



San Diego's Regional Planning Agency

Operator Manual

**San Diego Integrated Corridor Management System (ICMS)
USDOT Contract Number DTFH61-06-H-00038**

Version 3.2

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Operator Manual

San Diego Integrated Corridor Management System (ICMS) USDOT Contract Number DTFH61-06-H-00038

Introduction

The San Diego Integrated Corridor Management System (ICMS) is designed to assist in collecting and distributing traffic information to manage existing transportation systems. The ICMS software provides an integrated, browser-based thin client to support Traffic Operations Center (TOC) activities, as well as management and control modules for standard interfacing systems.

Purpose

This manual is intended to support TOC operators and managers working with the ICMS and its traffic management modules. It includes information to:

- Aid operators in navigating the user interface
- Show how to access equipment and other data
- Demonstrate using the viewer windows for specific equipment
- Explain how to use the system to manage day-to-day operations, and
- Generate reports to show device status and activity.

Definitions, Acronyms and Abbreviations

Table 1 is a list of acronyms and abbreviations used in this document.

TABLE 1: ACRONYMS

Acronym	Description
3Cs	Command, Control, and Communications Network
511	Regional Traveler Information Phone Number
911	Regional Emergency Phone Number
ACS	Actuated Traffic Signal Controller
ADS	Agency Data Server
AID	Automatic Incident Detection
ALPR	Automatic License Plate Recognition
AMS	Analysis, Modeling, and Simulation
A-PeMS	Arterial Performance Management System
Arterial Management System	Regional Arterial Management System

Acronym	Description
Arterial Management System 4	Arterial Management System version 4
Arterial Management System 4+	Upgraded version of Arterial Management System 4
ATIMS	Advanced Traveler Information Management System
ATIS	Advanced Traveler Information System
ATMS	Advanced Traffic Management System
AVL	Automatic Vehicle Location
BRT	Bus Rapid Transit
BTM	Barrier Transfer Machine
CAD	Computer-Aided Dispatch
Caltrans	California Department of Transportation
CCTV	Closed Circuit Television
CHP	California Highway Patrol
CMS	Changeable Message Sign
COASTER	Express Rail Service between San Diego and Oceanside
ConOps	Concept of Operations
CPS	Congestion Pricing System
DAR	Direct Access Ramp
DHS	Department of Homeland Security
DMS	Dynamic Message Sign (also referred to as CMS, Changeable Message Sign)
DOT	Department of Transportation
DSS	Decision Support Subsystem (ICMS)
ECC	Emergency Communications Center (San Diego Sheriff Dispatch)
EEP	Emergency Evacuation Plan
EFD	Escondido Fire Department
EIA	Electronics Industries Association
EPD	Escondido Police Department
ERP	Emergency Response Plan
ESRI	Environmental Sciences Research Institute

Acronym	Description
Express Lanes Management System	Managed Lanes Control System
FasTrak [®]	Fee-Based Transportation Program Allowing single Drivers Use of I-15 Fast Lanes
FEP	Front End Processor
FTA	Federal Transit Administration
FHWA	Federal Highway Administration
GIS	Geographic Information System
GPS	Global Positioning System
GUI	Graphical User Interface
HAZMAT	Hazardous Material
HAR	Highway Advisory Radio
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
HTML	Hypertext Markup Language
HTTP	Hypertext Transfer Protocol
IAI	Intermodal Agency Integration
ICD	Interface Control Document
ICM	Integrated Corridor Management
ICMS	Integrated Corridor Management System
IDD	Interface Design Document
IEEE	Institute of Electrical and Electronic Engineers
I-15	Interstate I-15
IMTMS	Intermodal Transportation Management System
ISP	Internet Service Provider
ITS	Intelligent Transportation Systems
LCS	Lane Closure System
LOS	Level of Service
LTR	Local Traffic Responsive
ML	Managed Lanes
ML TIM	Managed Lanes Traffic Incident Management

Acronym	Description
MOE	Measure of Effectiveness
MOMS	Maintenance Online Management system
MTS	Metropolitan Transit System
NCTD	North County Transit District
NIMS	National Incident Management system
NorthCom	North County Fire Communications Joint Powers Authority
NTCIP	National Transportation Communications ITS Protocol
NTP	Notice to Proceed
OES	Office of Emergency Services
PDA	Personal Digital Assistant
PeMS	Performance Management System
RCS	Regional Communication System
REMS	Regional Event Management System
RFID	Radio Frequency Identification
RHS	Regional Host Server
RideLink	Region Commuter and Employer Transportation Assistance Program Arterial Management System
RIWS	Regional Integrated Workstation
RLCS	Reversible Lane Control System
R[M]LCS	Reversible [Managed] Lane Control System
RMIS	Ramp Meter Information System
RMS	Ramp Metering System
SAFE	Service Authority for Freeway Emergencies
SANDAG	San Diego Association of Governments
SDD	Systems Design Document
SDFD	San Diego Fire Department
SDPD	San Diego Police Department
SDSD	San Diego Sheriff's Department
SOA	Service-Oriented Architecture
SOV	Single Occupancy Vehicle
SPRINTER	Commuter Light Rail Service between Oceanside and Escondido
SPS	Parking Management System

Acronym	Description
TDM	Transportation Demand Management
TMC	Transportation Management Center
TMDD	Traffic Management Data Dictionary
TMT	Traffic Management Team
TOC	Traffic Operations Center
TOD	Time of Day
T-PeMS	Transit Performance Measurement System
TSCS	Traffic Signal Control System
Transit Management System	Regional Transit Management System
USDOT	United States Department of Transportation
VDS	Vehicle Detector Station
VMS	Video Management Subsystem (IMTMS)
VJTOC	Virtual Joint Transportation Operation Center
VOS	Volume, Occupancy, and Speed
VOTT	Value of Travel Time
VTMS	Variable Toll Message Sign
WebEOC	Countywide Web services applications currently used for sharing information among a wide variety of agencies during major emergencies.
XML	eXtensible Markup Language

Table 2 is a list of definitions for the document.

TABLE 2: DEFINITIONS

Term	Definition
Alarm window	An alarm window within the ICMS application is used to alert the user to any device failures or severe traffic or weather conditions.
Browser	A web browser window. At this time, Internet Explorer Versions 7 and above are supported.
Compass rose	A compass rose is a tool located on the map window that is used to move around on the map. Shaped like a rose, the user can use the compass points to pan east, west, north, or south.
Geo-locator	The geo-locator is a tool used to place icons on the map at their correct locations without having to know their map coordinates.

Term	Definition
List window	A list window within the ICMS application allows the user to view a list of all the devices in the system and know their status at a glance. The switcher bar at the bottom of the list window allows the user to filter out a particular device.
Organization	The traffic agency or other group which has purchased a license for the ICMS.
Permitted operator	An operator login with the needed privileges to perform a particular action. Please see the Administration document for a complete list of privileges that can be assigned to an operator login.
Presets	A CCTV preset is a user-defined fixed location where the camera can be pointed to. The preset is given a name, and when the user chooses this preset, the camera returns to the fixed location.
Planned events	A Planned event is one where the agency plans for its occurrence such as in a lane closure for construction, or road closure for events
Switcher	The switcher bar is located at the bottom of ICMS windows which allow the user to switch to a different device quickly. By selecting a different device, the user is able to quickly start viewing the chosen device type.
Tiling	The tiling window allows the user to view information from different device types all within one window. The tiling window has cells where different devices can be placed. Operationally, this can be used to view video, VDS information, and the event window all surrounding a particular incident.
Unscheduled events	An unscheduled event is one where the agency does not know about it prior to its occurrence, such as in an accident, or road hazard
Viewer	A window within the ICMS application which allows the user to view information regarding a particular device or to view events. The viewer window gives the user the ability to see the information real time. If the user has the correct permissions, he will also be able to control the device or modify event information.

Windows Explanation

The ICMS has a windowed browser interface which allows multiple sources of information from various systems and hardware to be open and accessible at the same time. This section presents an explanation of windows types accessible to a standard operator.

The Login Screen



FIGURE 1: ICMS LOGIN SCREEN

The Login screen, shown in Figure 1, is the entry point for the ICMS. Every operator will have a username and password to log in to the system which will allow operator actions to be recorded and tracked accurately. Because the ICMS is available on the internet, ICMS uses a two-tier authentication system for extra security. As an operator attempts to log into the system, an automated phone call is placed by Phone Factor to the operator's pre-determined telephone number. The operator must respond to the telephone call by pressing the “#” key in order for a successful login. If the operator does not respond, the ICMS will attempt to call the operator's secondary number. If the operator does not respond, or responds with the incorrect key, login is denied. Upon login failure, the operator must simply try again. An operator's primary and secondary telephone number must be entered into ICMS as the operator's account is created.

The initial Login window remains open in the background when the ICMS desktop launches, displaying which account is currently logged into the ICMS from the browser session.

To log into the ICMS:

- a) Bring up the recommended Internet browser and navigate to <https://www.icmsd.net/atms>.
- b) Enter a username and password into the appropriate fields.
- c) Click the *Login* button.
- d) Wait for a phone call to the phone number configured in your user account.
- e) Answer the phone and press the “#” key.

User Preferences

After login, the ICMS desktop launches in a second (pop-up) browser window, and a message appears indicating that the specific operator's login preferences are being loaded. A sample desktop is shown in Figure 2.

Note: The second (pop-up) browser will require a user to allow popup windows from the ICMS site to ensure the system operates as anticipated.

The ICMS Desktop

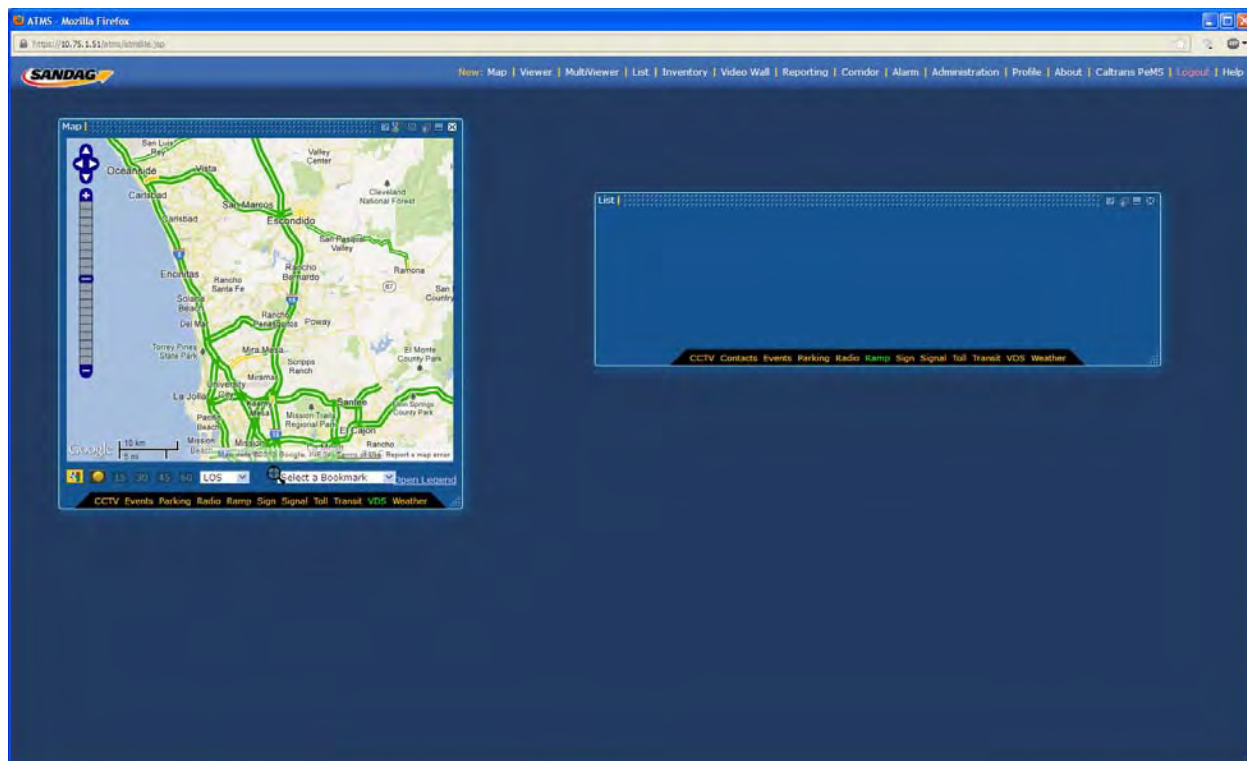


FIGURE 2: EXAMPLE OF ICMS DEFAULT WINDOW LAYOUT

The ICMS desktop launches (see Figure 2) in a second (pop-up) browser window, with several ICMS windows already open for the operator. If the operator has saved a particular desktop layout, that layout will be loaded. Otherwise, the default window layout will be loaded.

User preferences allow a specific operator to save a desktop layout to be automatically loaded on login. Clicking the *Close* button on the message will force the default desktop layout to load.

The desktop includes an upper menu bar, with the ICMS logo located on the left, and the menu of window types and the logout link located on the right. It also includes a desktop area with a grid background, where ICMS windows can be located and managed.

To save a particular desktop layout, log into the system, configure the desktop layout as desired, and click the *Profile* link in the upper menu bar. Once the *Profile* window is visible (see Figure 3), click the *Save current desktop for next login* button. The *Reset and reload desktop* button returns the desktop to the default desktop.



FIGURE 3: THE PROFILE WINDOW

To create new windows, click on the window type in the upper menu bar. If an operator has the correct permissions to create that type of window, a new window will launch in the desktop area. To log out, click the *Logout* link on the far right of the upper menu bar and choose whether to save the current desktop layout.

The Map Window

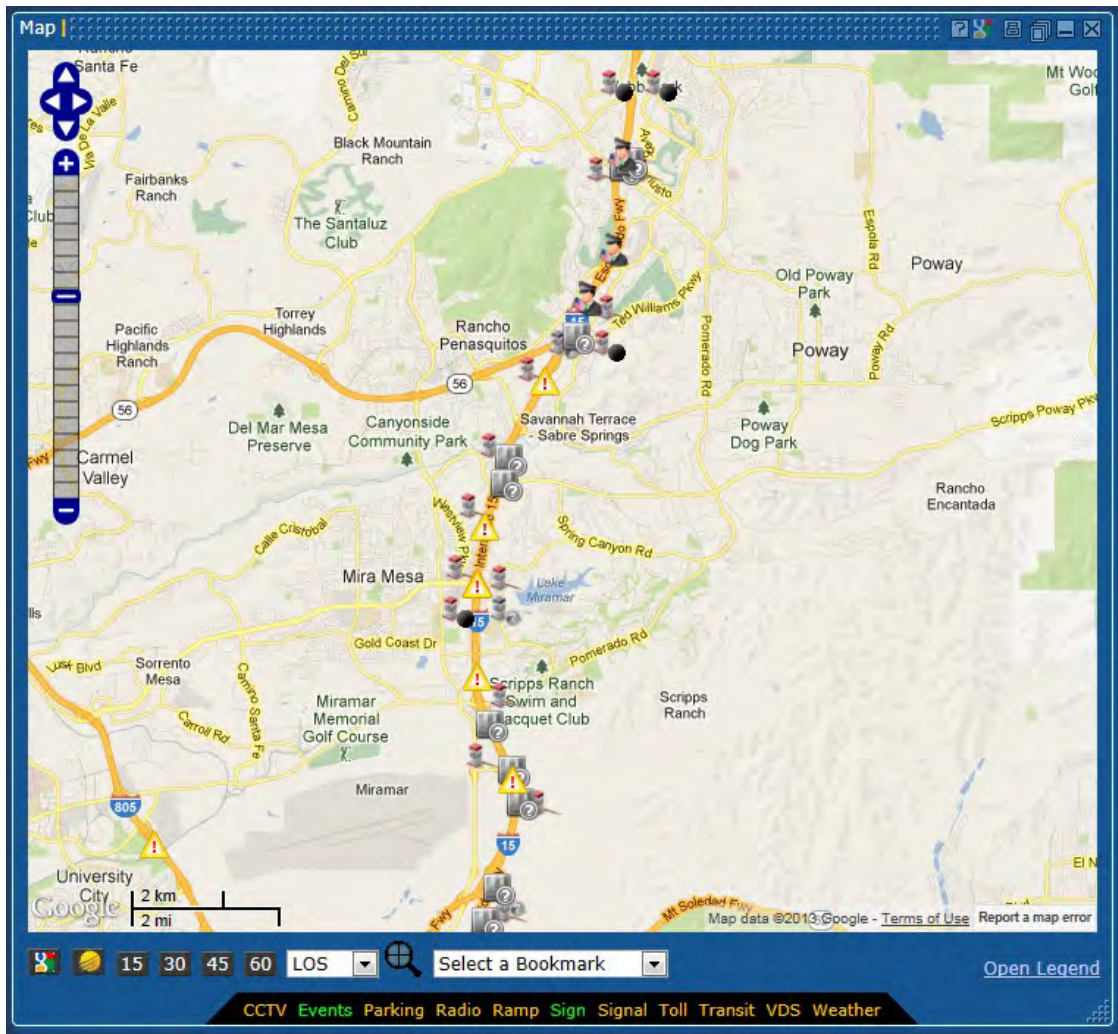


FIGURE 4: THE MAP WINDOW

The Map window shown in Figure 4 provides a real-time graphical representation of all the available and currently selected traffic data for the chosen geographical area. The GUI overlays real-time traffic status icons on the base map image, giving quick visual access to selected information such as equipment location, event locations, and other data.

The Map display allows click and drag-and-drop access to equipment control and configuration, and to event information. It includes zoom and map movement capabilities, via the mouse, the compass and the slider/zoom bar. This allows access to both a detailed and high-level view of the geographical area.

Icons are used to represent the different elements in the system, such as devices or events. A description of the various icons used are described in Table 3.

The Viewer Windows

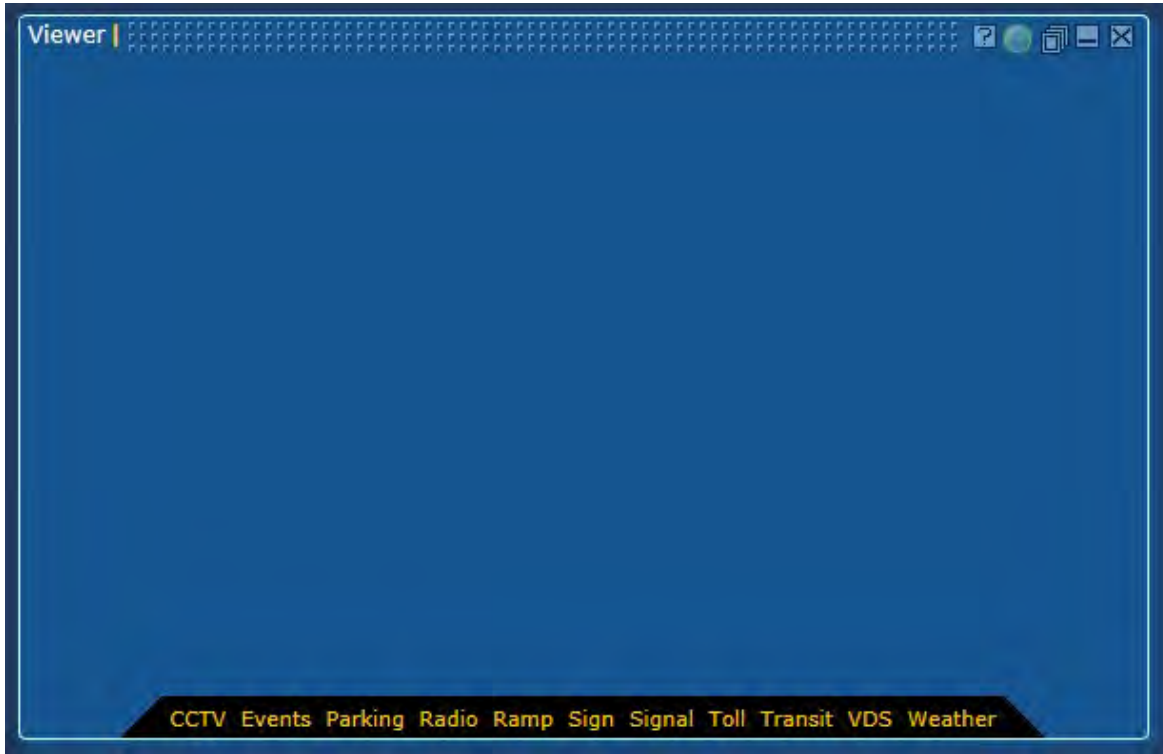


FIGURE 5: DEFAULT VIEWER WINDOW

The Viewer windows are the control windows of the ICMS, providing real-time status for and control of the hardware owned by the traffic agency. All equipment listed in the database can be accessed or controlled by permitted users using a Viewer window. See Figure 5 for an example default Viewer window.

