



SignCAD Systems

**The New Generation
in Traffic Software**

©2015, *SignCAD Systems, Inc., 800 722-6997*





Fully Integrated Signing System



Sign Design
Temporary Traffic Control Design
Signing And TTC Standards
Sign Manufacturing And Installation
Inventory Management
Sign Replacement



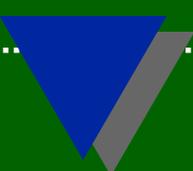


ConeZONE®

Designing the Safest Work Zone
with Smart Technology

©2015, *SignCAD Systems, Inc., 952 544-9559*





ConeZONE Features Updates

**With Emphasis
On
Intelligent Work Zones**

Copy & Paste Layouts Or Templates To Other Road Alignments

Define Alignment Line
Define Secondary Line
Reverse Travel Direction

Offset Trace Line
Duplicate Trace Line
Convert to Trace Line

Copy Devices
Paste Devices

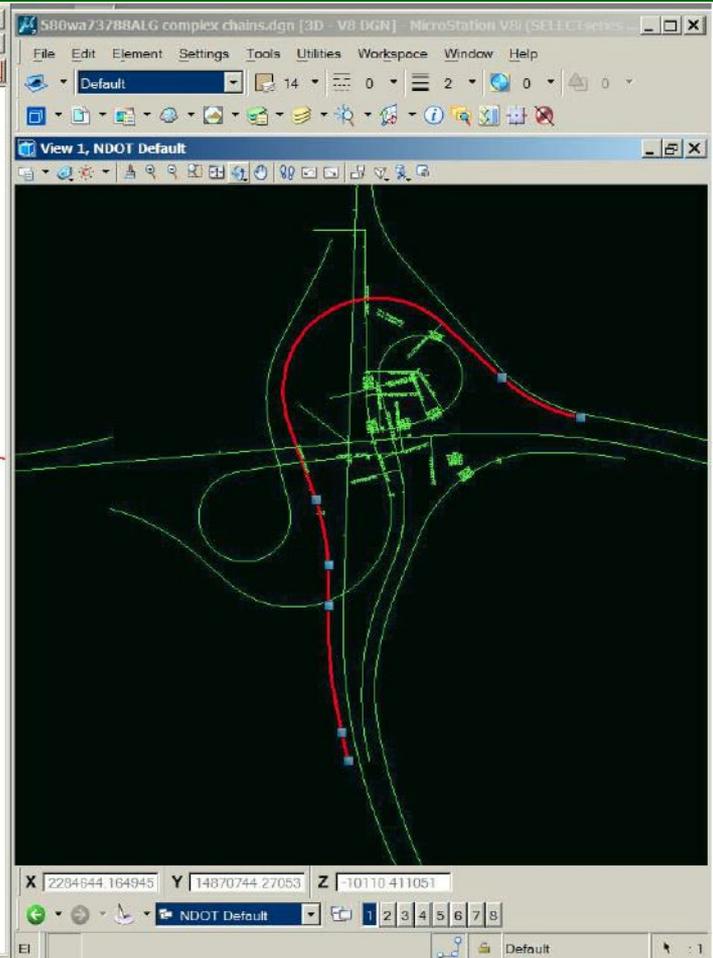
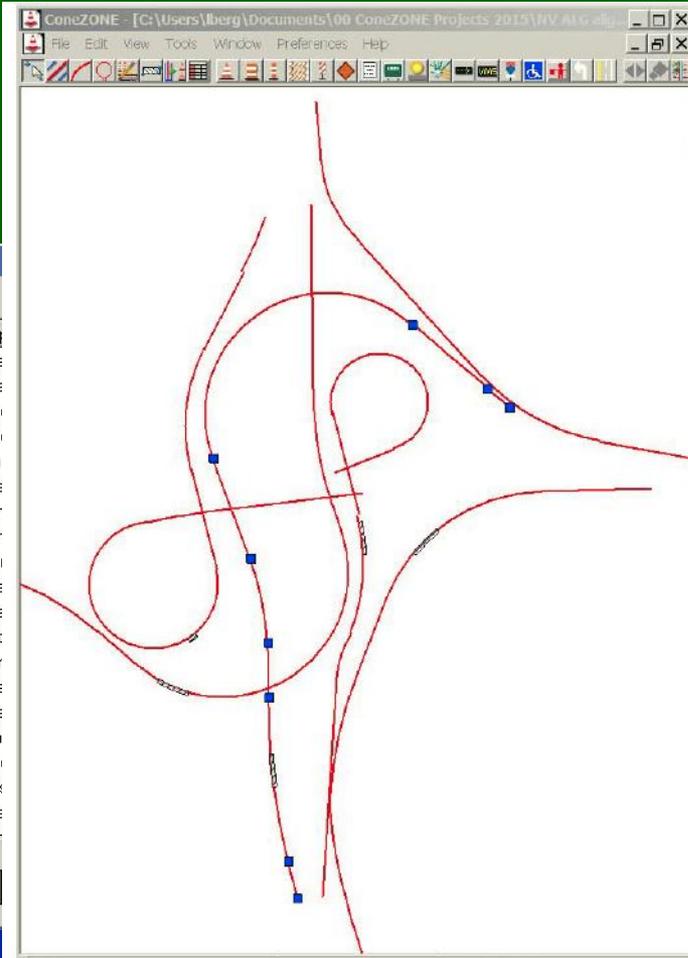
Add a Point
Delete a Point

Import MicroStation Alignments & Attach MicroStation Drawings

Importing Layers Selection

Import	Layer	Description
No	CNST DES TXT DIM	Propos
No	PGL TMP BYPASS	Propos
No	UDEFC	User d
No	UDEFE	User d
No	ALI BYP STAT	Station
No	FLOW ARROW	Inplace
No	ALI BYP TXT	Text ar
No	ALI RAMP TXT	Text ar
No	RD INP TXT	Text fo
No	BERM	Propos
No	MARKER	Propos
No	LEGEND	Legenc
No	HATCH	Hatchir
No	RW INP	Inplace
No	POND	Propos
No	PATTERN XS	Pattern
No	UDEFA	User d
No	ALI VAR	Various
No	CNST LIM	Propos
No	RD INP	Inplace

