technologies to manage traffic along detour routes during full road?
   Yes
   No

20. Does your state communicate information (e.g., status, specific warnings) concerning work zones in real-time to any of the following agencies/systems?
   Yes.
   Check all that apply:
   - Data archiving
   - Public safety
     State police
     Local agencies
   - Traffic management
   - Incident management
   - Traveler information
   - Information service providers
   - Tourism boards
   - Other states
   - Other (please specify): ________________________________
   No

**Traveler Information**

**Information Dissemination**

21. Which of the following technologies does your state use to distribute pre-trip traveler information? (Check all that apply) Internet or wireless systems
    - 511
    - Other (non-511) telephone systems
    - TV/Radio
    - Kiosks

22. Which of the following technologies does your state use to distribute en-route traveler information? (Check all that apply)
    - Wireless systems
    - 511
    - Other (non-511) telephone systems
    - Radio
    - In-vehicle systems

**Tourism and Events**

23. Does your state deploy tourism information traveler systems that focus on the needs (i.e., electronic yellow pages, incorporating lodging reservations systems and directions to points of interest) of travelers in areas unfamiliar to them?
   Yes
   No
24. Does your state deploy parking management systems that provide availability status and directional guidance posted on dynamic message signs at major tourism destinations?
   Yes
   No

25. Does your state deploy electronic payment systems, using technologies such as magnetic stripe cards or smart cards, to facilitate traveler’s payment for travel and other services at tourist destinations?
   Yes
   No

**Statewide Web Site**

26. Has your state deployed a Web Site that distributes traveler information?
   Yes.
   Please provide the web address (URL):
   No

27. What information is disseminated by this web site? (Check all that apply)

   **Roadway Information:**
   - Road closure
   - Detours
   - Alternate routes
   - Work zones/construction events
   - Weather
   - Road surface conditions
   - Road restrictions
   - Incidents
   - Congestion
   - Speeds
   - Travel times
   - CCTV Images
   - Other (please specify):

   **Traveler and Tourist Information:**
   - Maps
   - Directions
   - Special events
   - Points of interest
   - Hotel accommodations
   - Restaurants
   - Recreational areas
   - National Parks information
   - Local event calendars
   - Trail information
   - Parking information
   - Parking space availability
   - Other (please specify):
Public Transportation Information:
Transit schedules
Transit adherence to schedules
Rail schedules
Ferry schedules
Other (please specify): ________________________________

Other Information:
Air quality alerts
AMBER (child abduction)
Safety campaign messages
Other (please specify): ________________________________

28. What is the geographic coverage of the information provided?
Regional
Describe coverage: __________________________________________
Statewide
Multi-state
States included: __________________________________________

29. What is the highway coverage of the information provided?
Freeways
Multi-lane (not limited access)
State routes
Other (please specify): ______________________________________

Weather

General Information
30. What weather events and impacts significantly affect the operation and maintenance of roads in your jurisdiction? (Check all that apply)
Liquid precipitation (i.e., rain)
Frozen precipitation (e.g., snow, sleet, freezing rain)
Low visibility due to fog
Low visibility due to wind-blown snow
Low visibility due to wind-blown dust
Low visibility due to smoke
High winds
Flooding
Tropical storms and hurricanes
Tornadoes
Slick pavement (due to water, snow or ice, black ice)
Sand or dust
Landslides (mudsides, rockslides)
Snow slides (avalanches)
Other
Other (please specify): ________________________________
31. **What types of road weather information does your agency use to make operational decisions? (Check all that apply)**

   - Atmospheric data (e.g., precipitation, air temperature, visibility distance)
   - Pavement condition data (e.g., wet, freeze point temperature, chemical concentration)
   - Water level data (e.g., stream levels, river forecasts, tide levels)
   - Other
   - Other (please specify): ________________________________

32. **What environmental data are collected by your agency to support operational decisions? (Check all that apply)**