Blank Viewer windows can be opened by clicking on the Viewer link in the upper menu bar. A default Viewer window contains a Switcher Bar located on the bottom edge of the window with the viewer types for the ICMS installation highlighted in yellow. Clicking on a particular type in the switcher bar will open a blank Viewer for that type of equipment or event.

Dragging an icon from the Map window or a List window and dropping the icon onto any Viewer window will open the window for that piece of equipment or event. If that piece of equipment or an event is already open in another viewer window, the original viewer will be brought forward rather than opening in a second viewer window.

Viewer windows can switch between different types of equipment and events using drag and drop. For example, a Sign icon can be dropped onto a viewer window currently open for a Parking, and the viewer will switch to the interface for that sign.

The MultiViewer Windows

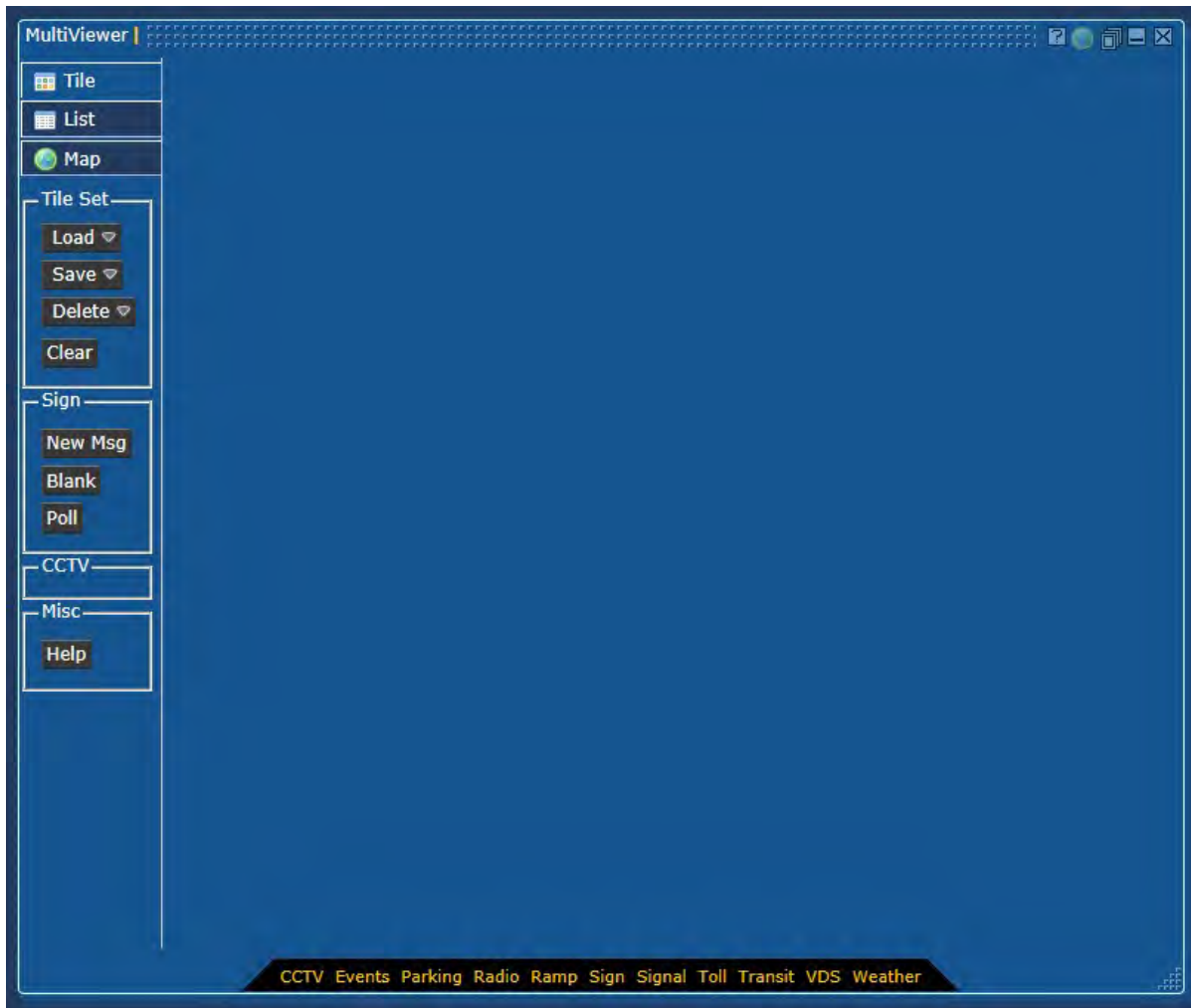


FIGURE 6: BLANK MULTIVIEWER WINDOW

The MultiViewer windows, shown in Figure 6, allow the operator to group devices of different types and/or events together into one manageable unit. For example, an operator can place event information, the CCTV nearest the event, and the DMS nearest the event onto one MultiViewer window so that all the pertinent information can be viewed simultaneously. This grouping of information can be named and saved for later recall.

This can be particularly useful in situations where the same group of DMSs or cameras are used over and over again, such as in sporting events. Because this set of cameras and DMS can be grouped, saved, and named, the operator is able to recall this set of devices the next time there is a game. This ability to name and save MultiViewer windows is unique to each user and is not available system-wide.

The MultiViewer windows are an extension of the Viewer, List, and Map windows. A regular Viewer window can house different types of devices or events, but only *one* at a time. The MultiViewer window can hold multiple devices of different types and multiple events simultaneously. In the sporting event example above, if there are 4 DMSs and 4 cameras near the stadium, the operator would have to open 8 individual regular Viewer windows (4

DMSs and 4 cameras) to manage the traffic. Using the MultiViewer window, the operator would only have to use 1 MultiViewer window.

To provide a more efficient application, the following constraints have been placed on MultiViewer windows:

- a) No more than 2 MultiViewer windows can be displayed at the same time.
- b) Only 50 elements can be placed in the MultiViewer for viewing in Tile format.
- c) Of the 50 elements that can be placed in the MultiViewer, only 12 CCTV elements can be placed in the MultiViewer for viewing in the Tile format.

The List Windows

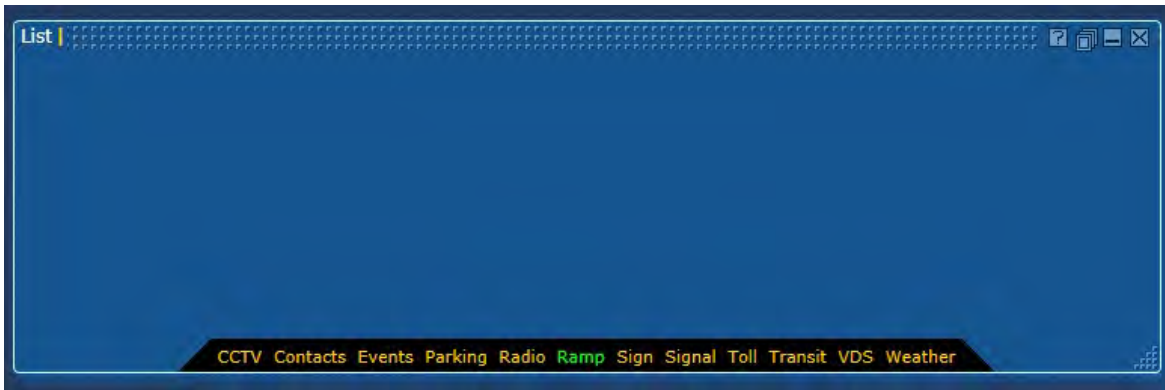


FIGURE 7: BLANK LIST WINDOW

The List windows provide access to lists of devices owned by the organization, list of events that are occurring in the system, list of contacts maintained by the organization and a list of travel time segments configured by the organization.

The default list window, shown in Figure 7, is a blank window with a switcher bar at the bottom that displays the types of lists that can be generated.

For devices (DMS, Signal, VDS, Ramp) the List windows contain a summary of information about the device. To select a particular list, click on the device type in the switcher bar. The list will contain a type icon, the agency-defined ID, the location information and status. The icon can be dragged from the list window and dropped into Viewer, MultiViewer, or Inventory windows to access either control or inventory functions. The list can be filtered by clicking on the column title. A small pop-up window will appear with a text box for entering the filtering criteria. An example of a List window (Figure 8) containing the DMSs appears below.

State	Device Name	Roadway	Cross Street	City	Mile Marker	Agency	Status	Current Message	Size (p x l x c)
	CPS-VTMS 50	I-15	MM 22		22	SANDAG	Not in Queue	MINIMUM TOLL: \$0.50 TO 163 \$0.50 9 MINS	1 x 3 x 20
	CPS-VTMS 52	I-15	MM 19.8		19.8	SANDAG	Not in Queue	MINIMUM TOLL: \$0.50 TO 163 \$0.50 7 MINS	1 x 3 x 20
	CPS-VTMS 54	I-15	MM 18.4		18.4	SANDAG	Not in Queue	MINIMUM TOLL: \$0.50 TO 163 \$0.50 6 MINS	1 x 3 x 20

FIGURE 8: SIGN LIST WINDOW

To see a list of events, click on *Events* link in the lower switcher bar. For events, the list row contains a scheduled or unscheduled icon, the agency-defined ID, the event type, the start time, the end time, the roadway type, the event location, and the event description. The icon can be dragged from the List window and dropped into Viewer or MultiViewer windows. The list can be reordered (first to last, or last to first) by clicking on the column title. An example of a List window containing the Events appears in Figure 9.

State	ID	Location	Agency	Status	Type	Road Type	Start Time	End Time
⚠	49743	I-15 S at Sr94 So	CHP-SD	Confirmed	Accidents And Incidents	Interstat	2013-05-05 16:37	
⚠	49742	I-5 S at Sr78 So (vista Wy)	CHP-SD	Confirmed	Accidents And Incidents	Interstat	2013-05-05 16:36	
⚠	49741	I-5 S at Sr78 So (vista Wy)	CHP-SD	Confirmed	Accidents And Incidents	Interstat	2013-05-05 16:35	
⚠	49740	I-5 S at Tamarack	CHP-SD	Confirmed	Accidents And Incidents	Interstat	2013-05-05 16:34	
👮	49739	I-15 S at		Unconfirmed	Traffic Conditions	Interstat	2013-05-05 16:35	
👮	49736	I-15 S at		Unconfirmed	Traffic Conditions	Interstat	2013-05-05 16:20	
⚠	49732	SR-94 E at SR125	CHP-SD	Confirmed	Accidents And Incidents	State Highway	2013-05-05 16:07	
⚠	49729	Tavern Rd ND at Alpine Blvd	CHP-SD	Confirmed	Accidents And Incidents	Arterial	2013-05-05 16:06	

FIGURE 9: EVENTS LIST WINDOW

The Profile window



FIGURE 10: PROFILE WINDOW

The Profile window, shown in Figure 10, displays information about the current user. It displays the login name, actual name, and contact information. It also includes options for customizing the application. Two available options allow the operators to customize the desktop to their preference: *Reset and reload desktop*, and *Save current desktop for next login*.

- To force the desktop to reset and reload, click on the *Reset and reload desktop* link. This option returns the desktop to the default settings of 1 map window, 1 blank viewer window, and 1 blank list window the next time the user logs in.
- To force the current settings to be saved upon logout, click the *Save current desktop for next login* link. This option allows the operator to save his current desktop and have it reload upon logging in. The saved desktop retains the types, sizes, and number of windows open along with the contents of those windows.

The *Visually Impaired Icons* checkbox will display the device icons in a different color palette for those users who have difficulty distinguishing between certain colors. Only the icons which are solely differentiated by color (Sign, Signal, Ramp, Radio, VDS, and some ESS) are affected. The icons differentiated by shape, such as the event icons, are not modified.

The About Window

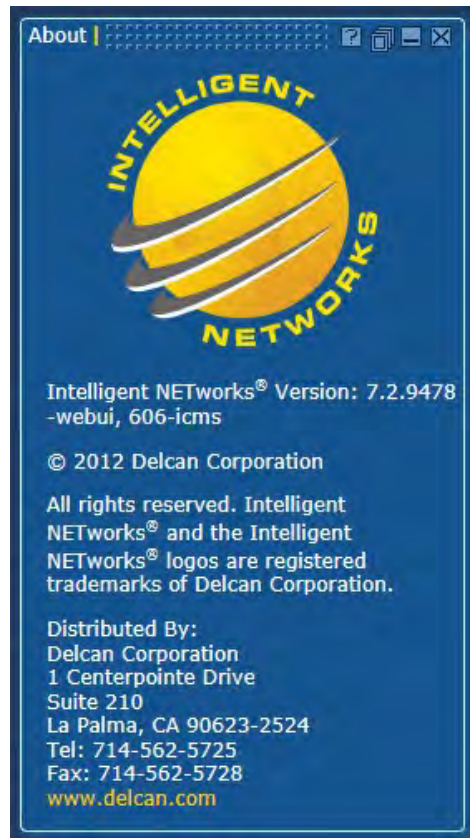


FIGURE 11: ABOUT WINDOW

The About window, shown in Figure 11, gives information about the installed system including the version number and Delcan contact information.

To access the About window, click on the *About* link in the upper menu bar. The version number of the currently installed system is located next to the Version tag.

The Logout window

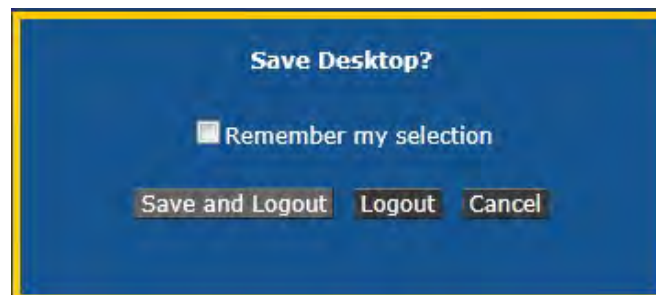


FIGURE 12: LOG OUT WINDOW

The logout window, shown in Figure 12, allows the user to log out of the ICMS system.

To log out of the application, click on the *Logout* link in the upper menu bar.

- To save the current desktop and log out, check the *Remember my selection* checkbox and click *Save and Logout* button.
- To log out without saving the desktop, click *Logout* button.
- To cancel log out, click *Cancel* button.

Browser Windowing

The ICMS is a browser-based, desktop-like environment. Multiple windows allow the operator to work with various system components at the same time. These windows can be moved, resized and organized by the operator in order to control workflow and information access.

Using the ICMS Window



FIGURE 13: UPPER MENU BAR

- **Opening windows:** Windows can be opened by clicking on the desired window type in the upper menu bar, shown in Figure 13.




FIGURE 14: WINDOW TOOLBAR

- **Closing windows:** Windows can be closed by clicking on the (Close) button located in the toolbar at the upper right corner of that window. See Figure 14.
- **Minimizing windows:** Windows can be minimized by clicking on the (Minimize) button in the toolbar. Minimizing a window retains its current contents and places it in the bottom left corner of the ICMS browser window. See Figure 14.



FIGURE 15: MINIMIZED WINDOW

- **Maximizing windows:** A minimized window can be maximized by clicking on the (Maximize) button in its toolbar. See Figure 15.
- **Transparent windows:** Windows can be made transparent by clicking on the (Transparency) button in the toolbar. This retains their current position in the ICMS browser window but allows other windows or the background to be seen through them. Clicking the Transparency button (see Figure 15) on a transparent window will return the window to full opacity.
- **Zooming in:** A device or event can be zoomed in on the Map by clicking the button (see Figure 15) in the toolbar of the device or event Viewer. This zooms the map to the location of the device or event.
- **Moving windows:** Window can be moved by holding the left mouse button down while the mouse pointer is in the upper toolbar of that window and dragging the window to the desired position.
- **Resizing windows:** The Map and List windows can be resized by using the mouse to grab and drag the (Resize) button in the bottom right corner of the window.

- **Accessing on-line help:** On-line help can be accessed by clicking the  button. See Figure 15 for an example.
- **Window Focus:** A window can be brought from behind other windows by clicking the mouse anywhere in its window body or toolbar.

ICMS Window Limitations

For system performance reasons, each type of window has a maximum number of windows allowed to be open simultaneously. Once that number of windows has been reached, either an existing window needs to be reused, or a currently open window needs to be closed.

The Switcher Bar

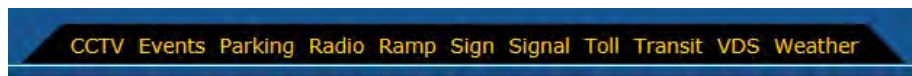


FIGURE 16: SWITCHER BAR



Most windows contain a switcher bar—a black bar across the bottom of the window with lit and unlit selections in several colors. The listed selections and how the switcher bar behaves are dependent on the window type. Figure 16 displays the switcher bar for the ICMS system.

Using the Map

The ICMS map view is comprised of a map background and feature class layers that are overlain on the background. The map background is a pre-generated set of map tile images that are generated for each zoom level and contain map features that automatically become included at each zoom level. The map background contains features such as roadways, city and county boundaries, labeling/annotation, etc. Other than changing to another zoom level, the user has no control of what is displayed on the map background. However, the ICMS map does contain a suite of feature classes that are listed in the map legend whose visibility can be controlled. The following sections will describe how to navigate the map and how to include feature classes on the map to support the operator in his or her traffic management activities.

Using the Map Control

The map in the Map window can be manipulated in several ways.

- The map can be moved using the mouse pointer. Clicking on the map and dragging the mouse will move the map center in that direction.
- The Map window has a zoom and pan bar, shown in Figure 17, in the upper left of the map window. To zoom in one level at a time, click the  selection at the upper end of the zoom bar. To zoom out one level at a time, click the  selection at the lower end the zoom bar. To jump to a particular zoom level, click in the zoom bar. The map view will continue to remain centered at the current point.



To pan the map, click on the desired directional arrow.



FIGURE 17: ZOOM AND PAN BAR

- The Map window has a magnifying glass, shown in Figure 18, in the bottom center of the window. Clicking the magnifying glass turns it on (yellow). While the magnifying glass is on, the mouse pointer is converted to a cross where smaller sections of the map can be framed and selected by depressing the mouse button and dragging mouse pointer over an area. When the mouse button is released, the map will then be centered and zoomed in the map window to the selected section. If this option is selected accidentally, dragging the 2nd corner of the box off the screen will cancel this action.



FIGURE 18: MAGNIFYING GLASS

Viewing the Map Legend

The Legend window can be opened by clicking on the *Open Legend* link located on the bottom right of the map window. The legend provides an explanation of the different icons and colors used on the map. The legend can be closed by clicking on the *Close Legend* link which resides at the same location. Figure 19 and Figure 20 show the links for the Legend. Figure 21 shows the Legend window.