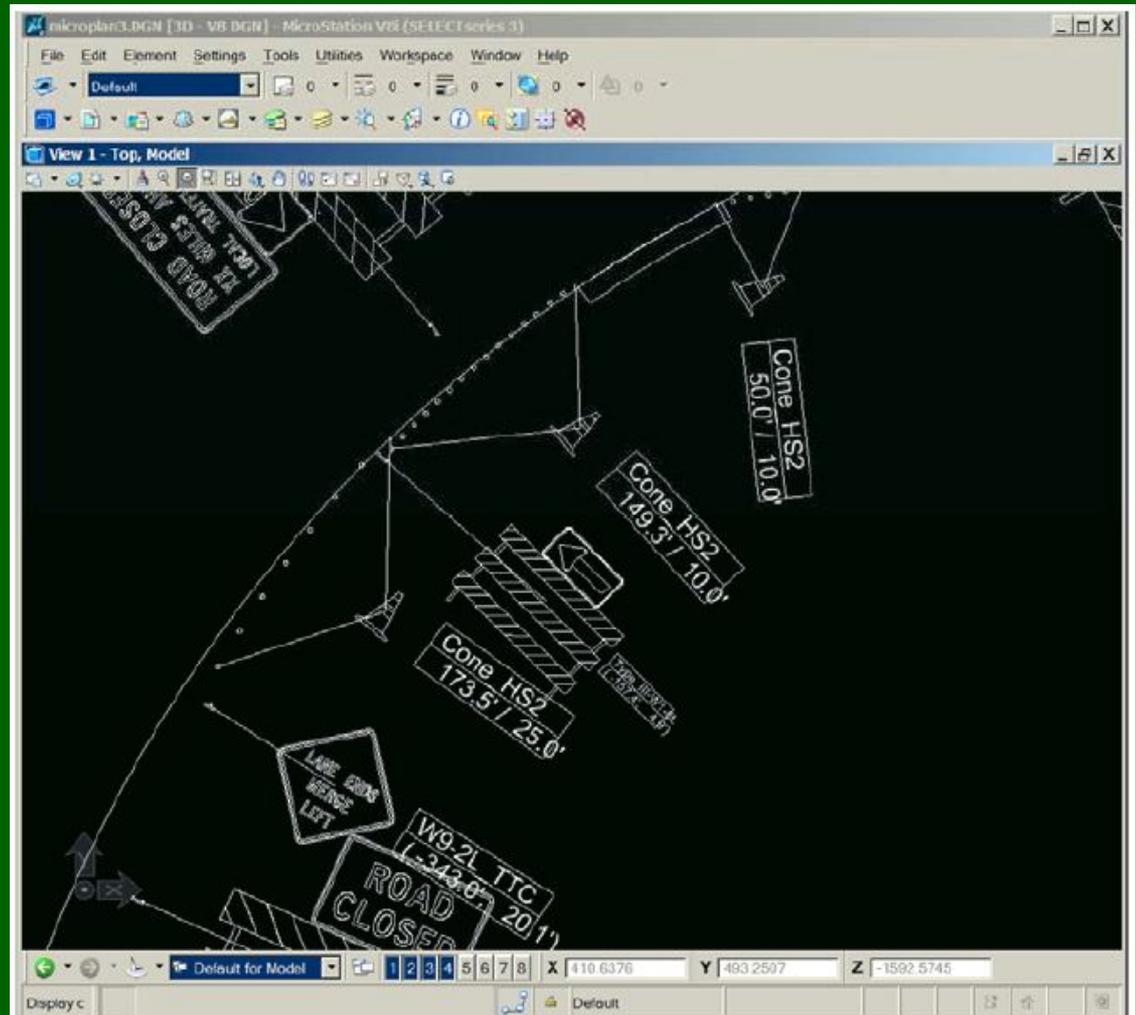
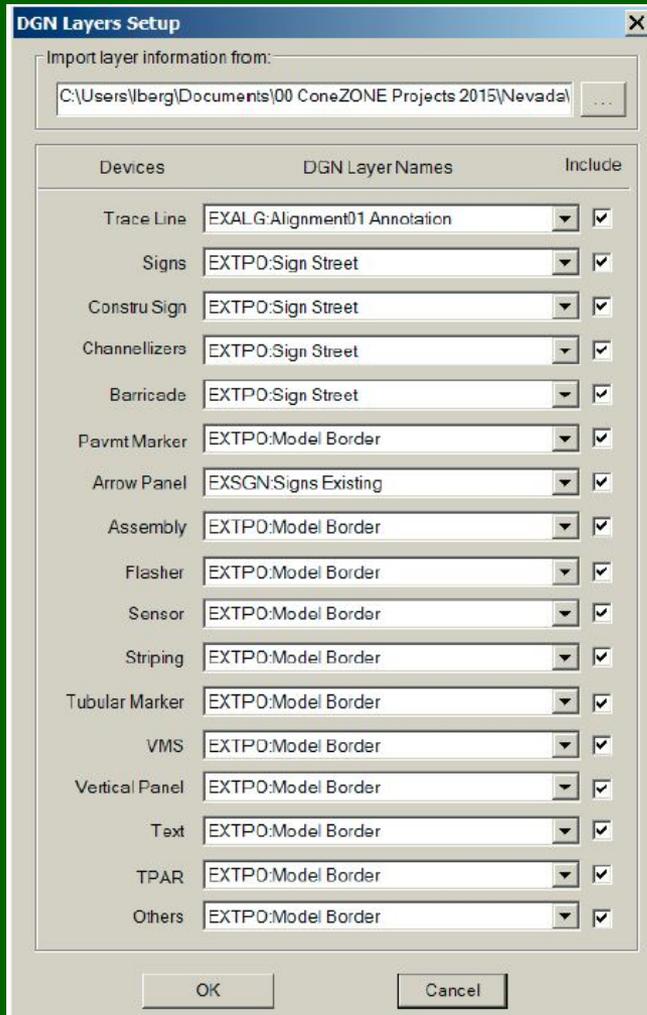
OK



Apply and Edit Layouts In ConeZONE

The screenshot displays the SignCAD software interface. The main window shows a road layout with various signs and layout elements. A dialog box titled "Typical Application Diagrams" is open, showing a list of sign types and work types. The "List" section includes: 6K-37, 6K-38, 6K-39, 6K-50R, 6K-50L, 6K-52L, 6K-52R (selected), 6K-53L, 6K-53R, and FM 1. The "Road Type" section includes: None (selected), Any, Any Road Type, and Expressway or Freeway. The "Work Type" section includes: FM Lane Closure (selected), FM Double Lane Closure, FM Dynamic Speed Display Sign, FM Lane Closure, and FM Lane Closure at or near Intersection. The dialog box also has "Placement Parameters...", "Apply", and "Cancel" buttons. At the bottom of the dialog box, the following information is displayed: Standard-Series: Minnesota 2011, Road Type: Multi Lane Divided, Work Type: FM Lane Closure. To the right of the dialog box, there is a diagram titled "LANE CLOSURE MULTILANE DIVIDED ROAD" showing a road layout with signs and a work zone. The diagram includes a "Work Point" and "Alignment Line" and shows various signs and layout elements. The diagram is labeled "OPTIONAL" and "LANE CLOSURE MULTILANE DIVIDED ROAD". The diagram also includes the text "3.045 x 1155 66-52 LAYOUT 1".

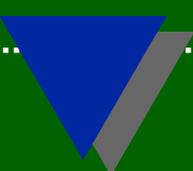
Save ConeZONE Layout As MicroStation Drawings





Intelligent Work Zones

**Where, How, Why
And When?**



New-Work Zone ITS Language

- ◆ **Intelligent Work Zones**
- ◆ **The Internet of Things**
- ◆ **Actionable WZ Intelligence**
- ◆ **Dashboards**
- ◆ **Reporting**

Translation

- ◆ Meaningful data on work zones including performance monitoring and traffic studies
- ◆ The ability to measure and transmit data over the internet in real time for analysis and action
- ◆ Ability to share your successes and lessons learned



MN & FHWA Published Standards ConeZONE Design Driven By Standards Salander Deployment, And Monitoring

- ◆ State and Federal Published Standard Layouts
- ◆ Standard Layouts Built Into ConeZONE
- ◆ Tabulations Generated From ConeZONE
- ◆ Data Sent Directly to Salander for Deployment/Monitoring

WARRANTS

- This lane of most range into one direction will be closed to traffic and traffic flow stopped.
- Although permits may develop as lane closures for many reasons, typically, the lane will not exceed 1500 yards in length to contain a queue that will be cleared by merging lanes.
- Estimated queue lengths may exceed beyond an upstream intersection or interchange operations.
- The speed and lane closure volumes are well beyond 1000 vehicles per hour causing the potential to have trouble clearing the first lane merge practice, such as using both lanes reverse slowly back for continuous lane line.