   **Air temperature**
   - Air temperature
   - Air quality
   - Dew point and relative humidity
   - Barometric pressure
   - Precipitation type
   - Precipitation rate
   - Wind speed and gusts
   - Wind direction
   - Visibility distance
   - Cloud cover/solar radiation
   - Pavement surface temperature
   - Pavement freezing point
   - Pavement condition (wet, dry, icy, snow-covered, flooded)
   - Pavement snow depth
   - Pavement friction coefficient
   - Pavement chemical concentration
   - Subsurface conditions (e.g., soil temperature, depth of frost level)
   - Water level (in streams, rivers, and lakes near roads)
   - Pavement water levels
   - Other
   - Other (please specify): ________________________________

**Environmental Sensor Stations**

33. **Does your state deploy in-pavement or road surface sensors to track pavement conditions?**

   - Yes
   - No
34. Does your agency use Environmental Sensor Stations (ESS) that are field components of a State DOT Road Weather Information System (RWIS) to gather road weather information?
   
   No
   
   What are the barrier(s) to obtaining or implementing Environmental Sensor Stations? (Check all that apply)
   
   No perceived need
   Cost
   Use other source(s)
   No barriers
   Other
   Other (please specify): _________________________________

   Yes

35. How many ESS are in the RWIS?

   ______________________________________________________________________________________

36. Is a map with ESS deployment data available?
   
   No
   Yes

   Where can the map be obtained?

   ______________________________________________________________________________________

37. What sections within your agency are involved with the operation of or have responsibility for ESS? (Check all that apply)
   
   Traffic Management
   Traveler Information
   Dissemination Maintenance
   Construction
   Other
   Other (please specify): _________________________________

38. Select the entity or entities with which your agency shares ESS observational data. (Check all that apply)
   
   NOAA’s Forecast System Laboratory to the Meteorological Assimilation Data Ingest System (MADIS)
   National Weather Service through local forecast offices
   Private meteorological services
   Other
   Other (please specify): _________________________________

   Do not share ESS observational data

39. If your agency DOES NOT share ESS observational data, what is/are the barrier(s)? (Check all that apply)
   
   Cost
   Proprietary restraints from private meteorological service providers
   Never considered
   Other
   Other (please specify): _________________________________
40. During what periods are your ESS operational? (Check all that apply)
   - Year-round
   - Winter
   - Spring
   - Summer
   - Fall
   - Other
   Other (please specify): ________________________________

Other Sources of Weather Information

41. If not including ESS, which of the following SYSTEMS, if any, does your agency use to gather road weather information?
   - Agricultural monitoring networks
   - Air quality sensing stations
   - Airport monitoring stations (e.g., ASOS stations, AWOS stations)
   - Closed Circuit Television (CCTV) cameras
   - State-owned mesoscale environmental monitoring network (mesonet)
   - Other mesonet (e.g., university):
     Other mesonet (please specify): ________________________________
   - Other monitoring system:
     Other monitoring system (please specify): ________________________________
   - Mobile environmental sensors

   If using mobile weather sensors, on which of the following types of vehicles are the sensors located? (Check all that apply)
   - On maintenance vehicles with Automated Vehicle Location (AVL) technology
   - On other vehicles (please specify type): ________________________________

   What data are collected by the mobile environmental sensors? (Check all that apply)
   - Air temperature
   - Pavement surface temperature
   - Pavement freeze point temperature
   - Pavement condition (wet, dry, icy, snow-covered, flooded)
   - Pavement friction coefficient
   - Other
   Other (please specify): ________________________________

   Do not gather road weather information
42. What source(s) of weather information does your agency use to gather road weather information? (Check all that apply)

- National Weather Service (NWS) (e.g., general weather forecasts)
- Federal Aviation Administration (FAA) (e.g., ASOS/AWOS data)
- U.S. Geological Survey (USGS) (e.g., stream gauge data)
- National Hurricane Center (NHC) (e.g., storm track and landfall forecasts)
- Department of Defense
- Reports from field personnel
- Private weather information service (please specify): _______________________________________