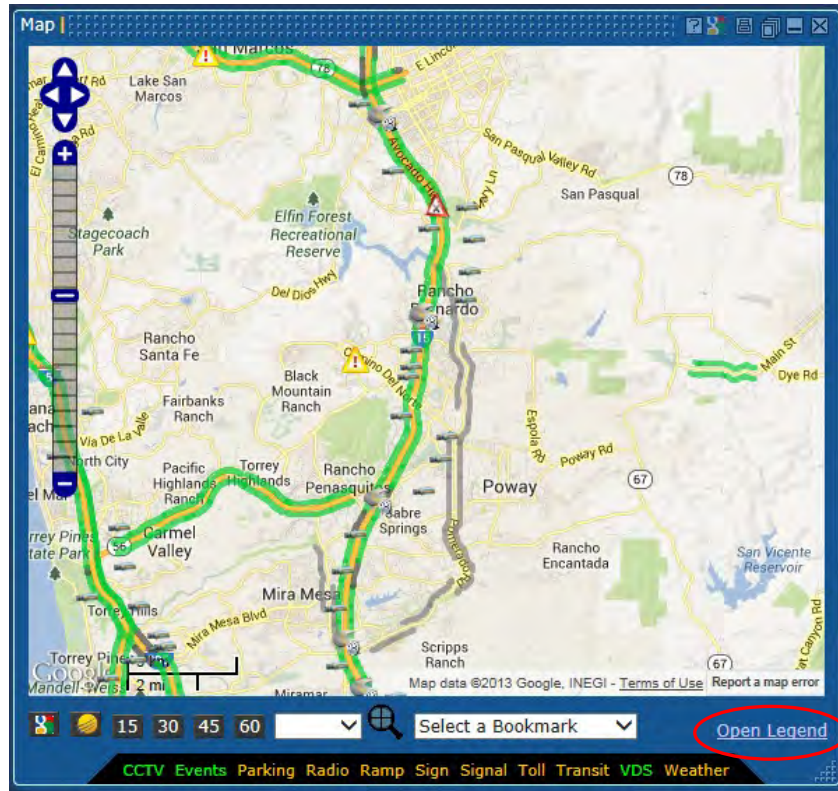


FIGURE 19: OPEN LEGEND LINK

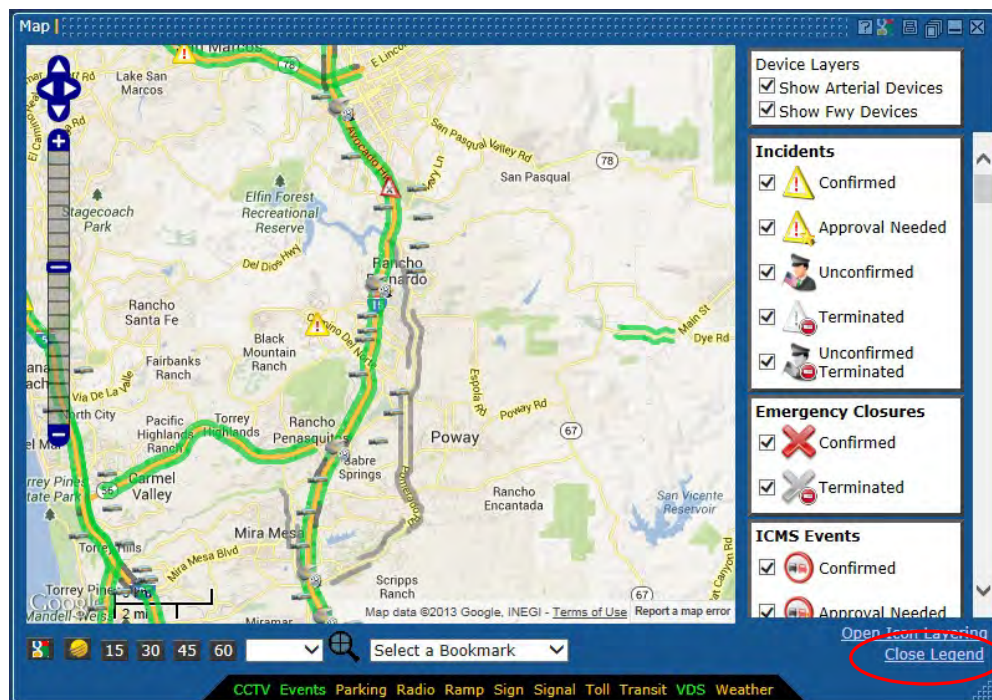


FIGURE 20: CLOSE LEGEND LINK

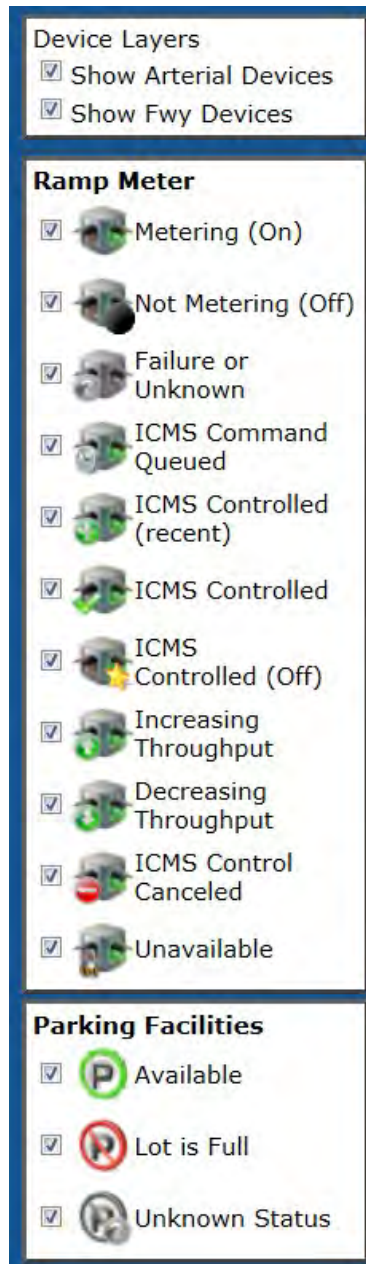








































FIGURE 21: LEGEND WINDOW















The icon descriptions are listed below in Table 3.





























TABLE 3: ICON DESCRIPTIONS

















Legend Icon	Description
Device Layers <input checked="" type="checkbox"/> Show Arterial Devices <input checked="" type="checkbox"/> Show Fwy Devices	Device Layers: Arterial devices and Freeway Devices




























Legend Icon	Description
Incidents  Confirmed  Approval Needed  Unconfirmed  Terminated  Unconfirmed Terminated	<p>Unscheduled Event: an event that is not planned in advance, such as a traffic collision.</p> <ul style="list-style-type: none"> Confirmed: the event is currently confirmed Approval Needed: the event is confirmed and is awaiting approval for a response plan recommendation Unconfirmed: the event is currently unconfirmed Terminated: the event has been terminated Unconfirmed Terminated: the event has been terminated and is an unconfirmed event
Emergency Closures  Confirmed  Terminated	<p>Emergency Closures: an event which is unplanned, such as emergency guard rail repair or bridge repair. The displayed events can be further filtered by status such as Confirmed or Terminated.</p>
ICMS Events  Confirmed  Approval Needed  Terminated	<p>ICMS Events: an event which is created on the ICMS workstation. The displayed events can be further filtered by status such as Unconfirmed, Alarmed, or Terminated.</p>
Freeway Construction  Confirmed  Future Planned  Terminated	<p>Freeway Construction Events: an event which is received from the external systems concerning freeway construction events. The displayed events can be further filtered by status such as Confirmed, Future Planned, or Terminated.</p>
Arterial Construction  Confirmed  Future Planned  Terminated	<p>Arterial Construction Events: an event which is received from the external systems concerning arterial construction events. The displayed events can be further filtered by status such as Confirmed, Future Planned, or Terminated.</p>
Planned Closures  Confirmed  Future Planned  Terminated	<p>Planned Closures: an event which is planned, such as a sporting event. The displayed events can be further filtered by status such as Confirmed, Future Planned, or Terminated.</p>











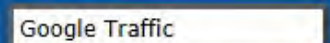
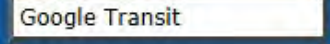
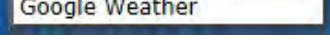










Legend Icon	Description
Transit AVL <input checked="" type="checkbox"/>  Normal / Ahead <input checked="" type="checkbox"/>  Behind Schedule / Off Route <input checked="" type="checkbox"/>  Emergency Alarm <input type="checkbox"/>  Route Filters Disabled	Transit AVL: <ul style="list-style-type: none"> • Normal/Ahead: a bus is currently performing in normal mode (on schedule, on route, no alarms) or ahead of schedule • Behind Schedule / Off Route: a bus is currently being behind schedule or is off-route • Emergency Alarm: a bus currently has the emergency alarm activated • Route Filters Disabled: the user is able to select specific routes to not display on the map
Arterial Routes  Active Detour Begin  Active Detour End  New Detour  New Detour End	Arterial Routes: <ul style="list-style-type: none"> • Active Detour Begin: an arterial detour route begins at the location • Active Detour End: an arterial detour route ends at the location • New Detour: an new arterial detour route is being recommended (begins at this location) • New Detour End: an new arterial detour route is being recommended (ends at this location)
Sign <input checked="" type="checkbox"/>  w/Message <input checked="" type="checkbox"/>  Blank <input checked="" type="checkbox"/>  Device Failure or Unknown Status <input checked="" type="checkbox"/>  ICMS Command Queued <input checked="" type="checkbox"/>  ICMS Controlled (recent) <input checked="" type="checkbox"/>  ICMS Controlled <input checked="" type="checkbox"/>  ICMS Control Canceled <input checked="" type="checkbox"/>  Unavailable	Sign: <ul style="list-style-type: none"> • w/Message: a fixed sign with no errors that is currently displaying a message • Blank: a fixed sign that is not displaying a message currently, but is working • Device Failure or Unknown Status: the system has not received any valid data • ICMS Command Queue: the sign is currently in the queue for an ICMS response plan • ICMS Controlled (recent): the sign has recently been controlled by an ICMS response plan • ICMS Controlled: the sign is currently under an ICMS response plan • ICMS Control Canceled: the sign has been released from the an ICMS response plan • Unavailable: the sign is not available for an ICMS response plan
Congestion Pricing Signs <input checked="" type="checkbox"/>  w/Message <input checked="" type="checkbox"/>  Blank <input checked="" type="checkbox"/>  Device Failure or Unknown Status	Congestion Pricing Signs: <ul style="list-style-type: none"> • w/Message: the CPS sign is currently displaying a message • Blank: the CPS is not currently displaying a message, but is working • Device Failure or Unknown Status: the CPS is reporting a communications failure that is not currently available for use

Legend Icon	Description
Ramp Meter <input checked="" type="checkbox"/>  Metering (On) <input checked="" type="checkbox"/>  Not Metering (Off) <input checked="" type="checkbox"/>  Failure or Unknown <input checked="" type="checkbox"/>  ICMS Command Queued <input checked="" type="checkbox"/>  ICMS Controlled (recent) <input checked="" type="checkbox"/>  ICMS Controlled <input checked="" type="checkbox"/>  ICMS Controlled (Off) <input checked="" type="checkbox"/>  Increasing Throughput <input checked="" type="checkbox"/>  Decreasing Throughput <input checked="" type="checkbox"/>  ICMS Control Canceled <input checked="" type="checkbox"/>  Unavailable	<p>Ramp Meter:</p> <ul style="list-style-type: none"> • Metering (On): a ramp meter that is currently metering • Not Metering (Off): a ramp meter that is currently not metering • Failure or Unknown: the system has not received any valid data • ICMS Command Queue: the ramp is currently in the queue for an ICMS response plan • ICMS Controlled (recent): the ramp has recently been controlled by an ICMS response plan • ICMS Controlled: the ramp is currently under an ICMS response plan • Increasing Throughput: while under ICMS control, the ramp is currently active in increasing the throughput of traffic • Decreasing Throughput: while under ICMS control, the ramp is currently active in decreasing the throughput of traffic • ICMS Control Canceled: the ramp has been released from the an ICMS response plan • Unavailable: the ramp is not available for an ICMS response plan
Parking Facilities <input checked="" type="checkbox"/>  Available <input checked="" type="checkbox"/>  Lot is Full <input checked="" type="checkbox"/>  Unknown Status	<p>Parking Facilities:</p> <ul style="list-style-type: none"> • Availability: a facility that has availability of open spaces • Lot is Full: no spaces are available • Status Unknown: the system has not received any valid data

Legend Icon	Description
Signals  Operational  Failure or Unknown  Flash or Alarm  ICMS Command Queued  ICMS Controlled (recent)  ICMS Controlled  Increasing Throughput  Decreasing Throughput  ICMS Control Canceled  Unavailable	<p>Signals:</p> <ul style="list-style-type: none"> Operational: the signal is operating in normal fashion Failure or Unknown: the system has not received any valid data Flash or Alarm: the signal is in a flash or alarm mode ICMS Command Queue: the signal is currently in the queue for an ICMS response plan ICMS Controlled (recent): the signal has recently been controlled by an ICMS response plan ICMS Controlled: the signal is currently under an ICMS response plan Increasing Throughput: the signal is currently active in increasing the throughput of traffic Decreasing Throughput: the signal is currently active in decreasing the throughput of traffic ICMS Control Canceled: the signal has been released from the an ICMS response plan Unavailable: the signal is not available for an ICMS response plan
VDS Speed Highway  50+ mph  25 - 49 mph  0 - 24 mph Arterial  40+ mph  20 - 39 mph  0 - 19 mph Both  Expired Data  Invalid Data  No Data	<p>VDS Speed:</p> <ul style="list-style-type: none"> Highway: colors represent the speed on a particular highway segment Arterial: colors represent the speed on a particular arterial segment Expired Data: the latest data the system has received is too old for display Invalid Data: the system has not received any valid data No Data: the system has not received any data
VDS Occupancy Highway  20+ pct  10 - 19 pct  0 - 9 pct Arterial  20+ pct  10 - 19 pct  0 - 9 pct Both  Expired Data  Invalid Data  No Data	<p>VDS Occupancy:</p> <ul style="list-style-type: none"> Highway: colors represent the occupancy on a particular highway segment Arterial: colors represent the occupancy on a particular arterial segment Expired Data: the latest data the system has received is too old for display Invalid Data: the system has not received any valid data No Data: the system has not received any data

Legend Icon	Description
VDS Volume Highway  100+ veh  50 - 99 veh  0 - 49 veh Arterial  60+ veh  30 - 59 veh  0 - 29 veh Both  Expired Data  Invalid Data  No Data	VDS Volume: <ul style="list-style-type: none"> Highway: colors represent the volume on a particular highway segment Arterial: colors represent the volume on a particular arterial segment Expired Data: the latest data the system has received is too old for display Invalid Data: the system has not received any valid data No Data: the system has not received any data
Managed Lane Status  Northbound+1  Northbound+3  Southbound+1  Southbound+3  2+2  Closed  Unknown Status	Managed Lane Status: <ul style="list-style-type: none"> Northbound+1: 1 lane is open in the Northbound direction Northbound+3: 3 lanes are open in the Northbound direction Southbound+1: 1 lane is open in the Southbound direction Southbound+3: 3 lanes are open in the Southbound direction 2+2: lanes in both directions are open Closed to All: the lanes are closed completely Unknown Status: the system has not received any valid data

Legend Icon	Description
Precipitation  Rain Light  Rain Moderate  Rain Heavy  Snow Light  Snow Moderate  Snow Heavy  Mixed Light  Mixed Moderate  Mixed Heavy  Freezing Rain Light  Freezing Rain Moderate  Freezing Rain Heavy  Light  Light Freezing  Unidentified Light  Unidentified Moderate  Unidentified Heavy  Other  Data Not Current	<p>Precipitation: various stages of precipitation on the roadway.</p> <p>Data Not Current: the system has not received data for a specific time period</p>
Wind Gust Speed  0-20 MPH  21-40 MPH  40+ MPH  Data Not Current	<p>Wind Gust:</p> <ul style="list-style-type: none"> 0 – 20 MPH: the current wind gust speed is between 0 and 20 MPH 21 – 40 MPH: the current wind gust speed is between 21 and 40 MPH 40+ MPH: the current wind gust speed is above 40 MPH Data Not Current: the system has not received data for a specific timer
Average Wind Speed  0-20 MPH  21-40 MPH  40+ MPH  Data Not Current	<p>Average Wind Speed:</p> <ul style="list-style-type: none"> 0 – 20 MPH: the current average wind speed is between 0 and 20 MPH 21 – 40 MPH: the current average wind speed is between 21 and 40 MPH 40+ MPH: the current average wind speed is above 40 MPH Data Not Current: the system has not received data for a specific time period

Legend Icon	Description
Air Temperature  Above 32 F°  32 F° or Lower  Data Not Current	Air Temperature: <ul style="list-style-type: none"> Above 32 F° : the current air temperature is above freezing (32 F°) 32 F° or Lower: the current air temperature is below freezing (32 F°) Data Not Current: the system has not received data for a specific time
Surface Conditions  Dry  Wet Above Freezing  Chemical Wet  Wet Below Freezing  Other  Data Not Current  Sensor Failure/No Report	Surface Conditions: <ul style="list-style-type: none"> Dry: the current surface condition is dry Wet Above Freezing: the current surface condition is wet above freezing level Chemical Wet: the current surface condition is chemically wet Wet Below Freezing: the current surface condition is web below freezing level Other: the current surface condition is unknown Data Not Current: the system has not received data for a specific time period Sensor Failure/No Report: the system is reporting for the current time period that the sensor is failed
  	Google Layer: <ul style="list-style-type: none"> Google Traffic: toggle the Google Traffic layer on/off for display Google Transit: toggle the Google Transit layer on/off for display Google Weather: toggle the Google Weather layer on/off for display
Forecast Traffic 17:00  15  30  45  60  LOS  V/C  Speed Level of Service  E - F  D  A - C	Forecast (Congestion): <ul style="list-style-type: none"> Forecast – 60 Minute: toggle the congestion forecast of 60 minutes on/off for display Forecast – 45 Minute: toggle the congestion forecast of 45 minutes on/off for display Forecast – 30 Minute: toggle the congestion forecast of 30 minutes on/off for display Forecast – 15 Minute: toggle the congestion forecast of 15 minutes on/off for display <p>User is able to toggle data for the map display between LOS (Level of Service), V/C (Vehicle over Capacity) or Speed</p>

Viewing Map Details

Tool Tips: Hovering the mouse pointer over icons on the map will pop up a box with basic information about the equipment, event or any other feature represented by that icon. Tool tip information is only available for icons depicted in the legend.

An example of a tooltip for a CPS sign is shown below in Figure 22.

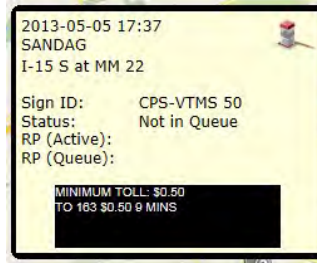


FIGURE 22: EXAMPLE TOOLTIP FOR CPS SIGN

Icons are layered on the map by type or feature class. Icons that are higher on the list are displayed above or on top of any icons below on the list and will take precedence in the tool tip information that is displayed. If two icons occupy the same geographic position, the icon layer visibility may need to be toggled off to access the underlying icon.

By using the black Switcher Bar at the bottom of the map window, icon types can be turned on (green) or off (yellow) in the map display. The icons can also be turned off by opening the legend and de-selecting the icon type, i.e. by clicking in the legend in check box area if one exists, or on the icons themselves if there is only one type.

Icon Layering: By default, icons are configured to be displayed at specific zoom levels. Selecting the *Icon Layering* link allows the user to set which types of icons will be displayed at certain zoom levels. This will keep the map from appearing cluttered with icons at the higher levels.

When the *Icon Layering* link is selected, the legend will show (for each feature class), either a link entitled *Default Visibility* or a button labeled *Set as Maximum Zoom*. Figure 23 shows the Icon Layer for a subset of the icons. If a feature class is presently set to its default visibility, a link entitled “Default Visibility” is displayed at the bottom of each section. The icons in this feature class will become visible on the map when its default visibility zoom level is reached. The operator can modify the zoom level at which the feature class is to become visible on the map by first clicking on the *Icon Layering* link in the legend, then selecting the *Default Visibility* link. This will enable a *Set as Maximum Zoom* button to appear. The operator must then zoom into the appropriate level desired on the map, then click on the *Set as Maximum Zoom* button. The current zoom level will become the zoom level at which the icons in this feature class become visible on the map.

The icon layering visibility designation will be saved along with all other desktop settings if the operator chooses to save his desktop setting. This can be done using the *Profile* window.

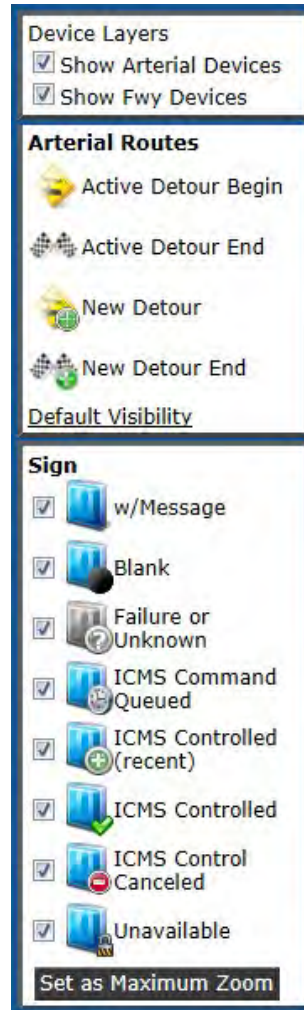


FIGURE 23: ICON LAYERING

Viewing Other Maps or Specific Geographic Areas

If multiple map backgrounds are managed by an organization (like both road maps and aerial photography), or if the organization has specific geographic areas that can be referenced by name (like cities or corridors), ICMS provides access to these maps or navigation to these areas by the user selecting an entry from the map selection drop down box, shown in Figure 24. Clicking on an entry in the map selection drop down box will alter the map view to include the map background, the map extent and the map zoom level as stored with the specific map selection name. The map legend icons will continue to be overlaid properly in the newly selected map.

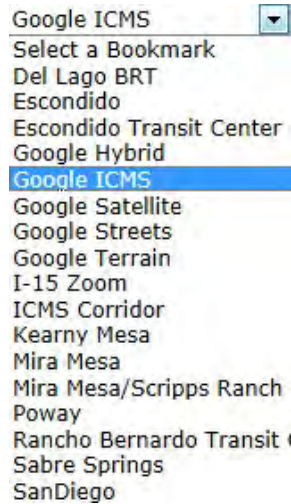


FIGURE 24: MAP SELECTION

Note: The map drop down does not return to the default view of an already displaying map. For example, if the operator has chosen San Diego from the drop down list, and then zooms in to view roadway details, the system assumes the operator would like to remain zoomed in on the displaying map. If the operator selects the exact same map from the drop down list, the system intentionally does not replace the detailed map with the default map. To return to the default view of the San Diego map, choose another map from the drop down list, then select the San Diego map again.

Using the Switcher Bar: Displaying Map Icons

The Map window contains a switcher bar — a black bar across the bottom of the window with lit and unlit selections (see Figure 25). In the Map window, the switcher bar turns on (green) and off (yellow) icons on the map display. If a type name in the switcher bar is yellow, click on the name to display the icons on the map. If the type name in the switcher bar is green, click on the name to remove the icons from the map.