BENEFITS

- The system should alert drivers of an upcoming traffic slow-down or stopped traffic, and advise them to use both lanes until the designated merge point.
- It is anticipated that the system will reduce the length of the upstream queue by 50%, which may reduce conflicts at nearby intersections.
- By utilizing ConeZONE, which may reduce conflicts at nearby intersections.
- Minimize any other roadway

ConeZONE - [C:\Users\Boring\Documents\09 Reference\Minnesota FWZ\494 sign layout.cz]

Typical Application Diagrams

List

- RK-46
- RK-47
- RK-48
- RK-49
- RK-50R
- RK-50L
- RK-51
- RK-52R
- RK-52L
- RK-53L

Message Type: None

Work Type: None

Any Road Type: Expressway or Freeway

Work Type: None

Any: FM-Advisory Speed Limit, FM-Blasting Zone

Placement Parameters

Apply Cancel

Standard-Series: Minnesota-2011 Road Type: Multi Lane Divided Work Type: FM Lane Closure

TRAFFIC RESPONSIVE

REDUCE SPEED NOW

494 Deployment Example

- ◆ **Dynamic Late Merge using PCMS and sensors**
- ◆ **Lane Closure on 494 from 394 to 694**
- ◆ **Deployment**
- ◆ **Assessment**



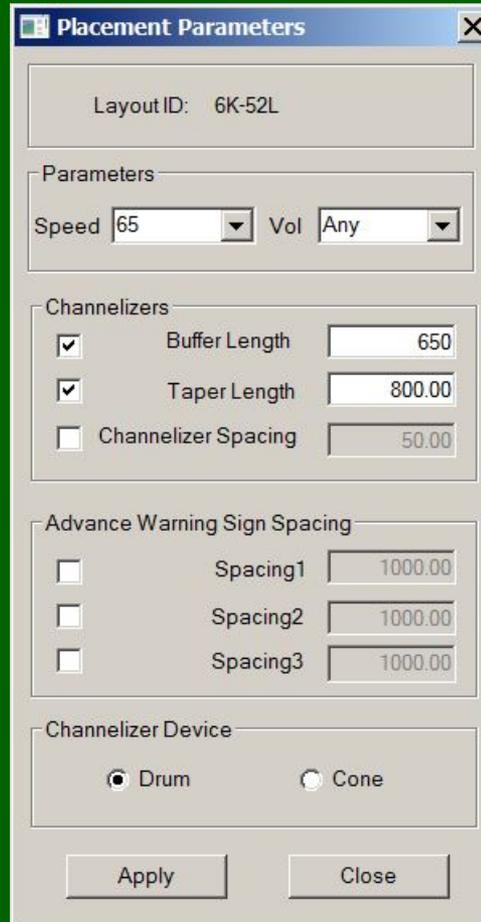
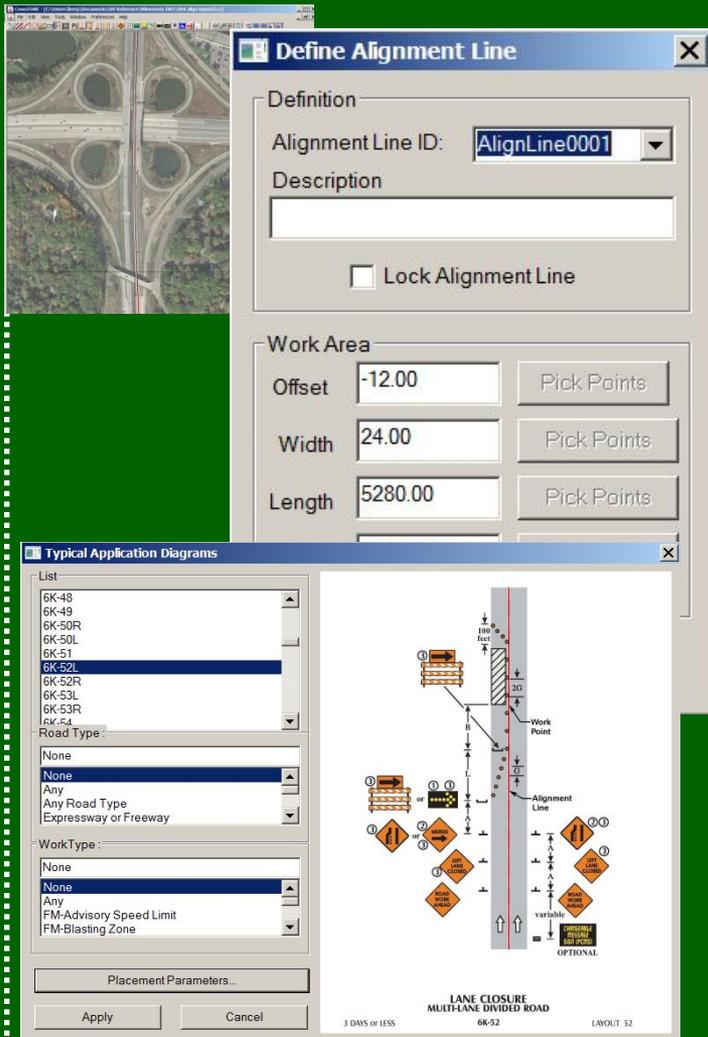
494 Deployment Example

Location of Road Construction –

Location of Dynamic Late Merge



ConeZONE Automation



- ◆ Select a road alignment
- ◆ Select a layout from the built in electronic standards
- ◆ Define the work area and select the road speed
- ◆ Apply the layout
- ◆ Save the drawing



Typical Application Diagrams

List

- 6K-46
- 6K-47
- 6K-48
- 6K-49
- 6K-50R
- 6K-50L
- 6K-51
- 6K-52L**
- 6K-52R
- 6K-53L

Road Type :

- None
- None**
- Any
- Any Road Type
- Expressway or Freeway

WorkType :

- None
- None**
- Any
- FM-Advisory Speed Limit
- FM-Blasting Zone

Placement Parameters...