Are weather products tailored to your operational requirements? (e.g., route-specific)

- Yes
- No

Other
- Other (please specify): _______________________________________
- Do not gather road weather information

43. Does your agency RECEIVE road weather information from non-weather agencies/entities?

- No
- Yes
- Please specify the other agencies/entities (Check all that apply)
  - Emergency management
  - Public safety (e.g., law enforcement, highway patrol)
  - Transit operators
  - Information service providers
  - Commercial vehicle operators
  - School districts
  - Traffic management centers
  - Maintenance crews
  - Other
- Other (please specify): _______________________________________

44. Do you coordinate data gathering with other states?

- Yes
  - Please list them: _______________________________________
- No
45. Which personnel in your agency use road weather information to make operational decisions? (Check all that apply)
   - Traffic management personnel
   - Traveler information dissemination personnel
   - Winter maintenance personnel (for snow and ice control activities)
   - Summer maintenance personnel (for weed control, patching, etc.)
   - Construction personnel (for paving operations, concrete pouring, etc.)
   - Other
   - Other (please specify): ________________________________

46. Please indicate with which of the following agencies/systems your state communicates weather warnings or forecasts in real-time. (Check all that apply)

<table>
<thead>
<tr>
<th>Agencies/Systems</th>
<th>Warnings</th>
<th>Forecasts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data archiving</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Public safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>State police</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local agencies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traffic management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incident management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Traveler information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information service providers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism boards</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other states</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not communicate in real-time</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (please specify):</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

47. Does your agency provide road weather information to the traveling public?
   - No
   - Yes
     Please specify the type of dissemination system(s) (Check all that apply)
     - Dynamic Message Signs (DMS)
     - Highway Advisory Radio (HAR)
     - In-vehicle devices
     - Interactive kiosks
     - Personal communication devices (e.g., PDAs, pagers)
     - Dedicated television channel
     - Fax
     - E-mail
     - Internet/web site.
     - What is the URL?
     - 511 Telephone system
     - Telephone number other than 511.
       - What is/are the number(s)? ________________________________
       - Does the telephone system use interactive voice response technology?
         - No
         - Yes
       - Other dissemination system (please specify): ________________________________
Please specify the type of road weather information disseminated to the traveling public. (Check all that apply)
Atmospheric observations (e.g., precipitation and air temperature from ESS)
Route-specific pavement condition data (e.g., dry, wet, plowed, flooded)
Video images of selected routes
Weather-related travel restrictions (e.g., tire chain requirements, closed routes)
General weather forecast data (e.g., National Weather Service warnings)
Route-specific weather forecast data
Other
Other (please specify): ________________________________________________________

48. Is weather information provided in a format that can be integrated with existing GIS and overlaid on a road network?
   Yes
   No

49. Are any or all-weather data archived in a way that would permit their re-use in forensics or validation studies?
   Yes
   How have archived weather data been used by your agency?
   ______________________________________________________
   ______________________________________________________
   ______________________________________________________
   No

**Traffic Control**

50. Does your state employ variable speed limits in response to weather conditions?
    Yes
    No

51. Does your state change traffic signal timing in response to weather?
    Yes
    No

52. Does your state deploy ITS technologies to manage traffic diversions in response to road closures due to weather events?
    Yes
    No
53. Does your state employ ITS sensors and information dissemination technologies to determine the need to implement temporary restrictions on vehicles during inclement weather conditions (e.g., road closures to high-profile vehicles during periods of high winds, snow tire/chain requirements during winter weather)?
   Yes
   No

Response and Treatment

54. Does your state deploy automatic bridge anti-icing systems?
   Yes
   No

55. Does your state deploy snowplows with AVL, communications and sensors to monitor treatment?
   Yes
   No