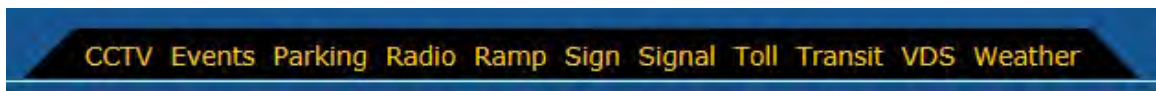


FIGURE 25: SWITCHER BAR

Using the Multiviewer

The MultiViewer windows are an extension of the Viewer, List, and Map windows. The MultiViewer window can hold multiple devices of different types and multiple events simultaneously.

Viewing Options for MultiViewer Windows

There are 3 different viewing options for the MultiViewer window:

- The *Tile* option places the devices and events into tiled Viewer format.
- The *List* option places those same elements in a list format.
- The *Map* option places those same items onto a map.

To select the different options, click on the *Tile*, *Map* or *List* options at the top of the left panel. Examples of each option are below. Figure 26 displays the MultiViewer in Tile format.

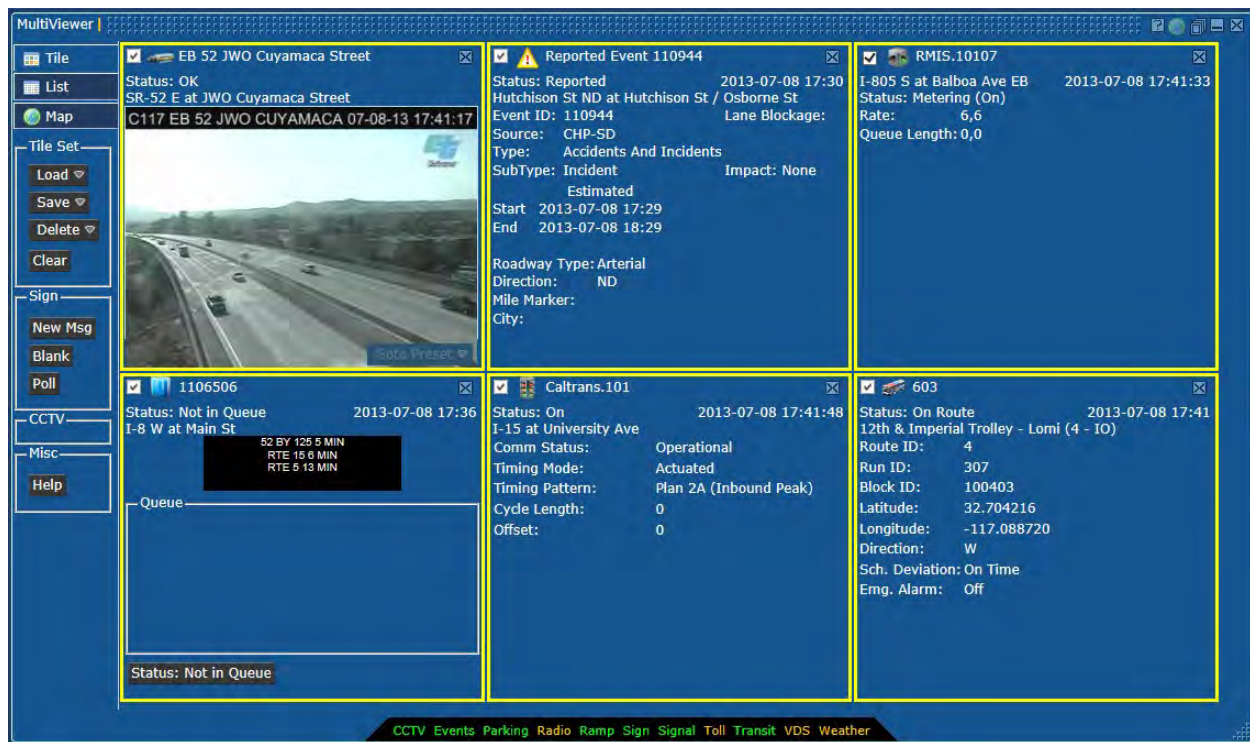


FIGURE 26: MULTIVIEWER WINDOW IN TILE FORMAT

Figure 27 displays the MultiViewer in List format.

State	Device Name	Roadway	Cross Street	City	Mile Marker	Status	Close
	1106506	I-8	Main St	La Mesa	14.34	Not in Queue	
	603	
	Caltrans.101	I-15	University Ave	
	EB 52 JWO Cuyamaca Street	SR-52	JWO Cuyamaca Street	Santee	15.09	OK	
	RMIS.10107	I-805	Balboa Ave EB	San Diego	21.47	Metering (On)	
	incident	Hutchison St	Hutchison St / Osborne St			Reported	

FIGURE 27: MULTIVIEWER WINDOW IN LIST FORMAT

Figure 28 displays the MultiViewer in Map format.

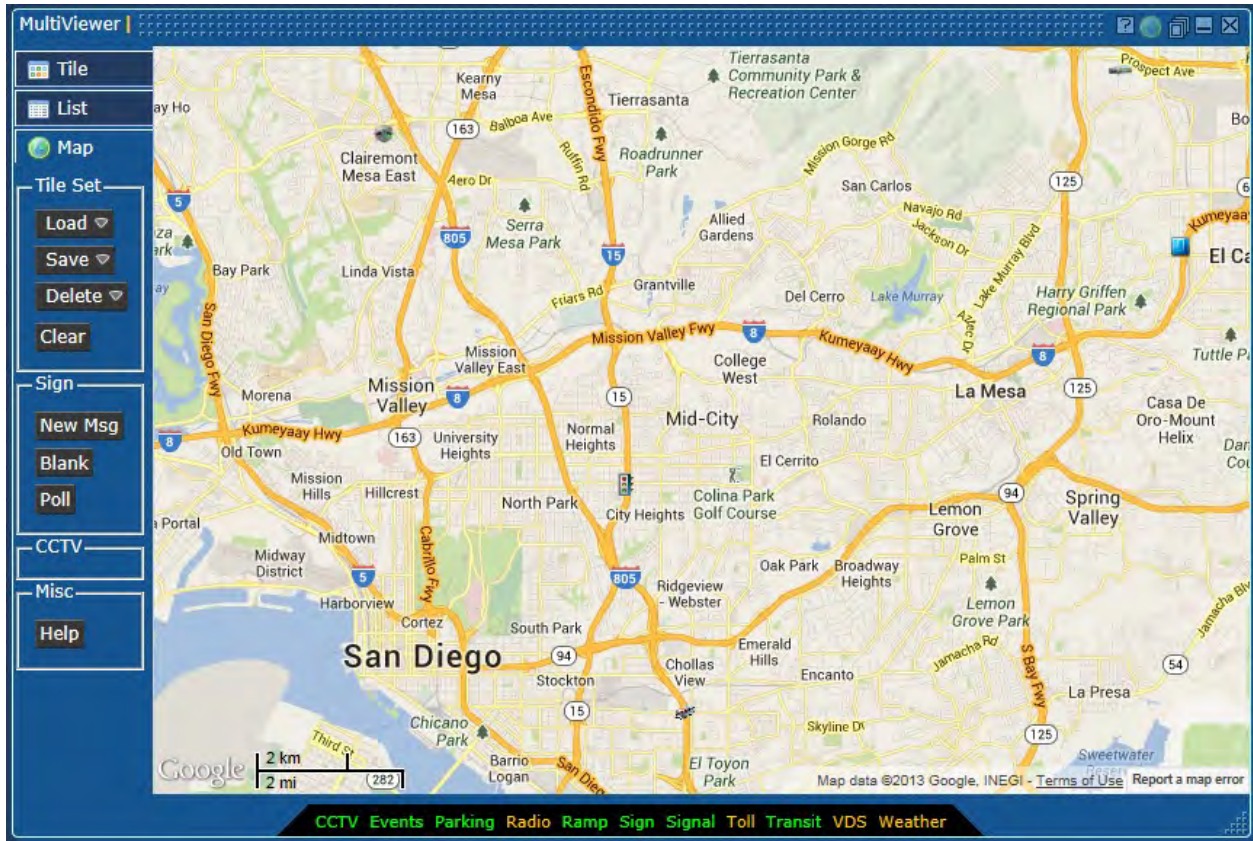




FIGURE 28: MULTIVIEWER WINDOW IN MAP FORMAT

Using a MultiViewer Window

The following instructions describe how to manage MultiViewer windows.

To place items onto a MultiViewer window:

- 1) Click on the MultiViewer link in the upper menu bar.
- 2) Drag and drop the devices or events from either the Map or List windows. Any DMS, CCTV, Event, or VDS can be placed in this manner.
- 3) Click on the Tile, List, or Map options at the top of the left panel to switch between viewing options.
- 4) To view an individual element in more detail, double-click on the individual element to bring up a regular Viewer window for that element.

Note: The removal of individual elements from a MultiViewer window must be done in the Tile or List viewing formats. To remove an element using the Tile view, click on the Close button  in the upper right hand corner of the individual tile. To remove an element using the List view, click on the Close button  in the right column for the individual element.

To save a MultiViewer window:

- 1) Place items onto the MultiViewer window as directed above.
- 2) Click on the *Save* button in the Tile Set section of the left panel.

- 3) When prompted, enter the desired name for the MultiViewer window.
- 4) Click on the *Save* button.

To recall or load an existing MultiViewer window:

- 1) Click on the *Load* button in the Tile Set section of the left panel.
- 2) Select the MultiViewer to load.

Note: This action loads the elements of the previously saved MultiViewer window, adding to those currently being displayed. It does not replace what is currently being displayed.

To remove a named MultiViewer window:

- 1) Click on the *Delete* button in the Tile Set section of the left panel.
- 2) Select the MultiViewer window to delete.

To clear all currently displaying elements from a MultiViewer window:

- 1) Click on the *Clear* button in the Tile Set section of the left panel.
- 2) All elements will be removed from view in all 3 viewing formats.

Managing Events

This section describes how to manage events. It includes viewing, creating, modifying, and terminating events. Also included is the generation and activation of a response plan for the event.

To open an Event Viewer window, first click the *Viewer* link in the upper menu bar. Then, click on the *Events* link in the Switcher Bar. Figure 29 displays the Event Viewer in its default state.

The Event Viewer Layout

The Event Viewer window is titled "Viewer | Event" and features a top navigation bar with tabs: "Event Basics", "Notes", "Details", and "Geolocator". Below the tabs are radio buttons for "Unscheduled", "Scheduled", and "Recurring", with "Unscheduled" selected. An "Event Edit" link is in the top right.

The "Event Basics" section contains the following fields:

- Source: ICMS (dropdown)
- Type: Accidents And Incidents (dropdown)
- Subtype: Accident (dropdown)
- Impact: None (dropdown)
- Status: Unconfirmed (dropdown)
- Created: [empty] by [empty]
- Confirmed: [empty] by [empty]
- Updated: [empty] by [empty]

The "Location Manager" section includes:

- Route: [empty] (dropdown)
- Direction: [empty] (dropdown)
- Start Cross St: [empty] (dropdown)
- Mile Marker: [empty]
- Road Type: [empty] (dropdown)
- Region: [empty] (dropdown)
- Lanes Blocked: ☒ Lanes Blocked, ☐ No/Unknown Blockage
- Buttons: - LS MN MN +, Geocode, Geocode

The "Event Schedule" section includes:

- ☐ Auto-Terminate
- Duration: Days 0, Hours 1, Mins 0
- Start Time: 5/5/2013 17:54
- End Time: 5/5/2013 18:54

The "Event Manager" section includes:

- Nearby CCTVs: None available (dropdown)
- Parent: 0 (dropdown)
- Alarm Event: At Event End (dropdown)
- Alert Me: No Alert (dropdown)
- Merge To: [empty] (dropdown)
- Split Event: Split (button)
- Buttons: Acknowledge, Confirm, End Event

At the bottom right are "Save", "New", and "Cancel" buttons. A bottom navigation bar contains: CCTV, Events, Parking, Radio, Ramp, Sign, Signal, Toll, Transit, VDS, Weather.

FIGURE 29: EVENT VIEWER

The Event Viewer window has the following features:

- a series of drop-down lists to further define the type of event,
- a tool to clarify which lanes are blocked, and the description of the lane (shoulder, mainline, etc)
- a series of tabs to provide further details such as location and damage sustained,
- buttons to confirm or terminate the event,

- button to find the nearby CCTV cameras, and
- if the event has had a response plan generated, there is a tab to view all the evaluations.

Creating a New Event

For the majority of the ICMS system, events are received from the external systems. There will be very few, if any, reasons to create an event on the ICMS workstation. If necessary, the following sections discuss how to create an event. Please note that while only location, event type, and the blockage pattern are required for event creation, the more information that is supplied will generate a more accurate response plan.

The same Event Viewer window is used to create both Planned and Unplanned events. There are a minimum number of fields that must be entered in order to create an event, which include: latitude, longitude, roadway type, roadway name, cross street, county and the lane blockage. In order for response plans to respond appropriately, additional fields must be set.

Creating an Unplanned Event

To create a new unplanned event:

- Open a Viewer window using the link in the upper menu bar.
- Click on the *Events* link in the lower switcher bar of the blank Viewer window.
- Using the series of drop-down lists, select the source, type, subtype and impact of the event.
- Use the Lane Blockage Tool to denote lanes blocked. If there are lanes blocked, use the '+' sign to create a checkbox for each lane; select the checkbox if the lane is blocked. To modify the lane type, click on the lane type beneath the checkbox and use the dropdown list to select the correct lane type. Figure 30 shows the Lane Blockage tool.



FIGURE 30: LANE BLOCKAGE TOOL

- Click on the Geo-Location tab, shown in Figure 31. Place the event on the map using the Geo-Locator. Please refer to the Using the Geo-Locator Map to Locate Event section for additional details.

Viewer | Event

Event Basics | Notes | Details | Geolocator

Geo-Locator Map

City: San Diego
 County: San Diego
 State: CA
 Latitude: 33.00534
 Longitude: -117.084852

ICMS Corridor

OUT 1 2 3 4 5 6 7 8 9 10 IN

Geocode

Save New Cancel

CCTV Events Parking Radio Ramp Sign Signal Toll Transit VDS Weather

FIGURE 31: GEO-LOCATION TAB

- Enter the Estimated Duration shown in Figure 32. Click the Auto-Terminate checkbox if the event should automatically terminate when the End Time is reached. If the Auto-Terminate checkbox is not selected, the event will remain until manually terminated.

Event Schedule

☐ Auto-Terminate

Duration

Days 0 Hours 1 Mins 0

Start Time 5/5/2013 17:58

End Time 5/5/2013 18:58

FIGURE 32: EVENT - DURATION TAB

- Click on the *Details* tab, shown in Figure 33.
 - Enter the Event Conditions if known.
 - Select the Vehicle types and enter the number of vehicle(s) involved. To enable more dropdown lists, click on the *Add* button.
 - Enter the People Involved if known.
 - Enter any additional information in the Hazmat or Proprietary fields.

FIGURE 33: DETAILS TAB

- Click on the *Notes* tab, shown in Figure 34. Add any additional comments in the text editing area. Click the *Add* button.

Viewer | Event

Event Basics | Notes | Details | Geolocator

Add Note

Date Created	Comment	Operator
--------------	---------	----------

Save New Cancel

CCTV Events Parking Radio Ramp Sign Signal Toll Transit VDS Weather

FIGURE 34: NOTES TAB

- Click the *Confirm* button on the Event Basics tab to create the event as a Confirmed event, if necessary. If the event has been received from the external agencies, then the event is already confirmed.

Creating a Planned Event

The screenshot shows the 'Event' form in the ICMS system. The 'Event Basics' tab is active, and the 'Scheduled' radio button is selected. The form includes fields for Source (ICMS), Type (Closures), Subtype (Blocked), Impact (None), Status (Unconfirmed), Created, Confirmed, and Updated. The 'Location Manager' section contains fields for Route, Direction, Start Cross St, Mile Marker, Road Type, Region, End Cross St, and Mile Marker. The 'Event Schedule' section has fields for Scheduled Duration (Days, Hours, Mins) and Actual Duration (Days, Hours, Mins). The 'Event Manager' section includes fields for Nearby CCTVs, Alarm Event, Alert Me, Parent, Merge To, Split Event, and buttons for Acknowledge, Confirm, and End Event. The form also includes a 'Geocode' button and a 'Save' button at the bottom.

FIGURE 35: CREATING A PLANNED EVENT

To create a new planned event:

1. Open a Viewer window using the link in the upper menu bar.
2. Click on the *Events* link in the lower switcher bar of the blank Viewer window. The default viewer will appear (see Figure 35).
3. Select *Scheduled* from the list of radio buttons.
4. Enter the following information:
 - a. source, type, subtype, impact
 - b. location information (geolocator tab), lane blockage information
 - c. scheduled duration
5. Click the *Confirm* button in the Event Manager section to create the event as a Confirmed event.

Note: Event information, such as location information (latitude and longitude), in the ICMS will be used by external systems thus the accuracy of the event and its location is critical.

Terminating Events

To terminate an existing event that was created on the ICMS workstation:

1. Open a Viewer window using the link in the upper menu bar.
2. Drag and drop an event icon from the Map or List windows.
3. Click the *End Event* button in the Status To section.
4. Click OK on the confirmation request.

When an event is terminated, the status changes to TERMINATED, and the status in all open windows will update to TERMINATED. The time allotted for a terminated event to remain in the system is configurable. The *event.termination.timeout* parameter is located on the Administration window (Properties switcher bar) and is only accessible to those with the *Admin* privilege.

Using the Geo-Locator Map to Locate Event

The ICMS requires the latitude and longitude of all events for icons to be properly located in the Map window. These attributes can be manually entered into the appropriate fields in the event entry forms. Or, the Geo-Locator map can be opened and the event's location attributes assigned by placing it on the map.

To open the Geo-Locator, click on the Geo-Locator tab on the Event Viewer or the *Geocode* button. See Figure 36.

A default map will be displayed for a new event. If this is an existing event, this map will be centered on the current placement of the event. This map can be manipulated in the same manner as the map in the Map window—either the mouse or the map controls can be used to move around in the map view.

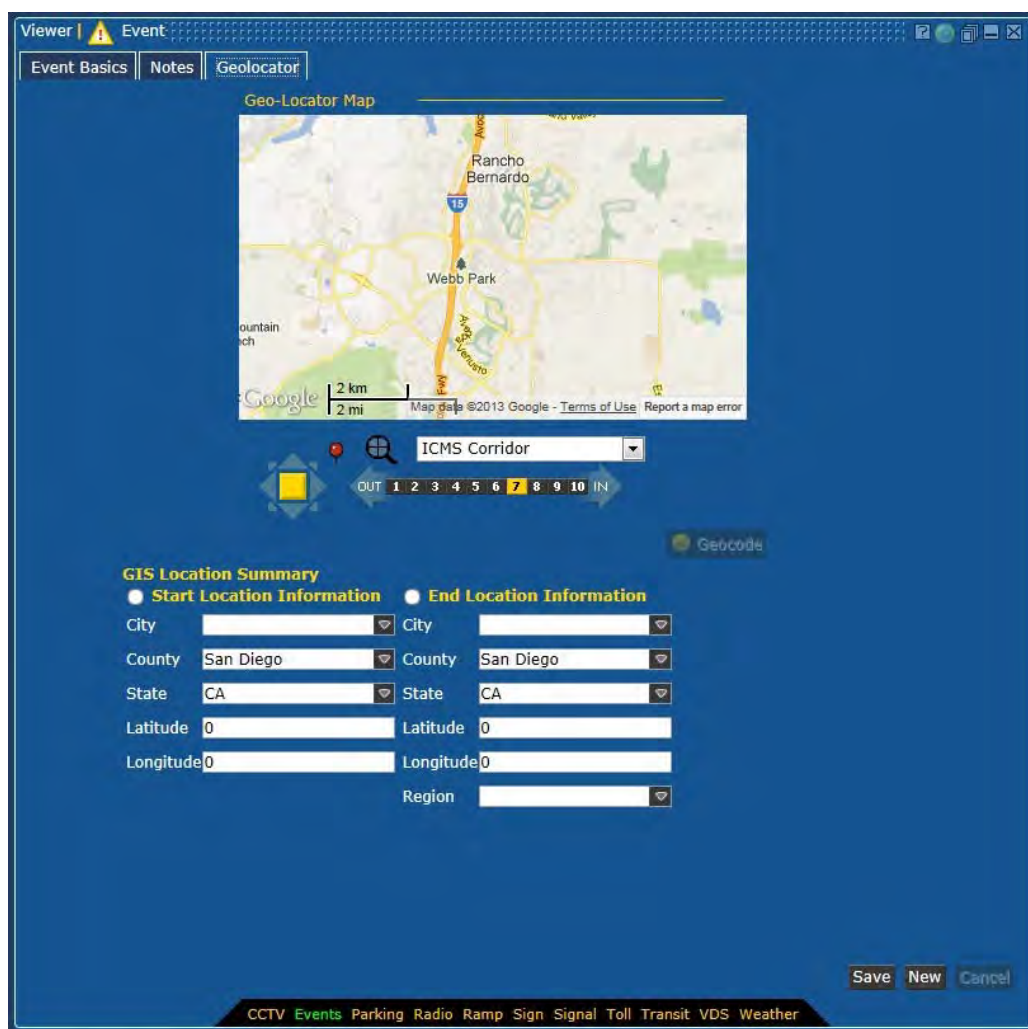



FIGURE 36: GEO-LOCATOR MAP

To capture the latitude and longitude of an event on the map:

1. Using the map controls, zoom in to the location desired for the placement of the icon.
2. Click the  (pushpin) button located in the map controls. The outline of the pushpin turns yellow.
3. Find the correct location for the event on the map, and click on that location. Notice that the latitude and longitude fields will populate. You may continue to click at new locations until you are satisfied with the location. To ensure accurate placement of the event, zoom in as much as possible to place the incident.