Apply

Cancel

Standard-Series

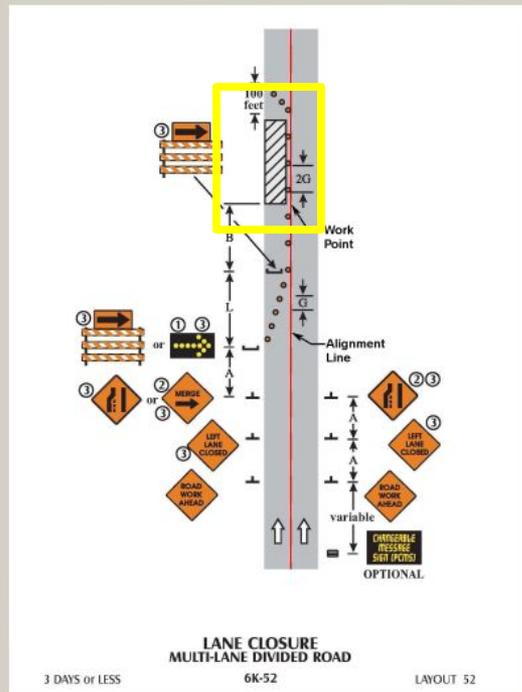
Minnesota-2011

Road Type

Multi Lane Divided

Work Type

FM-Lane Closure





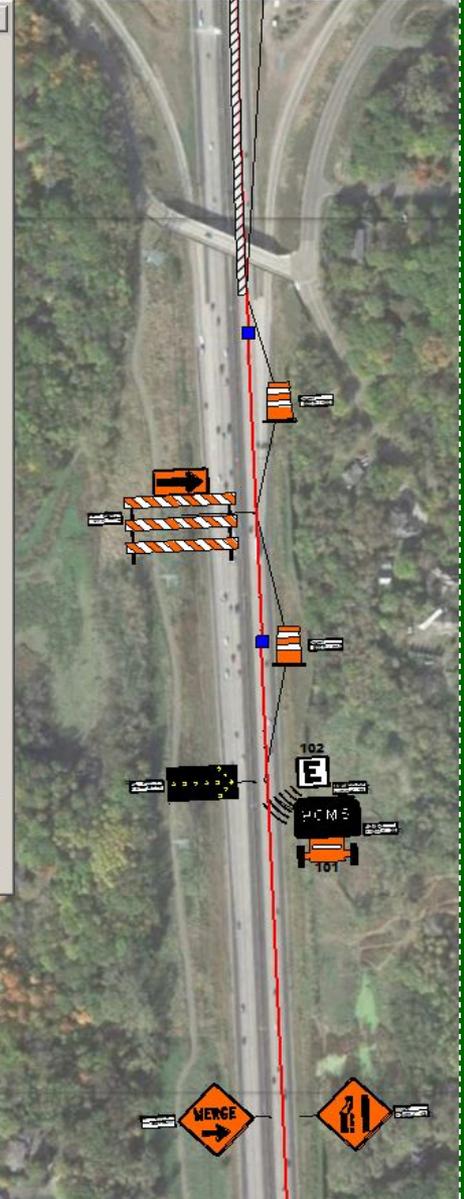
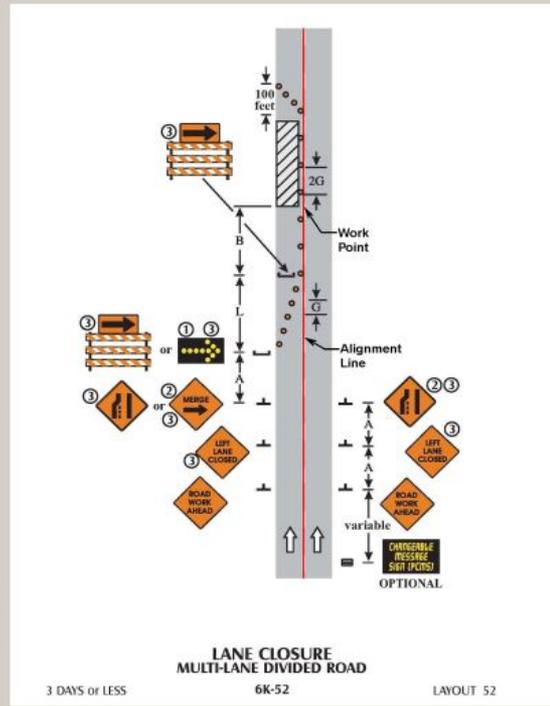
Typical Application Diagrams

- List
- 6K-49
 - 6K-50R
 - 6K-50L
 - 6K-51
 - 6K-52L**
 - 6K-52R
 - 6K-53L
 - 6K-53R
 - 6K-54
 - 6K-Fdeide
- Road Type:
- None
 - None**
 - Any
 - Any Road Type
 - Expressway or Freeway
- WorkType:
- None
 - None**
 - Any
 - FM-Advisory Speed Limit
 - FM-Blasting Zone

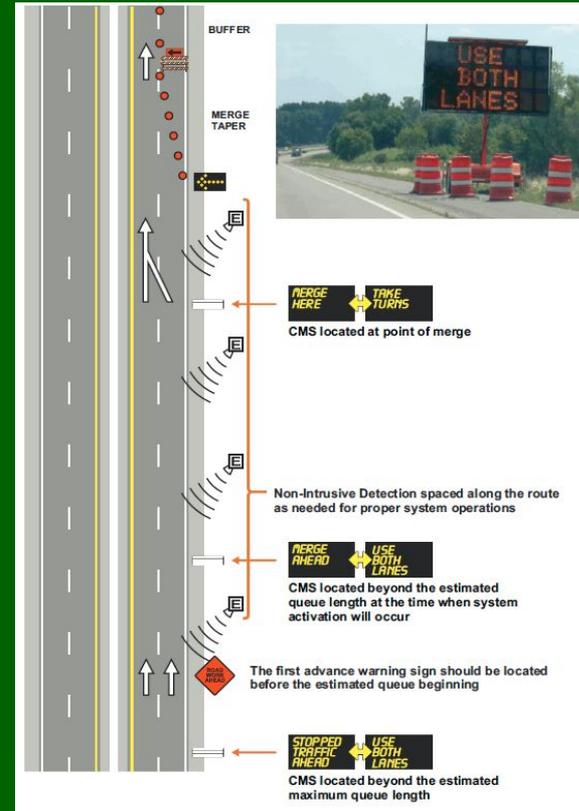
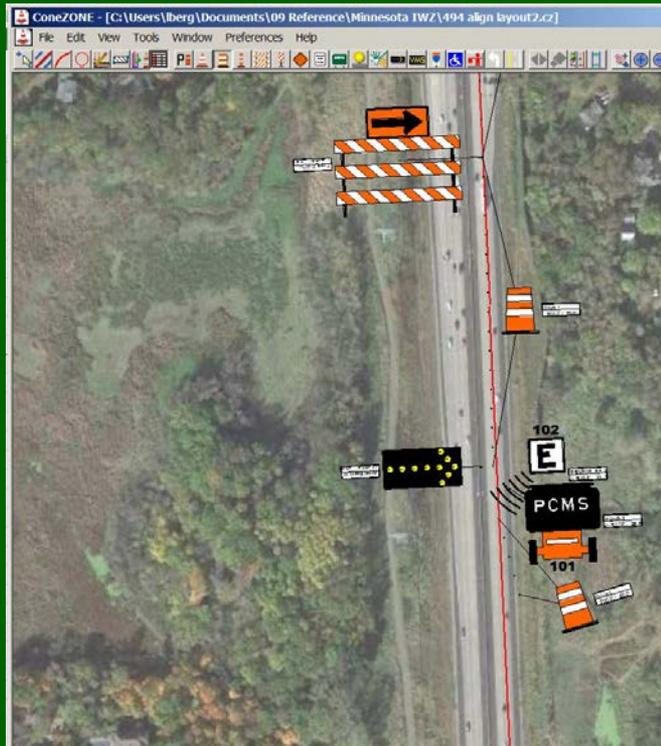
Placement Parameters...

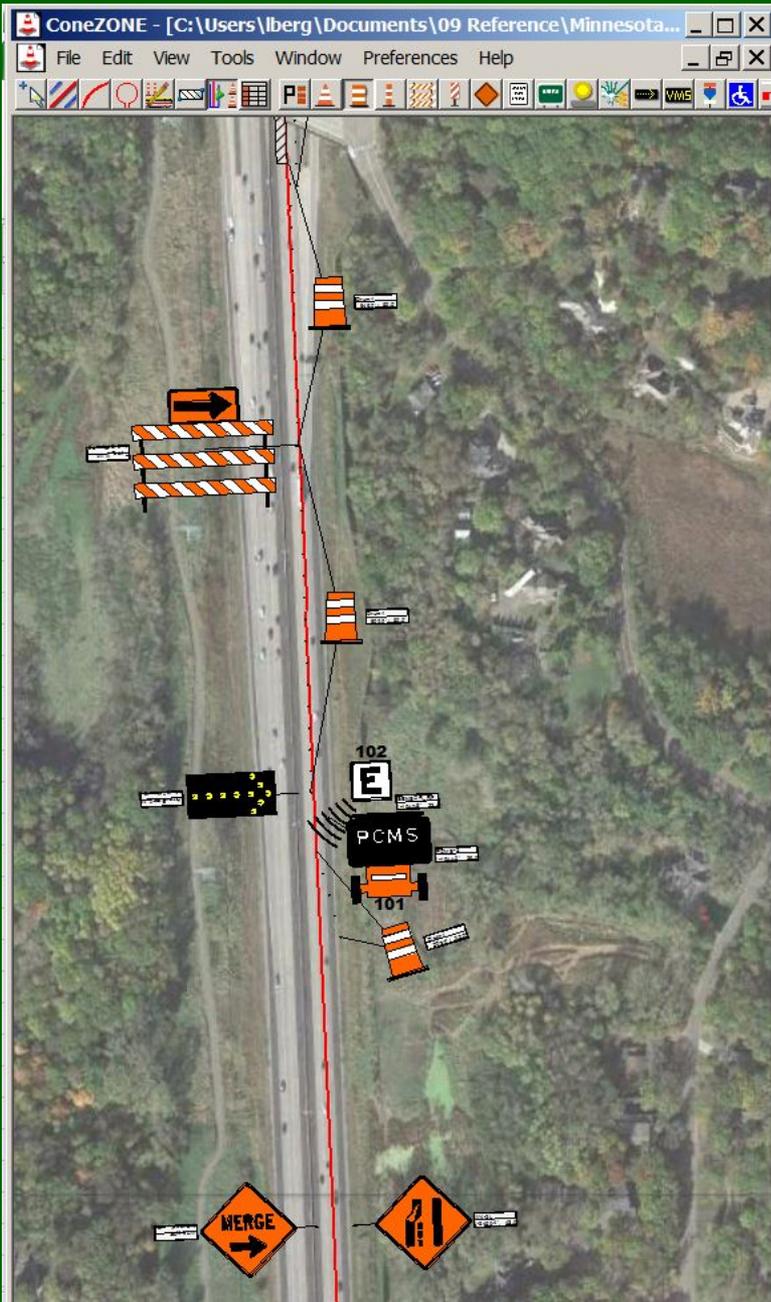
Apply Cancel

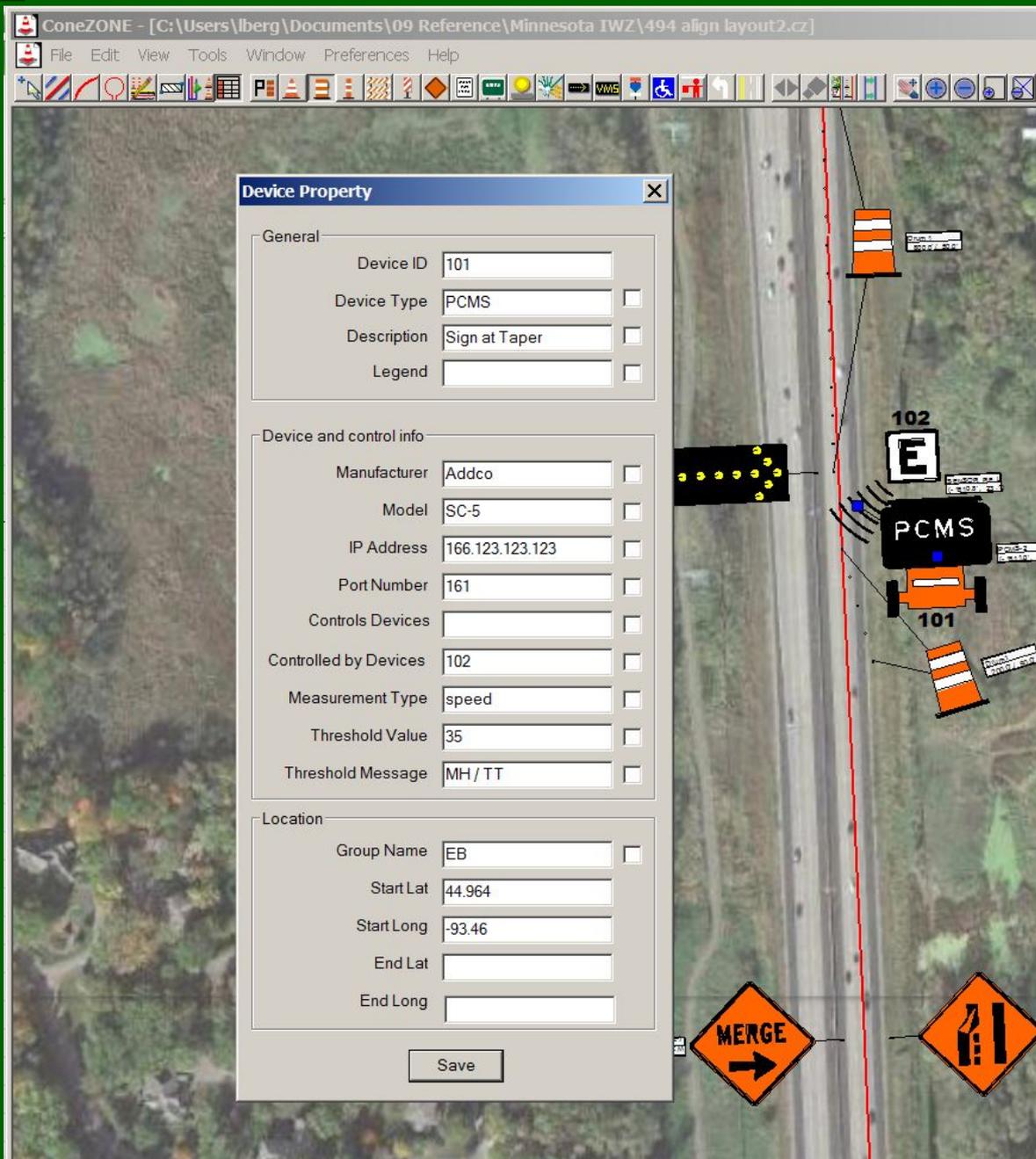
Standard-Series: Minnesota-2011
Road Type: Multi Lane Divided
Work Type: FM-Lane Closure



Locations of Sensors And PCMS







◆ Device properties

- ◆ Type, Manufacturer, Model
- ◆ IP address, port number, dependencies
- ◆ Measurement type, threshold, message
- ◆ Group Identifier