Note: Event information, such as location information (latitude and longitude), in the ICMS will be used by external systems thus the accuracy of the event and its location is critical.

Response Plans

Response Plans are automatically generated for ICMS (congestion) events. Once an event is confirmed, the system auto-generates a response plan and when the generation is complete, the Response Plans tab will become visible. Select the *Response Plans* tab to view the generated evaluations, shown in Figure 37. The system will select the option

with the best Measure of Effectiveness (MOE). The *Evaluations* selection also allows the display of either the Assets or Diversions to be shown on the graphical evaluation.

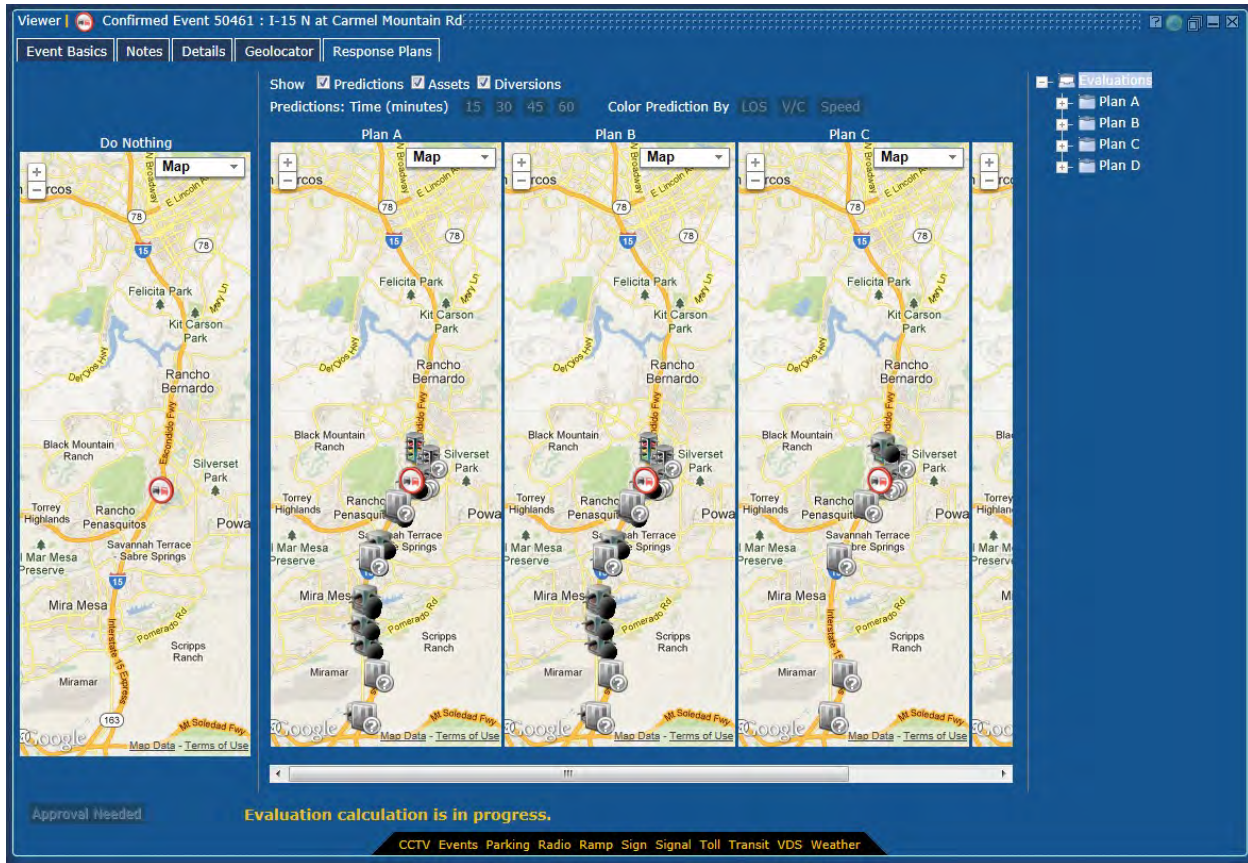


FIGURE 37: RESPONSE PLAN GENERATION

When an event with a response plan has been generated that requires device approval, the *Approval Needed* button is highlighted. This indicates that review of and approval for a device is needed. This is shown in Figure 38.

Viewer

Confirmed Event 1645093 : I-15 S @ Carmel Mtn Road

Event Basics

Notes

Details

Geolocator

Response Plans

Event Edit

Source

Operator-detected

Status

Confirmed

Type

Accidents And Incidents

Created

2013-01-31 15:34

by

admin

Subtype

Accident

Confirmed

2013-01-31 15:34

by

admin

Impact

Major

Updated

2013-01-31 15:36

by

admin

Location Manager

Route

I-15

Road Type

Direction

South

Region

Start Cross St

Carmel Mtn Road

Mile Marker

0

Lanes Blocked

☐ No/Unknown Blockage

☐

☐

☐

☒

☒

LS MN MN MN MN

+

Map It

Event Schedule

☐ Auto-Terminate

Elapsed Time

0 d 0 h 4 min

Refresh

Duration

Days

0

Hours

1

Mins

0

Start Time

2/4/2013

10:59

End Time

2/4/2013

11:59

Event Manager

Nearby CCTVs

None available

Parent

0

Acknowledge

Alarm Event

At Event End

Merge To:

Merge

Confirm

Alert Me

No Alert

Split Event

Split

End Event

Approval Needed

Save

New

Cancel

Events

Parking

Ramp

Sign

Signal

Transit

VDS

Weather

FIGURE 38: RESPONSE PLAN – APPROVAL NOTIFICATION

The message “Evaluation calculation is in progress” appears while the evaluation scores are being calculated. This is shown in Figure 39.

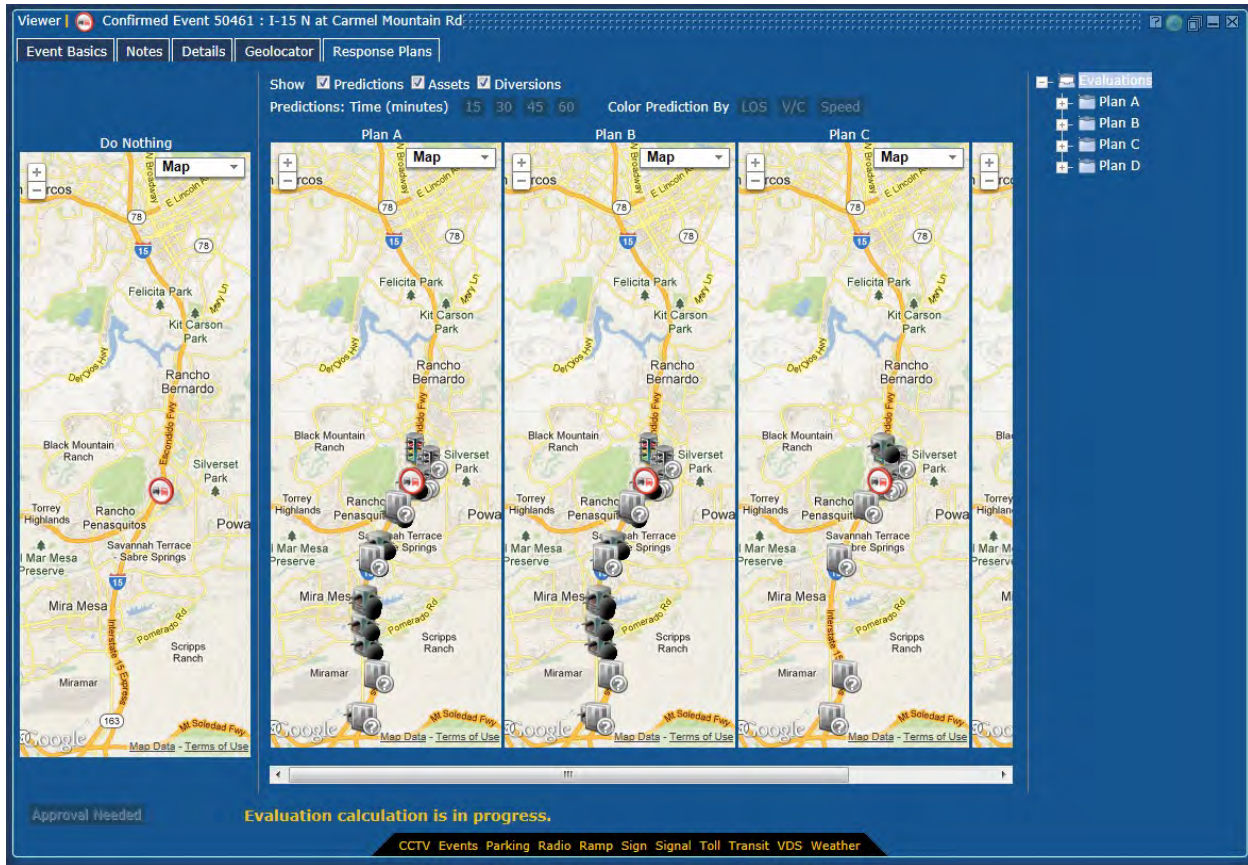


FIGURE 39: RESPONSE PLAN – NO EVALUATION

After the evaluations are completed, the individual response plans will receive their scores. This is shown in Figure 40. The evaluation plan with the best score will be placed into the left-most slot and will be titled “Recommended”. The remaining plans are reordered.

Also available at this time are the Predictions. The user is able to select a predictions time (15, 30, 45, or 60 minutes), as well as the prediction itself (LOS, V/C, or speed).

Each map has manipulation tools (pan or zoom). If the user manipulates one map, all maps are manipulated.

The user has the ability to view the following on the evaluation maps:

- Predictions
- Assets (devices)
- Diversions

A specific evaluation plan can be selected by clicking on the individual Plan selection. From the specific evaluation plan selection, the operator can select the individual devices (Sign, Ramp, Signals, Radio, or Public) to review. These are shown in the following figures. Excluding the Public selection, all other device selections show the current status of the device, the current action (message, rate, or plan), and the recommendation for the device based upon the event and response information.

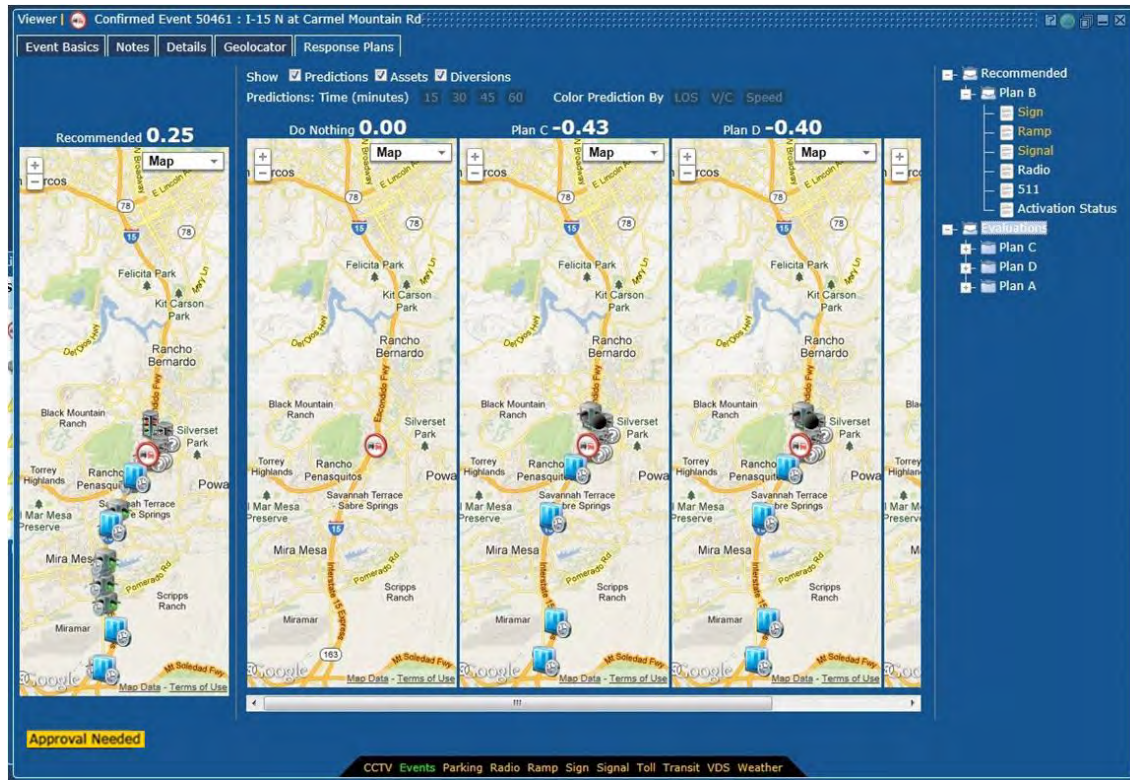


FIGURE 40: RESPONSE PLAN – EVALUATION WITH SCORE

Figure 41 shows the asset selection summary for the response plan.

Viewer | Confirmed Event 1645093 : I-15 S @ Carmel Mtn Road

Event Basics | Notes | Details | Geolocator | Response

Recommended 54

Map

ASSET & ROUTE SELECTIONS

Type	Owner	Action Summary	Number of Devices	Approval Status
Downstream Ramp	RMIS		3	Pending
Upstream Ramp	RMIS		9	Pending
Sign	Caltrans-D11		3	Pending
Signal	San Diego	CAMINO DEL RIO S	23	Pending

Approval Needed

CCTV Events Parking Radio Ramp Sign Signal Transit VDS Weather

Recommended

- Sign
- Ramp
- Signal
- Radio
- S11

Evaluation

- Plan A
- Plan C
- Plan D

FIGURE 41: RESPONSE PLAN TAB – SUMMARY

The Signs to be used for the evaluation plan are available on the *Sign* selection shown in Figure 42.

Viewer Confirmed Event 1645093 : I-15 S @ Carmel Mtn Road

Event Basics | Notes | Details | Geolocator | Response

Icon	Location	Owner	Current Message	Proposed Message	Remove
	I-15 S @ Camino Del Norte	Caltrans-D11		ACCIDENT AT RTE 56 USE TRANSIT Caltrans-D11	
	I-15 S @ Rancho Bernardo Rd	Caltrans-D11		ACCIDENT AT RTE 56 USE RHO BERNARDO Caltrans-D11	
	I-15 S @ Via Rancho Pkwy	Caltrans-D11		ACCIDENT AT RTE 56 USE BERNARDO RD Caltrans-D11	

Status: Pending Approve Deny

Recommended

- Sign
- Ramp
- Signal
- Radio
- 511

Evaluation

- Plan A
- Plan C
- Plan D

CCTV Events Parking Radio Ramp Sign Signal Transit VDS Weather

FIGURE 42: RESPONSE PLAN – SIGN

The *Signal* selection is shown in Figure 43. These are the signals that are recommended to be included in this specific evaluation plan.

Viewer Confirmed Event 38628 : I-15 S at Valley Pkwy

Event Basics | Notes | Details | Geolocator | Response Plans

SR-78 EB - Centre City SB -Valley

Recommended
3.29272008

Icon	Name	Owner	Current Plan	Proposed Plan	Remove
	15 NB @ VALLEY PKWY	Caltrans	6A	6A	
	15 SB @ VALLEY PKWY	Caltrans	6A	6A	
	Centre City & Mission	Escondido	3A	3A	
	La Terraza & Valley	Escondido	7A	6A	
	Tulip & Valley	Escondido	7A	6A	

Status: Pending

Approve Deny Cancel Manual

Approval Needed

Recommended

- Plan E
 - Sign
 - Ramp
 - Radio
 - 511
 - Activation Status
- Evaluations
 - Plan B
 - Plan C
 - Plan A
 - Plan D
 - Plan F

Events Parking Radio Ramp Sign Signal Toll Transit VDS Weather

FIGURE 43: RESPONSE PLAN – SIGNAL

The Ramps to be used for the specific evaluation are available on the *Ramp* tab shown in Figure 44. These ramps are separated into “Upstream” and “Downstream” ramps for easier viewing.

Viewer **Confirmed Event 38628 : I-15 S at Valley Pkwy**

Event Basics | Notes | Details | Geolocator | **Response Plans**

Recommended
3.29272008

Map

Upstream

Icon	Location	Current Rate	Proposed Rate	Remove

Downstream

Icon	Location	Current Rate	Proposed Rate	Remove
	I-15 S @ Auto Park Way/9th Ave		15	<input checked="" type="checkbox"/>

Status: Pending

Approve Deny Cancel Manual

Recommended

- Plan E
 - Sign
 - Signal
 - Radio
 - 511
 - Activation Status
- Evaluations
 - Plan B
 - Plan C
 - Plan A
 - Plan D
 - Plan F

Approval Needed

Events Parking Radio Ramp Sign Signal Toll Transit VDS Weather

FIGURE 44: RESPONSE PLAN – RAMPS

The message to the public to be used for the evaluation plan is available on the *Public* selection shown in Figure 45.

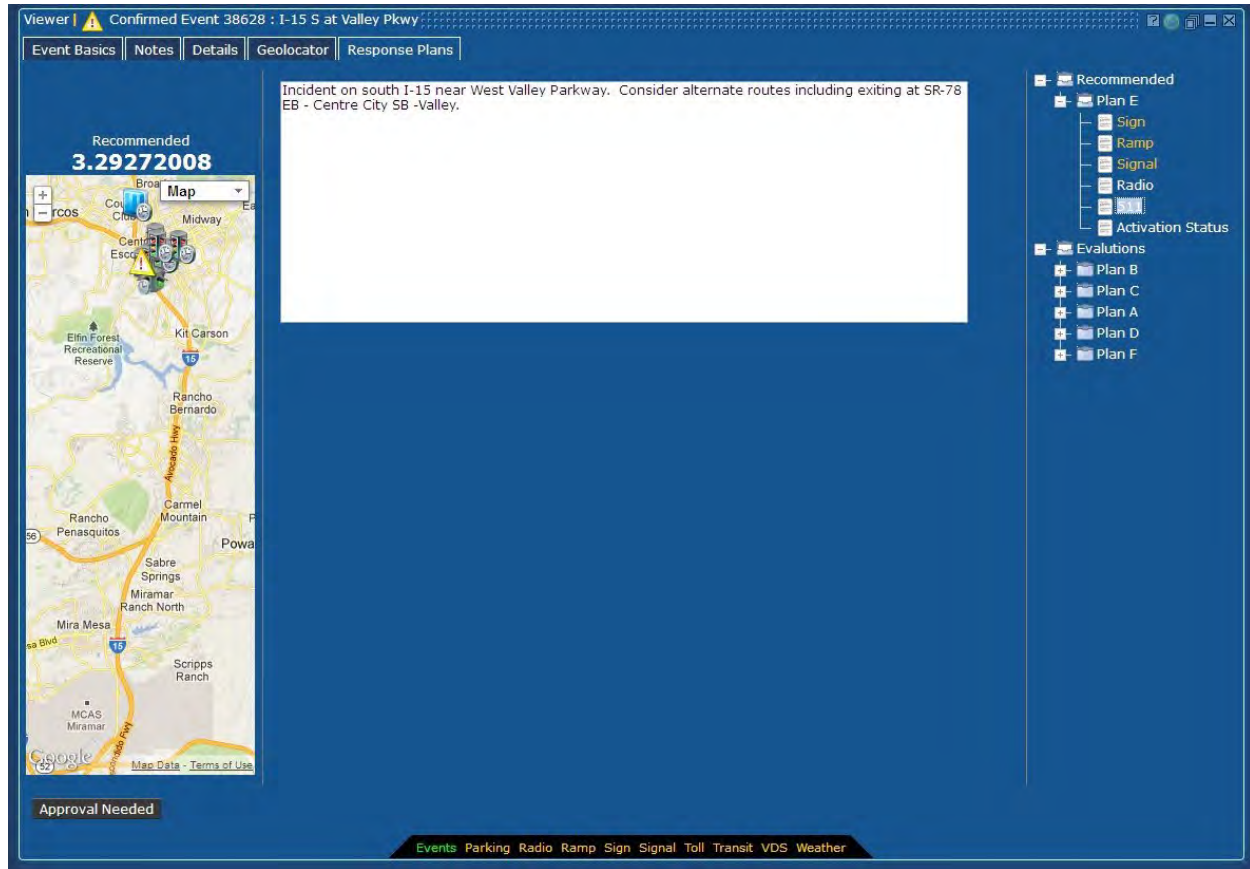


FIGURE 45: RESPONSE PLAN – PUBLIC (511)

The *Radio* selection is for future integrations. It will contain the recommendations for the Highway Advisory Radio (HAR) messages to be used for event.