ConeZONE Tabulation of Devices

- ◆ Instant Tabulation of all devices
- ◆ Includes code, quantity, distance

	A	B	C	F	G	I	J	K	L	M	N	O	P	Q	
5	Code	DeviceDesc	Quantity	Size	Area	distance	distanceEnd	Length	Dist to	latitude	longitude	DevID	devType	devDescription	d
6					sq ft	ft	ft		Next			IWZ			
7	Drum	Drum1	5	36		-9200	-9000	200		44.949	-93.458			Shoulder Taper	
8	PCMS-2	PCMS	1	72x48	24	-9000	0		4,100	44.949	-93.458	105	PCMS		
9	W20-1	ROAD WORK AHEAD	1	48x48	16	-4900	0			44.956	-93.460				
10	W20-1	ROAD WORK AHEAD	1	48x48	16	-4900	0		560	44.956	-93.460				
11	Drum	Drum1	5	36		-4540	-4340	200						Shoulder Taper	
12	PCMS-2	PCMS	1	72x48	24	-4340	0			44.958	-93.460	103	PCMS		
13	SENSOR_RF_L	Detection Device	1	194x194		-4340	0		890	44.958	-93.460	104	Doppler Radar		
14	W21-X5(L)	LEFT LANE CLOSED	1	48x48	16	-3450	0			44.962	-93.460				
15	W21-X5(L)	LEFT LANE CLOSED	1	48x48	16	-3450	0		1,000	44.962	-93.460				
16	W4-2L	road narrows	1	48x48	16	-2450	0			44.962	-93.459				
17	W20-X3R	MERGE	1	48x48	16	-2450	0		940	44.962	-93.460				
18	Drum	Drum1	5	36		-1710	-1510	200						Shoulder Taper	
19	PCMS-2	PCMS	1	72x48	24	-1510	0			44.964	-93.460	101	PCMS	Sign at Taper	
20	SENSOR_RF_L	Detection Device	1	194x194		-1510	0		60	44.964	-93.460	102	Doppler Radar	Sensor at Taper	
21	ArrowBoard_MoveM	Arrow Board Flashing Move Mer	1	48x24	8	-1450	0			44.964	-93.460				
22	Drum	Drum1	16	36	0	-1450	-650	800		44.964	-93.460			Taper	
23	Drum	Drum1	6	36	0	-650	0	650		44.964	-93.460			Buffer	
24	Type_III-W1-6R	Barricade Type III Arrow Assemb	1	96x60	40	-650	0			44.966	-93.460				
25	Drum	Drum1	52	36	0	0	5280	5280		44.967	-93.461			Longitudenal Buffer	
26						0				44.967	-93.461			Work area start	
27						5280				44.980	-93.460			Work area end	
28	Drum	Drum1	3	36	0	5280	5380	100		44.980	-93.460			Downside Taper	

IWZ Device Tabulation

- ◆ IP address
- ◆ Dependencies
- ◆ Parameters

Code	SENSOR_RF_L	PCMS-2
DeviceDesc	Detection Device	Portable Changeable Message Sign
DevID	104	101
devManufacture	Houston Radar	Addco
devModel	DR-500	SC-5
devIP	166.12.12.12	166.123.123.123
devPort	2161	161
devControls	103, 105	
devControlled		102
devMeastype	speed	speed
devThresValue		35
devThresMessage		MERGE HERE / TAKE TURNS
devGroupName	EB	EB

SENSOR_RF_L	PCMS-2	PCMS-2	PCMS-2	Drum1	ArrowBoard_MoveMergeR-Fl
Detection Device	Portable Changeable Message Sign	Portable Changeable Message Sign	Portable Changeable Message Sign	Drum1	Arrow Board Flashing Move Merge Right
1	1	1	1	15	1
none	yellow on black Variable Message Sign	yellow on black Variable Message Sign	yellow on black Variable Message Sign	Orange on White Channelizer	Yellow on Black ArrowPanel
104	101	105	103	36	48x24
	72x48	72x48	72x48	0	8
SENSOR_RF_L	PCMS-2.sgn	PCMS-2.sgn	PCMS-2.sgn	Drum1.sgn	ArrowBoard_Flashing-Move-Merge_R.sgn
-4336.61	-1507.2	-9002.28	-4339.61	-1268.42	-1266.6
44.9575	44.964	44.94875	44.9575		
-93.4595	-93.46	-93.4581	-93.4595		
Doppler Radar	PCMS Sign at Taper	PCMS	PCMS		
Houston Radar	Addco	Addco	Addco		
DR-500	SC-5	SC-5	SC-5		
166.12.12.12	166.123.123.123	166.45.45.45	166.12.12.12		
2161	161	161	161		
103, 105	102	102, 104	102, 104		
speed	speed	speed	speed		
	35	35	35		
	MERGE HERE / TAKE TURNS	STOPPED TRAFFIC AHEAD / USE BOTH LANES	MERGE AHEAD USE BOTH LANES		
EB	EB	EB	EB		

IWZ Devices

Code	Drum1	Type_III-W1-6R	SENSOR_RF_L	SENSOR_RF_L	PCMS-2	PCMS-2	PCMS-2	Drum1	ArrowBoard_Mo
DeviceDesc	Drum1	Barricade Type II Arrow Assembly	Detection Device	Detection Device	Portable Changeable Message Sign	Portable Changeable Message Sign	Portable Changeable Message Sign	Drum1	Arrow Board Flashing Move Merge Right
Quantity	5	1	1	1	1	1	1	15	1
Color	Orange on White	Orange on White	none	none	yellow on black	yellow on black	yellow on black	Orange on White	Yellow on Black
DeviceType	Channelizer	Barricade	Sensor	Sensor	Variable Message Sign	Variable Message Sign	Variable Message Sign	Channelizer	ArrowPanel
					101 72x48 24 PCMS-2.sgn	105 72x48 24 PCMS-2.sgn	103 72x48 24 PCMS-2.sgn	36 0 Drum1.sgn	48x24 8 ArrowBoard_Flas hing-Move- Merge_R.sgn
					-1507.2 44.964 -93.46 PCMS	-9002.28 44.94875 -93.4581 PCMS	-4339.61 44.9575 -93.4595 PCMS	-1268.42	-1266.6
					Sign at Taper				
					Addco SC-5 166.123.123.123	Addco SC-5 166.45.45.45	Addco SC-5 166.12.12.12		
					161	161	161		
					102 speed 35	102,104 speed 35	102, 104 speed 35		
					MERGE HERE / TAKE TURNS	STOPPED TRAFFIC AHEAD / USE BOTH LANES	MERGE AHEAD USE BOTH LANES		
devGroupName			EB	EB	EB	EB	EB		

Tabulation sheet

Device Attributes

- devID
- idDeviceDesc
- idDeviceType
- idStandard
- idSubType

Linear Device Attributes

- idTraceLine
- idPlacedCallout
- idType
- idWidth
- idPattern

Placement Attributes

- Quantity
- offset
- offsetEnd
- distance
- distanceEnd

Table

- Device::Code
- Device::idDeviceDesc
- Placement::Quantity
- Device::idColor
- Device::idDeviceType
- Device::Size
- Device::Area
- Device::Identifier
- Placement::distance
- Placement::distanceEnd
- Placement::latitude
- Placement::longitude
- Device::devType
- Device::devID
- Device::devDescription
- Device::devLegend
- Device::devManufacture
- Device::devModel

Place
Export
Cancel

JP - Co-Founder of Salander



- ◆ I'm JP Story
- ◆ 7 Years in ITS Industry
- ◆ Over 100 IWZ's designed, deployed, managed.
- ◆ 23 states, 4 provinces, 4 countries
- ◆ Newly minted father
- ◆ Total Geek.



Whats Next

ConeZONE®

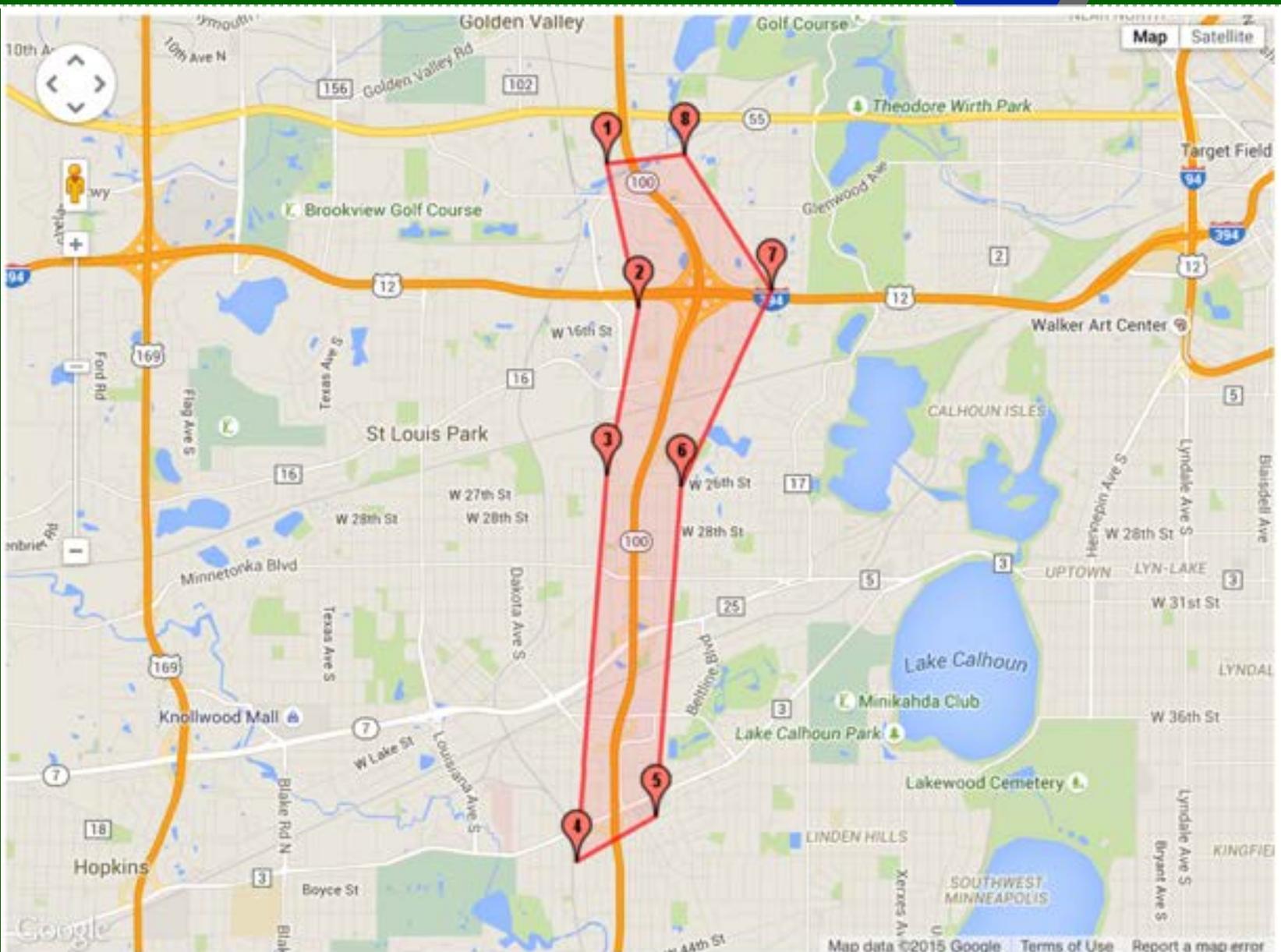
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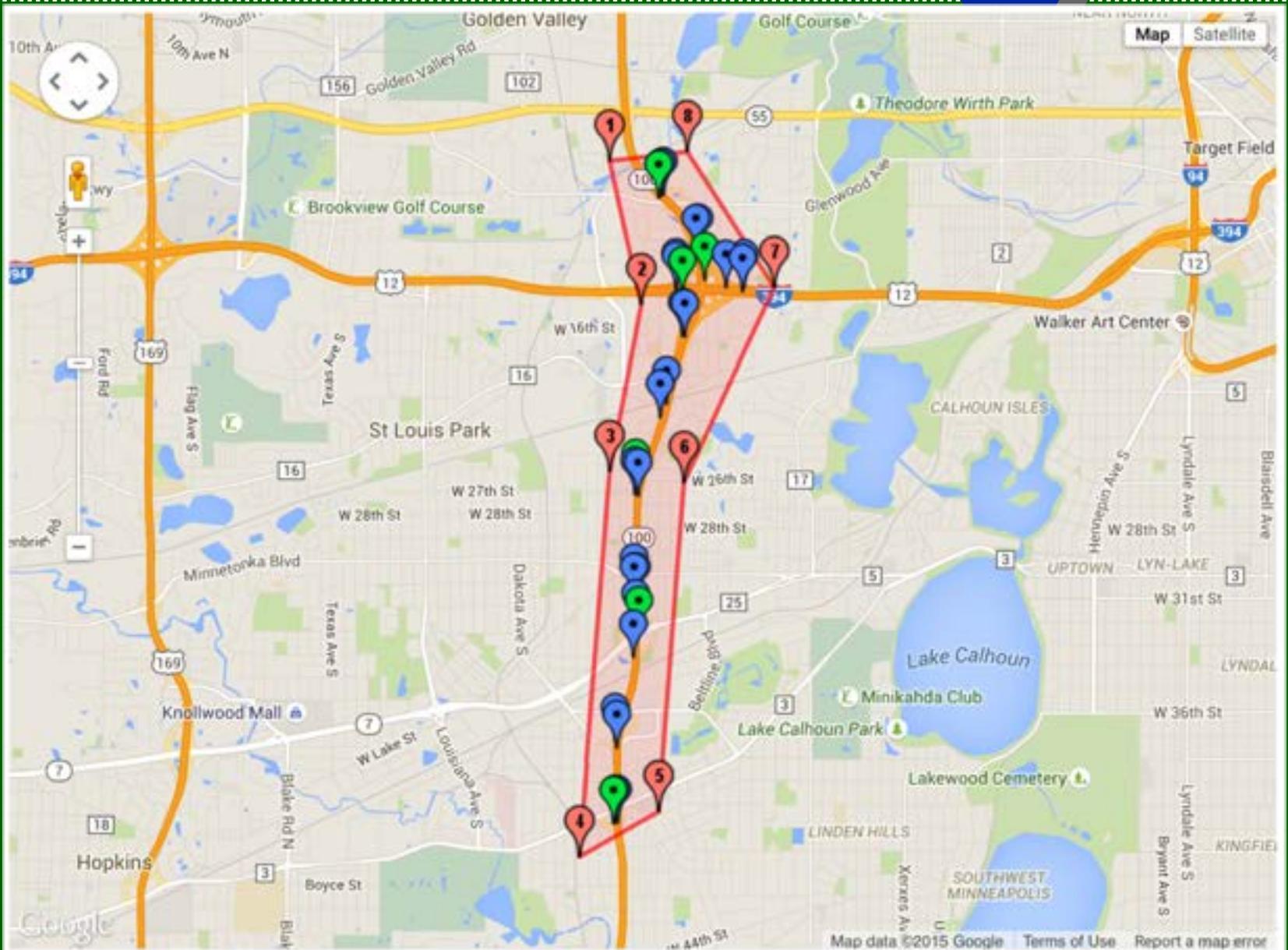
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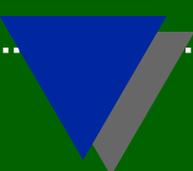