The *Activation Status* selection shown in Figure 46 shows the approval status of the various devices that require approval for use, along with the notification status of each device type.

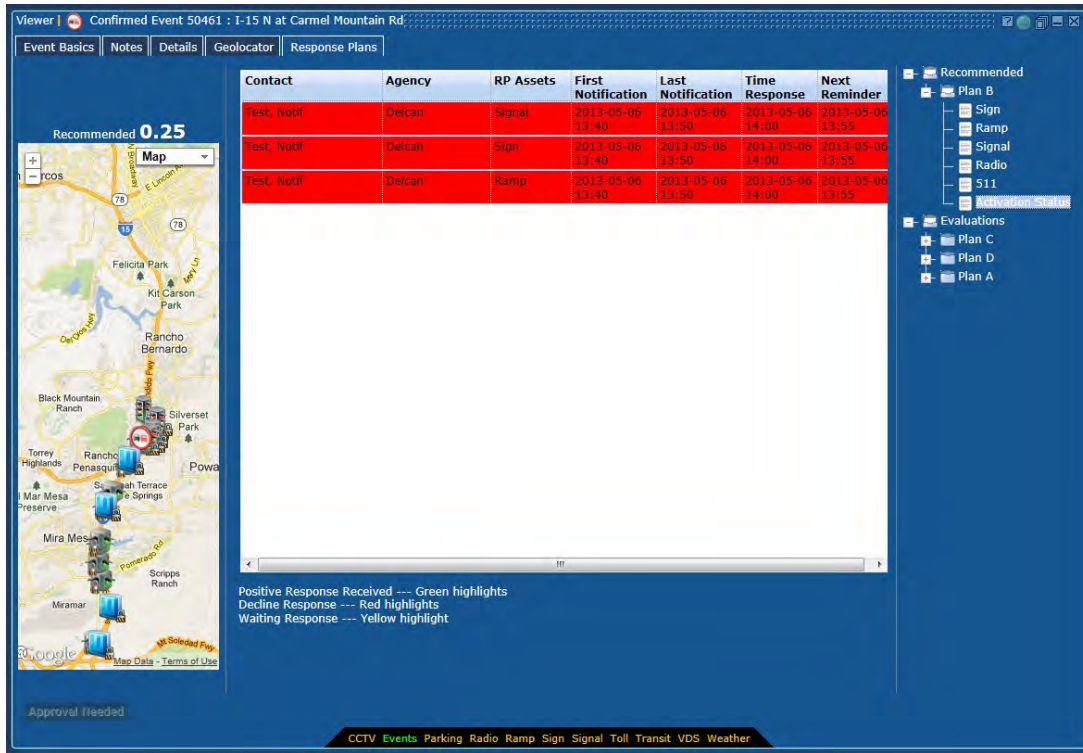


FIGURE 46: RESPONSE PLAN – ACTIVATION STATUS

Event Notifications and Approvals

When a Recommended Response Plan requires the approval from agency personnel to enact the plan (e.g. if device approval is required to modify a ramp's metering rate), the system will send out a notification to the user designated for that device. The notification will be either through email or SMS text message, and will contain the following information:

- event ID
- device type
- device ID
- proposed plan:
 - for signs – proposed message
 - for ramp meter – proposed rate
 - for signals – proposed timing pattern

Upon receipt of the notification (either through email or SMS text message), the user must take the following actions:

- Log into the ICM system
- Open a Viewer window for the event
- Select the Response Plan tab
- Highlight the Recommended plan on the right panel
- Click on the device to approve/deny

For each device type, users can take the following actions:

- approve (agree to use the devices)
- deny (decline to use the devices)
- or manual control, which includes
 - adding device manually by drag-n-drop the icon
 - remove devices
 - change the proposed plan (message, rate, or timing pattern)

Once the users respond to the device, the “Activation Status” (under the “Recommended” of the tree structure on the far right) shows the status of notification. It indicates how the users responded to the device (with the timestamp when they respond) by color code:

- approve or manual control – green
- deny – red
- device with no response from the user – yellow

The configuration of the users for notifications can be found under the “Using the Contact Inventory Window” section of the ICMS System Administration Manual.

Event Notification Escalation

Each user that is assigned the role to approve response plan devices, is assigned a notification level (1, 2, or 3, with 1 being the primary). Upon response plan activation, this designated user (with notification level 1) is sent a notification containing the event response plan information described above. This primary contact is given a fixed, but configurable amount of time to respond. If the user has not responded during the given time, a second notification to this user is sent as a reminder. A third notification is also sent. If, after the 3rd notification, the user does not respond, the notifications are escalated to the user with notification level 2. Again, this secondary user is given two reminders. If, after two reminders, this user has not responded, the notification is sent to the level 3 notification. If the 3rd contact does not respond, the response plan will not be approved, and will not be enacted.

The notification levels of each user allowed to approve devices is configurable in the “Using Contact Inventory Window” section of the ICMS System Administration Manual. The response times from notifications are set in the “Managing Corridor window/Notifications” section of the ICMS System Administration Manual.

Caltrans Event Responses

For those events that need a response from the Caltrans operators, this information will be displayed on the existing Caltrans Advanced Transportation Management System (ATMS). The operators will be able to select the event and approve and implement the desired response plan elements, i.e. Signs.

This section describes the process by which ICMS shall publish ICMS events and proposed CMS messages to gain ATMS Operator approval for usage of CMS message boards for the ICMS response.

This approach utilizes the Caltrans ATMS Event Response Plans as well as the ATMS CMS subsystem.

Workflow Description

The following is the workflow:

1. ICMS creates an event in ATMS by writing an Event containing a CMS Response Plan to the ATMS database.

In order to prevent ID overlap, the event will be created using the next Event ID as pulled from the sequence in the ATMS database. Once the event is inserted, a signal will be sent over the SmartSockets connection, notifying any ATMS GUIs of the new event. When this happens, the list as seen in Figure 47 and Figure 48 will be refreshed with the ICMS event shown, depending on the approach desired, in either the Confirmed or Unconfirmed Events table.

2. An ATMS Operator will see the new event appear in the Event Summary Window. The Operator will then review any event details or comments, describing the reason for the CMS request.
3. Once the Event is confirmed by the Operator, the “Response Plan” tab will be enabled as seen in Figure 49. The Operator will see that there is a CMS response already entered. The Operator has the following options as per the standard ATMS workflow:
 - a. Approve the suggested response plan, and send the set of messages to the field.
 - b. Modify the suggested messages then send out to the field.
 - c. Opt to reject the messages by not sending anything to the field.
4. ICMS will monitor the CMS message updates coming from ATMS and update its records.

If the response plan was approved, the Event ID associated with the active CMS messages will match the Event ID written into the ATMS database by ICMS at the beginning of the procedure. By comparing the actual CMS messages reported by ATMS, ICMS will be able to detect when, if at all, the messages from the ICMS event we approved.

Event Summary Window

Events inserted by ICMS will appear in the topmost table of the Caltrans ATMS Event Summary Window as an Unconfirmed Event. As a new entry will be written to the list, an Operator’s attention can be drawn to the event quickly. To further facilitate the recognition of an event created by ICMS, the CAD Code will be set to “ICMS” automatically. See Figure 47 for an example.

Event Summary Sep 17, 2012 9:57 AM

View by: Event State **Sort by:** Time - Ascending

Unconfirmed Events:

ID	Detection Time	Fwy	Cross Street	Type	CAD Code	CAD Number
1944	11/16/11 15:53	80 E	at BUCHANAN ST	Incident	ICMS	ICMS
1972	11/16/11 16:28	80 W	at CLEVELAND ST	Incident		
2031	11/16/11 17:32	80 E	at THORNTON AVE RM-E-DIAG	Incident		
2047	11/16/11 18:06	87 S	at GUAPALUPE PARKWAY	Incident		
2075	11/16/11 20:23	101 S	at WB 152 RM-S-LOOP	Incident		
2106	11/17/11 00:10	87 N	at TAYLOR STREET	Incident		
2111	11/17/11 00:28	680 S	at LANDES AVE	Incident		
2125	11/17/11 01:17	87 N	at TAYLOR ST RM-N-DIAG	Incident		
2163	11/17/11 03:40	680 N	at RAILROAD AVE RM-E-DIAG	Incident		
2164	11/17/11 03:48	101 N	at BAKER AVE RM-N-DIAG	Incident		

Confirmed Events:

ID	Detection Time	Fwy	Cross Street	Type	CAD Code	CAD Number
2346	12/28/11 15:56	880 N	at 66TH AVE/COLISEUM WAY	Special Event		

CHP Events:

CAD Number	Detection Time	Fwy	Cross Street	Type
------------	----------------	-----	--------------	------

Terminate
Details
Terminated Event Lookup
Ok

FIGURE 47: CALTRANS EVENT SUMMARY UNCONFIRMED

Once the Operator confirms the event, it will move to the Confirmed area. The response plan will then be accessible via the Event details screen. See Figure 48 for an example.

Event Summary

Sep 17, 2012 10:07 AM

View by: Event State Sort by: Time - Ascending

Unconfirmed Events:

ID	Detection Time	Fwy	Cross Street	Type	CAD Code	CAD Number
1972	11/16/11 16:28	80 W	at CLEVELAND ST	Incident		
2031	11/16/11 17:32	80 E	at THORNTON AVE RM-E-DIAG	Incident		
2047	11/16/11 18:06	87 S	at GUAPALUPE PARKWAY	Incident		
2075	11/16/11 20:23	101 S	at WB 152 RM-S-LOOP	Incident		
2106	11/17/11 00:10	87 N	at TAYLOR STREET	Incident		
2111	11/17/11 00:28	680 S	at LANDES AVE	Incident		
2125	11/17/11 01:17	87 N	at TAYLOR ST RM-N-DIAG	Incident		
2163	11/17/11 03:40	680 N	at RAILROAD AVE RM-E-DIAG	Incident		
2164	11/17/11 03:48	101 N	at BAKER AVE RM-N-DIAG	Incident		
2169	11/17/11 04:20	101 N	at null	Incident		

Confirmed Events:

ID	Detection Time	Fwy	Cross Street	Type	CAD Code	CAD Number
2346	12/28/11 15:56	880 N	at 66TH AVE/COLISEUM WAY	Special Event		
1944	11/16/11 15:53	80 E	at BUCHANAN ST	Incident	ICMB	ICMB

CHP Events:

CAD Number	Detection Time	Fwy	Cross Street	Type
------------	----------------	-----	--------------	------

Terminate Details Terminated Event Lookup Ok

FIGURE 48: CALTRANS EVENT SUMMARY CONFIRMED

Proposed Response Plan

Once the event is confirmed (with Operator approval), the “Response Plan” tab is enabled (Figure 49) and the operator can select the “CMS Response” to review the CMS message proposed by ICMS (Figure 50).

Once the Operator has reviewed the proposed response plan, the Operator has the option to approve the proposed response plan, modify the suggested messages before sending to the field, or to reject the messages. The Operator accomplishes this using the standard ATMS workflow as stated in the Workflow Description section.

Event 1944 10:13 AM

Sep 17, 2012 Last Update at: 09/17 10:08

Event ID: 1944
Event Type: Incident
County: ALA
Route: 80 E
At: 7.11 BUCHANAN ST
Roadway Type: ML
Event State: Confirmed

Placement/Confirmation Monitoring Details **Response Plan** Comments

Plan Options

Generate Expert Plan

Response Plan Library

Control

View Plan	Status
Operator Actions ...	N/A
CMS ...	Modified
HAR ...	N/A
Duty Page...	System Generated

Responders

☐ TMT/MIRT
☐ MTCE
☐ MTCE Callout
☐ Sigalert
☐ Major Delays: Caltrans Response

CT 1097 Response: Time not set

CT 1098 Response: Time not set

Apply **Cancel** **Terminate**

FIGURE 49: EVENT RESPONSE PLAN TAB

The screenshot shows the 'CMS Response Plan' window for Event ID: 1944 on Sep 17, 2012 at 10:18 AM. The window has tabs for 'Multiple CMS' and 'Single CMS Detail'. The 'PLAN' section contains a table with columns: CMS, Sch, Phase1 Proposed, Phase2 Proposed, Phase1 Current, Phase2 Current, and Sched. A red box highlights the first three rows of the table, all containing 'TEST MESSAGE FROM ICM'. The right sidebar has 'View' options (Summary, Msg Details, Schedule), 'Show' filters (All, Good, Active, Bad, Incidents, Emergency Closure, Special Events, Scheduled, Travel Times), and buttons for Add, Delete, Select All, Deselect All, Save All, Send, Blank, and Reset. The 'EDIT' section at the bottom includes radio buttons for '2 Phase' and '1 Phase', a 'Display Time Per Phase' dropdown set to '2 Seconds', radio buttons for 'Immediate' and 'Schedule', a 'Low Priority' checkbox, and buttons for Preview, Clear, History, and Library. An 'OK' button is at the bottom center.

CMS	Sch	Phase1 Proposed	Phase2 Proposed	Phase1 Current	Phase2 Current	Sched.
<input type="checkbox"/> 9		TEST MESSAGE FROM ICM				
<input type="checkbox"/> 10		TEST MESSAGE FROM ICM				
<input type="checkbox"/> 11		TEST MESSAGE FROM ICM				

FIGURE 50: CMS RESPONSE PLAN SCREEN WITH PROPOSED CMS MESSAGES

Event Privileges

The system contains only one privilege which allows operators to create, modify and delete events through the Event Viewer: Event Control. This privilege also allows the operator to generate and activate response plans for the event.

If the operator has no Event privileges set, the Event Viewer will open in View Only mode. In View Only mode, an operator can view the details of an existing event. The operator cannot create events or modify events.

If the operator has Event Control privilege, the operator can create new events, modify existing events, and remove expired events from the system.

Corridor Configuration

The Corridor feature contains global parameters used to configure the event management and response plan management systems. The Corridor screens are accessible to all users, but only Corridor Administrators have the ability to make modifications to the parameters. A detailed description of the parameters and how to modify them is available in the “Managing Corridor” section of the ICMS Administration Manual.

Global

The Global screen (Figure 51) sets the values for various global verification parameters. These include the minimum time between action plans, as well as global arterial thresholds. Also shown on this screen are the individual route arterial thresholds. The modification of the arterial thresholds, whether global or route specific, allows the system to determine if the recommended route will be able to be used based on the availability of signals and the operational status of the signals.

Corridor

Global | Asset Availability | Strategy Matrix | Sim Q | Corridor Score | Transit | RP Expiration Ti

Minimum Action Plan Runtimes: 120 min

Global Arterial Availability Thresholds

Arterial Routes	% of Routes Congested	Arterial Signals	% of Asset Operational
Aggressive	66 %	Aggressive	75 %
Moderate	80 %	Moderate	85 %
Conservative	90 %	Conservative	95 %
Minimum # of Links	2	Minimum # of Signals	2

Route Specific Override Arterial Availability Thresholds

Route: I-15

Arterial Routes	% of Routes Congested	Arterial Signals	% of Asset Operational
Aggressive	66	Aggressive	75
Moderate	80	Moderate	85
Conservative	90	Conservative	95
Minimum # of Links	2	Minimum # of Signals	2

Save Cancel

FIGURE 51: CORRIDOR – GLOBAL

Asset Availability

Asset availability (Figure 52) allows the Corridor Administrator to select on a per asset basis, the availability of the asset to be used in response plans. Each asset is able to be in one of the following states:

- Unavailable – Cannot be used for a response plan at anytime
- Auto Approve – Can be used in a response plan WITHOUT approval being granted
- Deny on Timeout – After the timeout period, set on RP Expiration Timers screen, the asset is unable to be used in a response plan
- Approve on Timeout – After the timeout period, the asset is able to be used even if no approval has been received.

To schedule times of device unavailability, the “Schedule” section of the Asset Availability screen allows the Corridor Administrator to disallow the use of the device during pre-determined times.

Corridor | [?] [] [X]

Global | **Asset Availability** | Strategy Matrix | Sim Q | Corridor Score | Transit | RP Expiration Ti

Sign | Radio | Signal | Ramp | Routes

<input type="checkbox"/>	Sign Name	Roadway	Cross Street	Mile Marker	City	Agency	Default Availability	Schedule
<input type="checkbox"/>	1106505	I-5	J St OC	14.75	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106506	I-8	Main St	14.34		Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106507	I-15	Rte 94 Interchange	2.68	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106508	I-15	Miramar Way	13.57	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106509	SR-163	Genesee Ave	5.46	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106510	SR-163	Clairemont Mesa Blvd	9.01	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106511	I-805	Imperial Ave	12.24	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106512	I-805	El Cajon Blvd	16.7	San Diego	Caltrans-D11	Deny on Timeout	No
<input type="checkbox"/>	1106513	I-805	I 8	18.3		Caltrans-D11	Deny on Timeout	No

Select all by Agency: Select one... ▼

Schedule

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Su																								
Mo																								
Tu																								
We																								
Th																								
Fr																								
Sa																								

☐ = Unavailable, Blank = Deny on Timeout ▼

Save Cancel

FIGURE 52: CORRIDOR – ASSET AVAILABILITY

Strategy Matrix

The selection of the types of devices to be used in the recommended response plans are configured on the screen show in Figure 53. There are two (2) event types: Congestion and Any, while there are three (3) route types; Freeway, Arterial, and Express Lanes. There are three (3) impact levels; High, Medium, and Low. Two (2) diversion types, Yes and No, are included for the devices to be included for a transit diversion.

For each selection, the administrator selects the desired devices or assets that can be used in the preparation of the response plan.

Corridor | [?] [] [X]

Global | Asset Availability | **Strategy Matrix** | Sim Q | Corridor Score | Transit | RP Expiration Ti | [?] [] [X]

Asset Class Utilization

Event Type	Route Type	Forecasted Impact	Diversion	511	DMS	Arterial Timing	Ramp Metering	Transit	Managed Lanes
Any	Arterial	Low	No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Arterial	Low	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Arterial	Medium	No	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Arterial	Medium	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Any	Arterial	High	No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Arterial	High	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Any	Freeway	Low	No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Freeway	Low	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Freeway	Medium	No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Freeway	Medium	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Any	Freeway	High	No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Freeway	High	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Any	Managed Lanes	Low	No	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Managed Lanes	Low	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Managed Lanes	Medium	No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Managed Lanes	Medium	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Any	Managed Lanes	High	No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Any	Managed Lanes	High	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Save Cancel

FIGURE 53: CORRIDOR – STRATEGY MATRIX

Sim Q

The overall functionality of this screen (Figure 54) is to provide the global simulation management features. This is separated by the two (2) event types, Congestion and Non-Congestion. Initial scores are available for each of these event types, as well as the location of the event, either Freeway or Arterial.

Corridor

Global | Asset Availability | Strategy Matrix | **Sim Q** | Corridor Score | Transit | RP Expiration Ti

Simulation Q Management

General

Maximum Available Simulation Entries: 10

Score Increase Per Cycle: 2

Wait Time After All Simulations Complete: 15 mins

Non-Congestion Events : Freeway

Initial High Impact Score for Freeway Non-Congestion Events: 30

Initial Moderate Impact Score for Freeway Non-Congestion Events: 20

Initial Low Impact Score for Freeway Non-Congestion Events: 5

Congestion Events : Freeway

Initial High Impact Score for Freeway Congestion Events: 10

Initial Moderate Impact Score for Freeway Congestion Events: 7

Initial Low Impact Score for Freeway Congestion Events: 2

Non-Congestion Events : Arterial

Initial High Impact Score for Arterial Non-Congestion Events: 20

Initial Moderate Impact Score for Arterial Non-Congestion Events: 15

Initial Low Impact Score for Arterial Non-Congestion Events: 3

Congestion Events : Arterial

Initial High Impact Score for Arterial Congestion Events: 5

Initial Moderate Impact Score for Arterial Congestion Events: 3

Initial Low Impact Score for Arterial Congestion Events: 1

Save Cancel

FIGURE 54: CORRIDOR – SIM Q

Corridor Score

Within this screen (Figure 55) is the definition of the evaluation area to compare the simulation scores too. The Response Plan Improvement designates the minimum percentage of improvement of a response plan as compared to the Do Nothing or current response plan. The Evaluation Area defines a “boundary area” for each of the posture types of Conservative, Moderate, and Aggressive. The Conservative posture takes a low impact stance toward easing the congestion. The Moderate posture takes a medium stance, while the Aggressive posture takes a high impact stance toward easing congestion. In developing the evaluation bounding area, the length “X” is the downstream distance from the event for defining the evaluation area and length, while the “3x” is the upstream distance from the event for defining the evaluation area – defined per response plan posture. In developing the evaluation bounding area, this width is the perpendicular distance to the event, based on event direction, for defining the evaluation area as defined per response plan posture.

The values for the vehicle metrics is the assumed vehicle occupancy factor to apply to the individual vehicle along a route, in evaluating the metric relative to people instead of vehicles.

The evaluation period metrics are the weighting factors for the specific interval relative to the other intervals. The exclusions for the Level Of Service (LOS) are for the addition of nearby links operating at the same LOS level to the evaluation.

Corridor				
<input checked="" type="radio"/> Global <input type="radio"/> Asset Availability <input type="radio"/> Strategy Matrix <input type="radio"/> Sim Q <input checked="" type="radio"/> Corridor Score <input type="radio"/> Transit <input type="radio"/> RP Expiration Time				
Response Plan Improvement	0.2 %			
Evaluation Area	Conservative	Moderate	Aggressive	
"Upstream 1x/Downstream 3x Length Bound"	X 1.0 mi	1.5 mi	2.0 mi	
"Lateral Width Bound"	Y 1.0 mi	2.0 mi	3.0 mi	
Vehicle Occupancy Factors	SOV	HOV	Truck	Bus
	1.0	1.0	1.0	1.0
Evaluation Interval Factors	15 Min	30 Min	45 Min	60 Min
	0.90	0.80	0.70	0.60
Include LOS Processing?	<input checked="" type="checkbox"/>			
LOS Comparison	30 Min			
LOS Exclusions	<input checked="" type="checkbox"/> A	<input checked="" type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D <input type="checkbox"/> E
<input type="button" value="Save"/> <input type="button" value="Cancel"/>				

FIGURE 55: CORRIDOR – CORRIDOR SCORE

Transit

The Transit Availability (Figure 56) tab allows the Administrator to determine the distance/evaluation area that will allow the transit device to be included in the response plan. The Administrator defines the parameters for the following:

- Bus Capacity – are there available transit vehicles that can sustain the additional passengers?
- Parking Availability – Is there available parking spaces for the additional passengers and their vehicles?
- BRT Route Travel Time -- Is the transit travel time worse than the current scheduled route?
- BRT Station Finder -- Distance to the nearest transit station must be less than the specified.

Corridor

Global | Asset Availability | Strategy Matrix | Sim Q | Corridor Score | **Transit** | RP Expiration Ti

Availability Test

BRT Start Station

Bus Capacity ☒ 10 % Available

Parking Availability ☒ 10 % Available

BRT Route Travel Time ☐ 10 % Allowable travel time worse than scheduled

BRT Station Finder 1.0 mi Max distance from event to BRT Station

Save Cancel

FIGURE 56: CORRIDOR – TRANSIT

RP Expiration Timers

This screen (Figure 57) enables the Administrator to set timers in relation to devices and their availability for response plans. The following timers are shown on this screen:

- Reuse Timer – maximum amount of time, in minutes, that this device/asset can be used in another response plan, equal in posture, i.e. a moderate plan can use these devices/assets after the time limit has expired on another moderate plan
- Auto Approval Timer –timeout in minutes that the device/asset can be used automatically. No approval is required from the device/asset owning agency
- No Reply Timer – maximum amount of time, in minutes, after no reply, for this device/asset to be declared unavailable for this response plan. For example, a ramp metering device is requested for a response plan, yet no approval is received from the owning agency. After the specified time period, the ramp metering will be declared unavailable for usage

	Reuse Timer		Auto Approval Timer		No Reply Timer	
511	5 min	511	15 min	511	10 min	
Traffic Signals	5 min	Traffic Signals	10 min	Traffic Signals	10 min	
DMS	5 min	DMS	10 min	DMS	10 min	
Express Lanes	5 min	Express Lanes	10 min	Express Lanes	10 min	
Ramp Metering	5 min	Ramp Metering	10 min	Ramp Metering	10 min	

Save Cancel

FIGURE 57: CORRIDOR – EXPIRATION TIMERS

Notifications

This screen (Figure 58) allows the Administrator to specify which Operator Group will receive notifications. Notifications can include notification to owner for device failures, whether the device/asset is in an active response plan or not.

Primary ICM		Groups	Timings
Event Confirmation		adminusergrp	1 min
Estimated Duration			1 min
Action Plan Request			1 min
Action Plan Response			1 min
Reminder 1			1 min
Reminder 2			1 min
Escalation after Request			5 min

Groups		Not currently in Action Plan	In Action Plan
Asset Failure	Failure Type	Failure Duration	Failure Duration
511	All	0 min	0 min
DMS	All	0 min	0 min
Signals	No Coord	0 min	0 min
	Signals in Flash	0 min	0 min
	No Response	0 min	0 min
	No Comm	0 min	0 min
Ramp Meters	All	0 min	0 min

Save Cancel

FIGURE 58: CORRIDOR – NOTIFICATIONS

Signal Response

This screen (Figure 59, Figure 60, and Figure 61) allows the Administrator to select those routes and plans for the individual postures. There are three (3) selections on this screen that relate to the generic event locations of Freeway, Express Lanes, and Arterial.

The freeway alternate route candidates that are parallel to and go around the event are found by laterally searching out from the event location. The candidate set of routes is then further narrowed and ranked by checking if the alternates are too congested to use, have sufficient available device assets, have the shortest travel distance, where they are relative to the queue. The highest ranked alternate(s) are then selected.

The screenshot shows the 'Corridor' application window with the 'Signal Response' tab selected. The 'Freeway' sub-tab is active. The interface is organized into a 'Route Selection' column and a 'Plan' column. Under 'Route Selection', there are three sections: 'Conservative', 'Moderate', and 'Aggressive', each with 'Add' and 'Delete' buttons. To the right of these sections are dropdown menus for 'First Route' and 'Plan'. The 'Plan' dropdowns show 'Peak', 'Shoulder', 'Flush', and 'Peak' respectively. At the bottom right are 'Save' and 'Cancel' buttons.

FIGURE 59: CORRIDOR – SIGNAL RESPONSE (FREEWAY)

Corridor | x | Sim Q | Corridor Score | Transit | RP Expiration Timers | Notifications | Signal Response | As

Freeway | Express Lanes | Arterial

Route Selection Plan

Conservative

Add Delete

Moderate

Add Delete

Aggressive

Add Delete

First Route Peak

Second Route Peak

First Route Flush

First Route Peak

Save Cancel

FIGURE 60: CORRIDOR – SIGNAL RESPONSE (EXPRESS LANES)

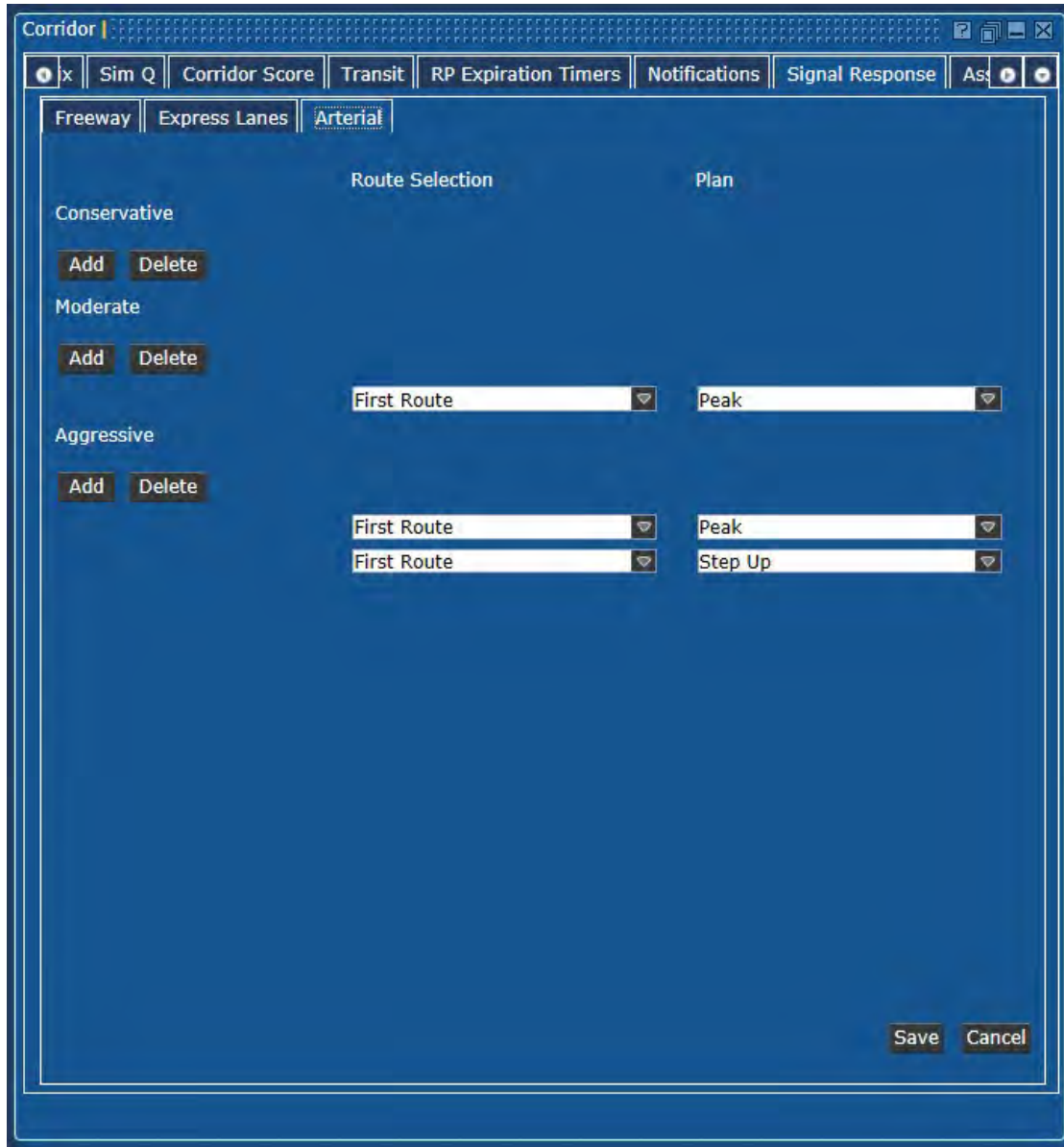


FIGURE 61: CORRIDOR – SIGNAL RESPONSE (ARTERIAL)

Asset Finder

This screen (Figure 62) allows the Administrator to determine the distance to be used in finding the devices/assets to be used in response plans. “Lateral Distance” is the maximum distance to search parallel to the event’s route for alternate routes. For the ramp meter device/assets, the distance is the maximum distance to search either upstream or downstream of the event’s location for the devices.

For signs (DMS) devices/assets, the maximum distance is searched, as well as evaluating non-contiguous routes in relation to the event’s location.

	Freeway	Express Lanes	Arterial
Lateral Distance			
Aggressive	1.6 mi	1.6 mi	1.6 mi
Moderate	1.6 mi	1.6 mi	1.6 mi
Conservative	1.6 mi	1.6 mi	1.6 mi
Downstream Ramp Meters			
Aggressive	2.0 mi	2.0 mi	
Moderate	1.5 mi	1.5 mi	
Conservative	1.0 mi	1.0 mi	
Upstream Ramp Meters			
Aggressive	7.0 mi	7.0 mi	
Moderate	4.0 mi	4.0 mi	
Conservative	2.5 mi	2.5 mi	
DMS			
	Non Cont.	Non Cont.	Non Cont.
Aggressive	10.0 mi <input type="checkbox"/>	10.0 mi <input type="checkbox"/>	10.0 mi <input type="checkbox"/>
Moderate	7.0 mi <input type="checkbox"/>	7.0 mi <input type="checkbox"/>	7.0 mi <input type="checkbox"/>
Conservative	3.0 mi <input type="checkbox"/>	3.0 mi <input type="checkbox"/>	3.0 mi <input type="checkbox"/>

Save Cancel

FIGURE 62: CORRIDOR - ASSET FINDER

RMSimHierarchy

The Ramp Metering (RM) Simulation Hierarchy screen (Figure 63) allows the Administrator to set the metering rate plans for the three (3) postures. The ability to override the traffic responsive strategy is also available to the Administrator. Selections available for the meters are as follows:

- Do Nothing – Leave the ramp meter running the current selection
- Off – Turn the ramp meter off or dark
- Minimum Rate – Transition the ramp meter to using the established minimum rate
- Maximum Rate – Transition the ramp meter to using the established maximum rate

The screenshot shows the 'Corridor' application window with the 'RM Sim Hierarchy' tab selected. The 'Freeway' section is active, displaying settings for 'Upstream' and 'Downstream' directions. Each direction has three strategy options: 'Conservative', 'Moderate', and 'Aggressive'. Each strategy has an 'Override Traffic Responsive Strategy' checkbox (all are checked) and two columns of settings: 'If On' and 'If Off'. Each column contains two dropdown menus labeled 'Option 1' and 'Option 2'. The 'Save' and 'Cancel' buttons are at the bottom right.

		If On		If Off	
Direction	Strategy	Option 1	Option 2	Option 1	Option 2
Upstream	Conservative	Off	Off	Off	Off
	Moderate	Min Rate	Do Nothing	Min Rate	Do Nothing
	Aggressive	Min Rate	Do Nothing	Min Rate	Do Nothing
Downstream	Conservative	Off	Off	Off	Off
	Moderate	Do Nothing	Max Rate	Do Nothing	Max Rate
	Aggressive	Do Nothing	Max Rate	Do Nothing	Max Rate

FIGURE 63: CORRIDOR - RSimHierarchy

Congestion Event Finder

This screen (Figure 64) allows the user to establish the bridging effect between events and the distance that is approved for the locations, freeway and arterial. Bridging is the merging of an event with another possible event either downstream or upstream of the location.

This determination of distance is dependent upon whether the event is on the freeway or the arterials. For the bridging effect, the user sees the maximum allowable distance that can be set.

Corridor | **RM Sim Hierarchy** | **Express Lanes Response** | **Congestion Event Finder** | **Congestion Thresholds**

Bridging Allowed ☒

Link Bridge Max **New Event Upstream Max** **New Event Downstream Max**

Arterial Maximum Allowable Distance mi mi mi

Freeway Maximum Allowable Distance mi mi mi

Upstream Distance Criteria

	Freeway	Arterial
Low	<input type="text" value="1.0"/> mi	<input type="text" value="1.0"/> mi
Medium	<input type="text" value="1.0"/> mi	<input type="text" value="1.6"/> mi
High	<input type="text" value="2.0"/> mi	<input type="text" value="2.0"/> mi

Transition Time

Transition Time Up min

Transition Time Down min

Save **Cancel**

FIGURE 64: CORRIDOR – CONGESTION EVENT FINDER

Congestion Thresholds

This screen (Figure 65) will allow the user to view those thresholds that are being used to determine congestion events in the corridor. As congestion is different on freeways and arterial roadways, there are two (2) sets of congestion thresholds used. “Congested” pertains to the current congestion seen as this point in time. “Over Congested” pertains to the current congestion seen as compared to congestion seen historically (i.e. is it more congested than it normally is at this day/time?).

Corridor | RM Sim Hierarchy | Express Lanes Response | Congestion Event Finder | Congestion Thresholds

	Freeway Congestion Events	Arterial Congestion Events
Congested	Speed	Speed
Minimum Speed Differential vs Free Flow	10.0 mph	10.0 mph
Minimum % Speed Change vs Free Flow	20.0 %	20.0 %
Minimum Delay Differential vs Free Flow	120.0 scc/veh	120.0 scc/veh
Minimum V/C Differential vs Free Flow	0.75	0.95
Over Congested	Speed	Speed
Minimum % Change in Speed vs Historical	15.0 %	15.0 %
Minimum Speed Differential vs Historical (-)	9.5	11.3
Minimum % Change in Delay vs Historical	15.0 %	15.0 %
Minimum Delay Differential vs Historical (-)	300.0	300.0

Save Cancel

FIGURE 65: CORRIDOR – CONGESTION THRESHOLDS

Viewing Parking Information

The Parking viewer, shown in Figure 66, will display current status for the specific parking lot. This status information includes the location, operating hours, total number of spaces, and space availability. The Parking Viewer window is view-only and does not have any control capabilities.

Parking Viewer Window Layout

To view information from a Parking station:

1. Click the Viewer link in the upper menu bar.
2. Click the Parking link in the lower switcher bar. This will display a blank Parking window.
3. Select the desired station from the drop-down list. A Parking station may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.

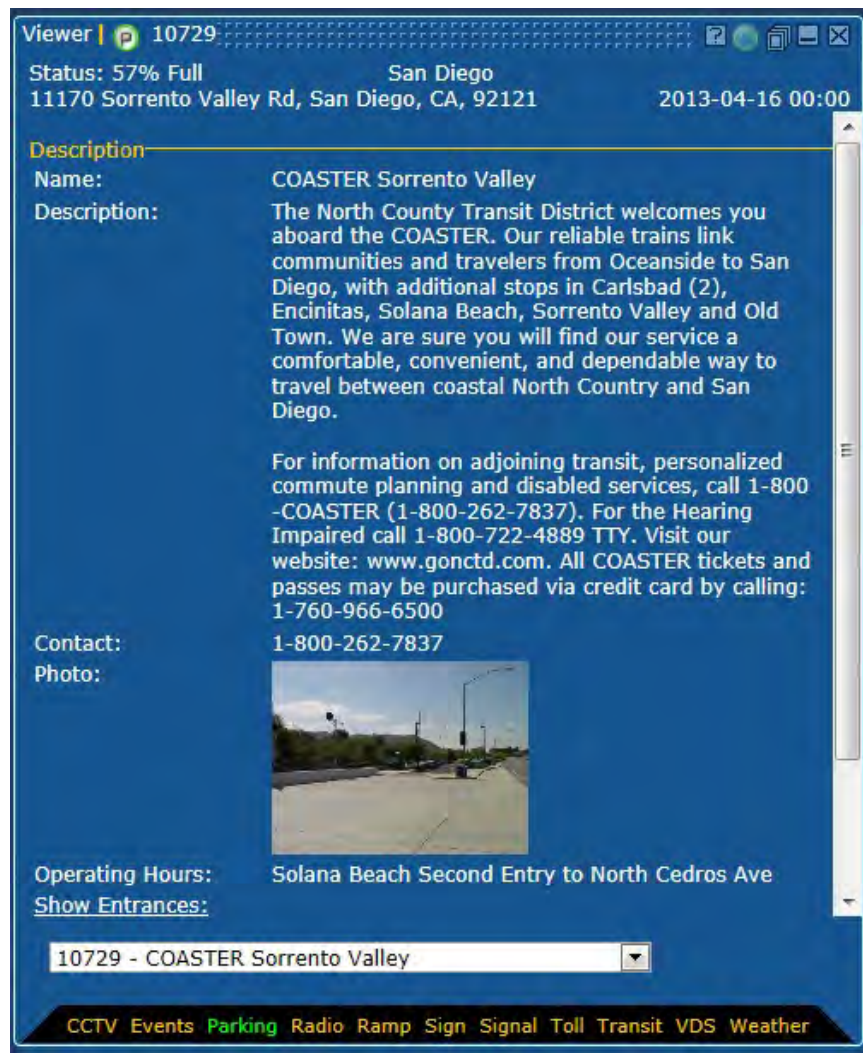


FIGURE 66: PARKING VIEWER WINDOW

Viewing Ramp Information

The Ramp viewer, shown in Figure 67, will display the current status information for the ramp. The Ramp Viewer window is view-only and does not have any control capabilities.

Ramp Viewer Window Layout

To view information from a Ramp station:

1. Click the Viewer link in the upper menu bar.
2. Click the *Ramp* link in the lower switcher bar. This will display a blank Ramp window.
3. Select the desired station from the drop-down list. A ramp station may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.

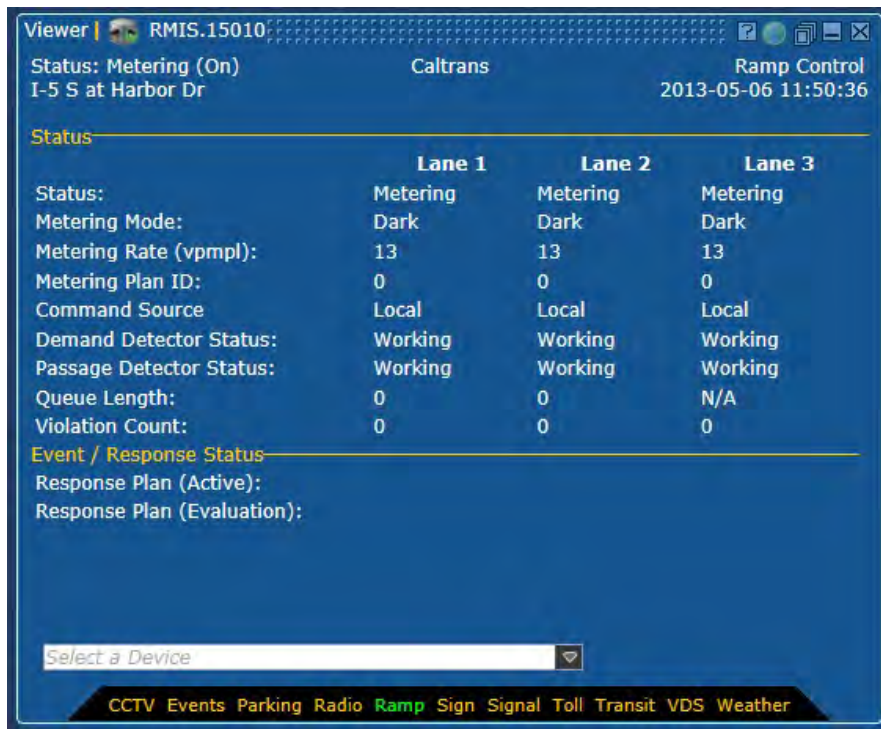


FIGURE 67: RAMP VIEWER WINDOW

Viewing Signs

This section describes how to manage the organization's Sign (Dynamic Message Sign (DMS)) or Changeable Message System (CMS). The Sign Viewer window is the central point of focus for accomplishing these tasks. Its use is described in this section.

The Sign system is accessed by opening a Sign Viewer window. See Figure 68. There are several ways of opening a Sign Viewer window:

1. Click on the *Viewer* link in the upper menu bar and then drag & drop a Sign icon from the Map or a List window into the viewer window
2. Drag & Drop a Sign icon from the Map or a List window into any currently open viewer window. If another Sign or any other type of device is already in that window, it will be replaced or converted to a Sign window with the selected sign
3. Single click on a Sign icon on the map or in a list window and a new viewer window will be opened as a Sign viewer window with the selected sign placed into that window
4. Double-Clicking on a Sign window element in a Multi-viewer/List window.

The Sign Viewer Window Layout

The Sign Viewer window can be used to view the messages on one or more dynamic message signs owned by the organization.

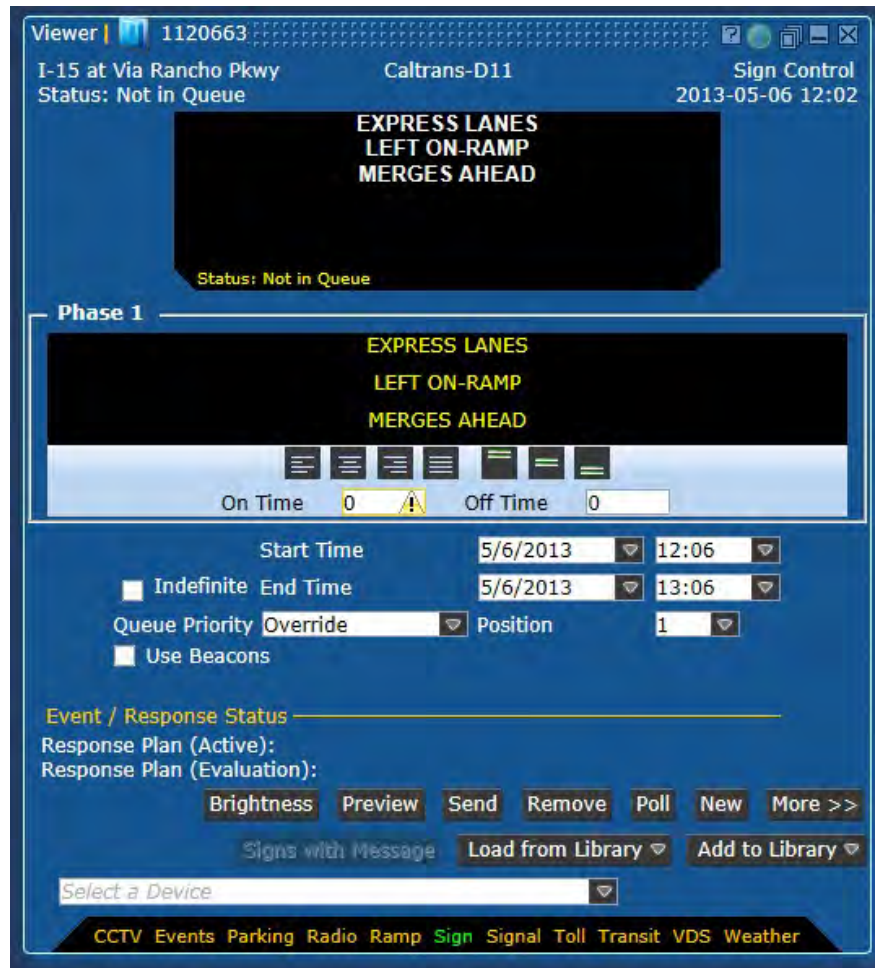


FIGURE 68: SIGN VIEWER WINDOW

Sign Viewer Privileges

The system contains two privileges which control Sign Viewer window usage: *DMS Manual Control* and *DMS Library Use*.

If the operator has no Sign privileges set, the Sign Viewer window will open in View Only mode. In View Only mode, the operator can see messages posted to currently active signs, but cannot modify them. The Viewer window will contain the tag "View Only" in the upper right corner of the window.

Viewing CCTVs

This section describes how to view the organization's CCTV cameras using the CCTV Viewer window.

The CCTV system is accessed by opening a CCTV Viewer window (Figure 69). There are several ways of opening a CCTV Viewer window:

1. Click on the *Viewer* link in the upper menu bar and then drag & drop a CCTV icon from the Map or a List window into the viewer window
2. Drag & Drop a CCTV icon from the Map or a List window into any currently open viewer window. If another CCTV or any other type of device is already in that window, it will be replaced or converted to a CCTV window with the selected sign
3. Single click on a CCTV icon on the map or in a list window and a new viewer window will be opened as a Sign viewer window with the selected sign placed into that window
4. Double-Clicking on a CCTV window element in a Multi-viewer/List window.

The CCTV Viewer Window Layout

The CCTV Viewer window can be used to view the images from the CCTVs within the ICMS.



FIGURE 69: CCTV VIEWER WINDOW

CCTV Viewer Privileges

The system contains one privilege which allows the user to view the images: *CCTV View*.

If the operator has no CCTV privileges set, the user will not be able to view the images. The *CCTV View* privilege must be set to be able to view the CCTV images.

Viewing Signals

The Signal viewer will display the current status and pattern for the signal. This viewer, shown in Figure 70, will also allow the modification of the current pattern for the signal. Using the drop-down selection, the pattern can be changed to another predefined pattern.

Signal Viewer Window Layout

To view information from a Signal location:

1. Click the Viewer link in the upper menu bar.
2. Click the Signal link in the lower switcher bar. This will display a blank Signal window.
3. Select the desired station from the drop-down list. A Signal may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.



FIGURE 70: SIGNAL VIEWER WINDOW

Signal Viewer Privileges

The system contains the privilege, *ASC Pattern Control*, which controls the Signal Viewer window controls. The Viewer window will contain the tag "View Only" in the upper right corner of the window.

Viewing Tolls

The Toll viewer will display current status for the specific toll station, as shown in Figure 71. This status information includes the location, link length, link capacity, direction and number of lanes open. The Toll Viewer window is view-only and does not have any control capabilities.

Toll Viewer Window Layout

To view information from a Toll station:

1. Click the Viewer link in the upper menu bar.
2. Click the Toll link in the lower switcher bar. This will display a blank Toll window.
3. Select the desired station from the drop-down list. A Toll station may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.



FIGURE 71: TOLL VIEWER WINDOW

Viewing Radio

The Radio viewer will display current status for the specific Highway Advisory Radio station. This status information includes the location and the current message being played. The Radio Viewer window is view-only (Figure 72) and does not have any control capabilities.

Radio Viewer Window Layout

To view information from a Radio station:

1. Click the Viewer link in the upper menu bar.

2. Click the Radio link in the lower switcher bar. This will display a blank Radio window.
3. Select the desired station. A Toll station may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.

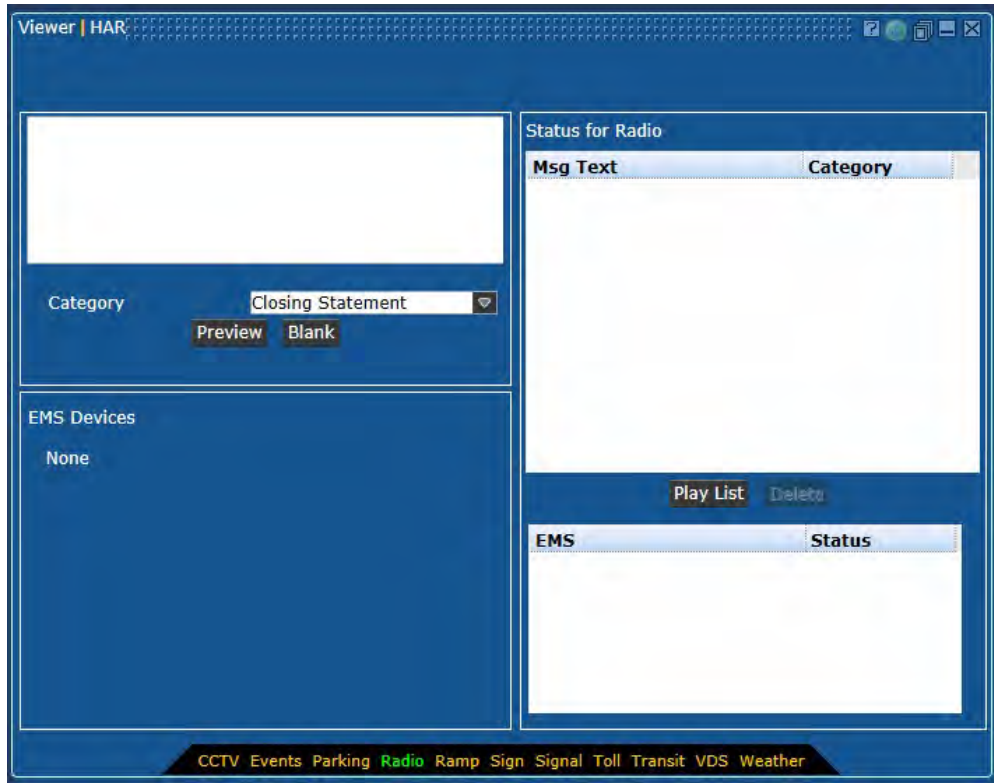


FIGURE 72: RADIO VIEWER WINDOW

Viewing Transit Information

The Transit viewer will display the current description and location information for a transit vehicle. Other general status information about the transit vehicle is also shown on the viewer. The Transit Viewer window (Figure 73) is view-only and does not have any control capabilities.

Transit Viewer Window Layout

To view information from a Transit station:

1. Click the Viewer link in the upper menu bar.
2. Click the Transit link in the lower switcher bar. This will display a blank transit window.
3. Select the desired station from the drop-down list. A Transit station may also be dragged and dropped from the Map window or List window.



FIGURE 73: TRANSIT VIEWER WINDOW

Viewing Vehicle Detector Station (VDS) Information

The VDS viewer will display the Speed, Volume, and Occupancy for a particular VDS station. The Lane-by-Lane display will also show Estimated Speed for each lane. The VDS Viewer window (Figure 74) is view-only and does not have any control capabilities.

VDS Viewer Window Layout

To view information from a VDS station:

1. Click the Viewer link in the upper menu bar.
2. Click the VDS link in the lower switcher bar. This will display a blank VDS window.
3. Select the desired station from the drop-down list. A VDS segment may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.
4. Press the Lane-by-Lane button to view lane-by-lane data. This will expand the VDS viewer to show the data coming in from all the lanes for that particular segment.

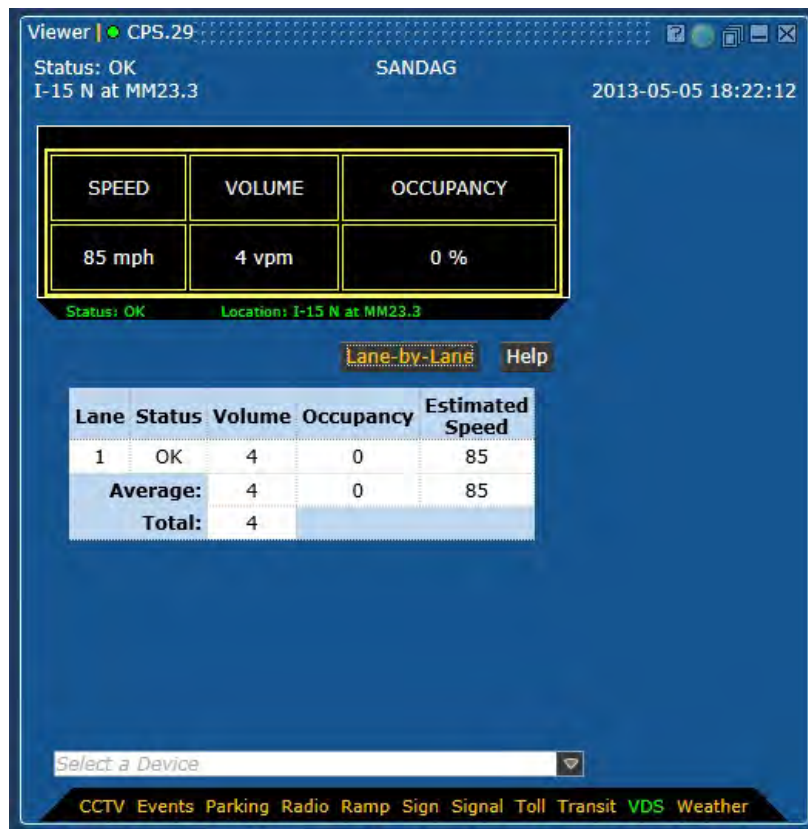


FIGURE 74: VDS VIEWER WINDOW

Viewing Weather Information

The weather viewer will display the current and forecasted weather information. The Current tab includes the current data for the weather station, while the Forecast tab includes the next week's forecasted weather.

The Weather Viewer window is view-only (Figure 75) and does not have any control capabilities.

Weather Viewer Window Layout

To view information from a Weather station:

1. Click the Viewer link in the upper menu bar.
2. Click the Weather link in the lower switcher bar. This will display a blank Weather window.
3. Select the desired station from the drop-down list. A weather station may also be dragged and dropped from the Map window (the map must be zoomed in to be able to easily select the segment) or List window.

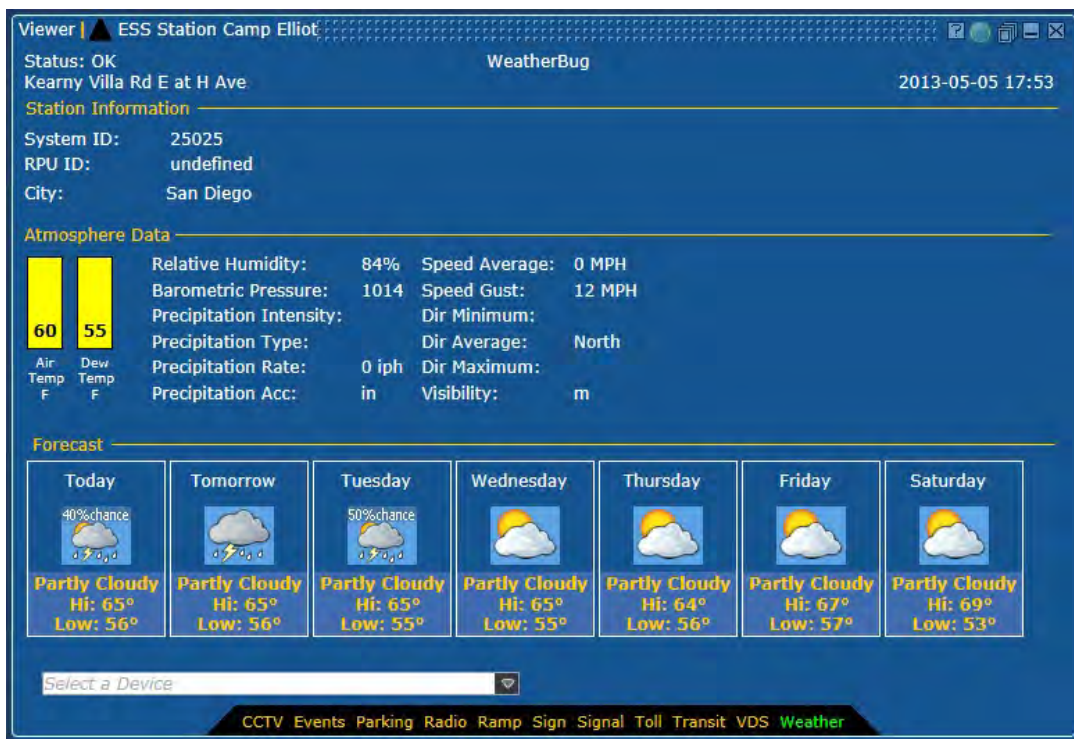


FIGURE 75: WEATHER VIEWER WINDOW

Generating Reports

This section describes how to generate reports. Table 4 describes the reports that are currently available.

TABLE 4: REPORTS

Report Name	Description
Event Summary	Describes the events that have occurred in a given time frame. Contains the event ID, location, start/end dates, type, and who created it.

Report Name	Description
Event Details	When viewing the Event Summary report, by selecting the ID of a particular event, a report containing the details for that event will display.
Sign Message History	Describes the messages that were posted to the signs. Contains the device name, the location, the date and time of the message, what the message said, and who sent the message.
Sign Status	Describes the communications status of the signs. Contains the device name, location, date, the NTCIP status and the communications status.
User Activity	Describes the activities of a given user. Contains the username, date/time, and the user's activity.
Inventory Audit	Describes the devices that are in the inventory. Contains the ID, the location, and configuration information for the device.

Event Summary Report

Figure 76 shows the Event Summary report form.

The screenshot shows a web-based reporting interface titled "Reporting | Events Reporting". The main area contains several sections of input fields:

- Report Category:** A radio button labeled "Event Summary" is selected.
- Event Category:** A text input field.
- Type, Subtype, Severity:** Each has a text input field and a dropdown arrow.
- Location:** Includes "Roadway Type", "County", and "City", each with a text input field and a dropdown arrow.
- Date Range:** Includes "Start" and "End" rows. Each row has a "Date (mm/dd/yyyy)" field and a "Time (hh24:mi)" field, both with text input and dropdown arrows.

At the bottom of the form are three buttons: "Reset", "Report", and "Help". Below the buttons is a tabbed interface with three tabs: "Events" (highlighted in green), "Sign", and "Users".

FIGURE 76: EVENT SUMMARY REPORT FORM

To generate an Event Summary report:

1. Click the *Reporting* link in the upper menu bar. This will display a blank report window.
2. Click the *Events* link in the lower switcher bar.

3. Click on the *Event Summary* radio button.
4. Select the Event Category.
5. Select the Location.
6. Enter the date range for the report.
7. Click the *Report* button.

Sign Report (Message History and Status)

Figure 77 shows the Sign report form.

FIGURE 77: SIGN REPORT FORM

To generate a Sign report:

1. Click the *Reporting* link in the upper menu bar. This will display a blank report window.
2. Select the type of Sign report: Sign Message History, Sign Status – Current, Sign Status – Historical
3. Select the device
4. Enter the date range for the report.
5. Click the *Report* button.

User Activity Report

Figure 78 shows the User report form.

Reporting | Users Reporting

Report Category

☒ User Activity History
☐ Inventory Audit History

User Information

User: tmalone

Date Range

	Date (mm/dd/yyyy)	Time (hh24:mi)
Start	5/5/2013	17:25
End	5/5/2013	18:25

Reset Report Help

Events Sign Users

FIGURE 78: USER REPORT FORM

To generate a User report:

1. Click the *Reporting* link in the upper menu bar. This will display a blank report window.
2. Click the *User Activity History* radio button.
3. Select the user from the drop down list.
4. Enter the date range for the report.
5. Click the *Report* button.

Inventory Audit History Report

Figure 79 shows the Inventory Audit History report form.

Reporting | Users Reporting

Report Category

☐ User Activity History

☒ Inventory Audit History

Device Type

Device: All

Date Range

	Date (mm/dd/yyyy)	Time (hh24:mi)
Start	5/6/2013	15:04
End	5/6/2013	16:04

Reset Report Help

Events Sign **Users**

FIGURE 79: INVENTORY AUDIT HISTORY REPORT FORM

To generate an Inventory Audit History report:

1. Click the *Reporting* link in the upper menu bar. This will display a blank report window.
2. Click the *Inventory Audit History* radio button.
3. Select the device from the drop down list.
4. Enter the date range for the report.
5. Click the *Report* button.