= *Actionable WZ Intelligence*



Save Delete Refresh Show Devices





No Login Needed

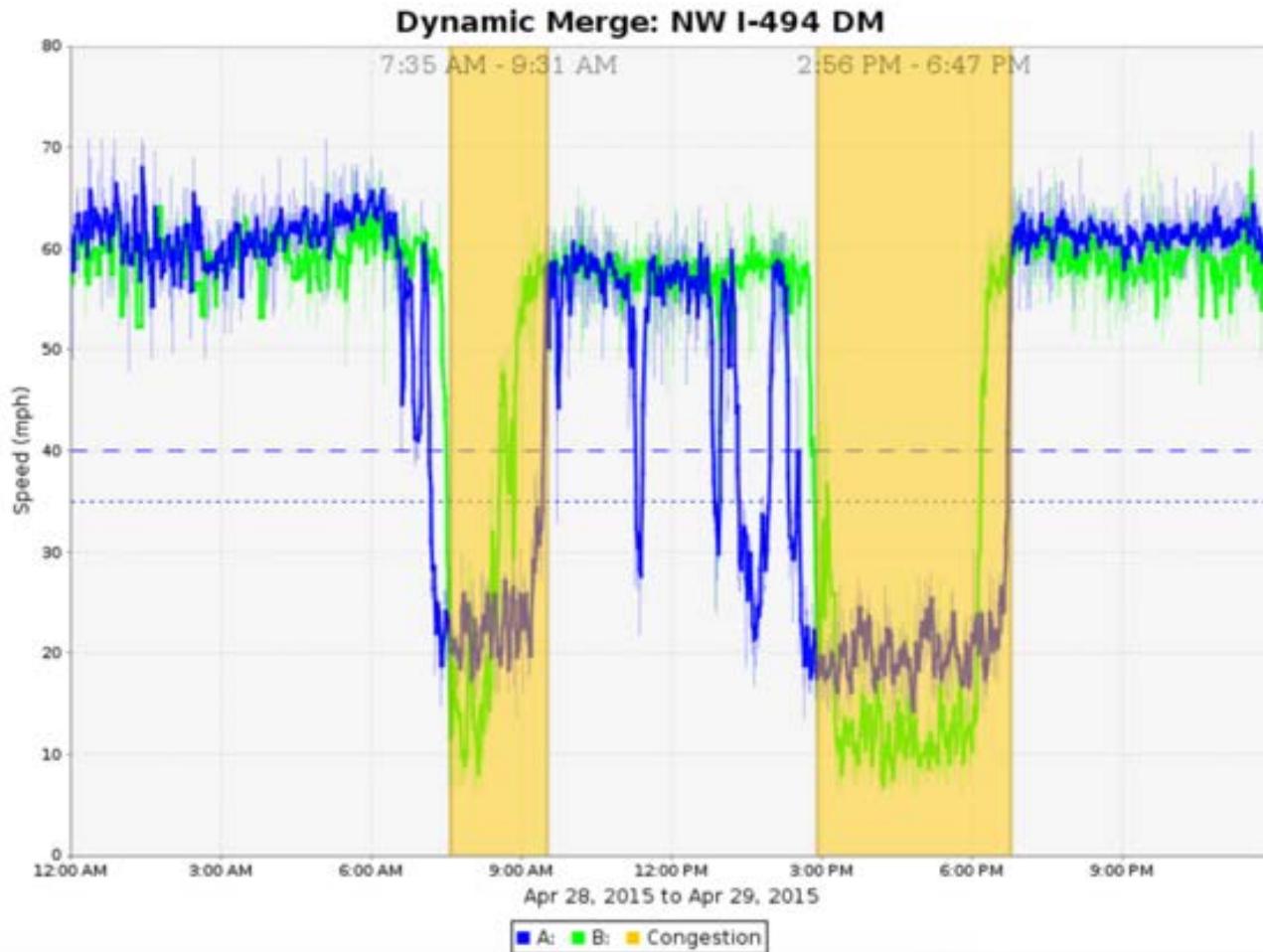
- ◆ **Who needs another username/password in their lives?**

Salander

To: JP Story
Salander: Yesterdays Queue Warning Report

April 29, 2015 at 1:01 AM

Inbox - Exchange

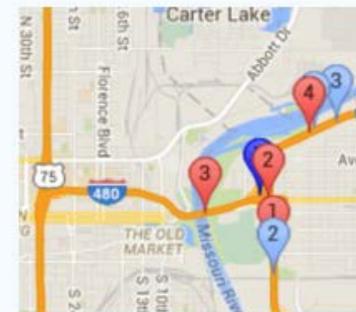


“ Active Delay on Hwy 100-SB - ”
Today 7:48 AM - T.H.100 SB
from I-394 to Excelsior Blvd.

For more info go [here](#)

“ Finished Delay on Hwy 100-SB - ”
Today 7:48 - 8:03 am - T.H.100 SB
from I-394 to Excelsior Blvd

For more info go [here](#)



3 South Metro Drive SB
**NEW LANE
SHIFT
US 275 E**



Custom Outputs

Month of August 2015

Project Monthly Report: NW I-494

Generated on Wed Sept 2, 2015

All times are in CST6CDT time zone.



Event durations by Location:

Location	Count Total	Duration Total	Title	Count	Duration (hour)
I-494 at Bass Lake Rd in Maple Grove	8	9:06	incident	1	3:02
			crash	5	5:26
			stalled vehicle	1	0:12
I-94 EB at E Fish Lake Rd in Maple Grove	1	3:02	debris on roadway	1	0:26
			debris on roadway	1	3:02
I-494 EB at Flying Cloud Dr in Eden Prairie	3	6:23	crash	2	6:02
			stalled vehicle	1	0:21
I-494 mile 24.4	1	0:34	stalled vehicle	1	0:34
I-94 at Weaver Lake Rd in Maple Grove	7	28:20	crash	4	4:33
			stalled vehicle	2	23:18
			incident	1	0:29
I-94 at 85th Ave N in Maple Grove	2	3:44	crash	1	0:43
			debris on roadway	1	3:01
I-494 mile 23.4	1	1:06	crash	1	1:06
US 12 WB at I-494 in Minnetonka	4	6:19	debris on roadway	2	0:17
			animal on roadway	1	3:01
			vehicle traveling wrong way	1	3:01
I-494 at Wayzata Blvd in Minnetonka	11	11:05	crash	6	6:43
			debris on roadway	3	1:12
			incident	1	3:01
I-494 mile 14.7	1	0:34	stalled vehicle	1	0:09
			crash	1	0:34
I-494 at W 62nd St in Eden Prairie	2	1:41	debris on roadway	1	0:11
I-494 WB at US 212 in Eden Prairie	3	0:53	crash	1	1:30
			debris on roadway	3	0:53
I-494 at Cheshire Pkwy in Minnetonka	1	0:53	debris on roadway	1	0:53
I-494 at Co Rd 6 in Plymouth	3	2:47	crash	1	0:53
			stalled vehicle	2	1:49
MN 55 at I-494 in Plymouth	2	1:07	crash	1	0:58
			incident	1	0:58
I-494 at Valley View Rd in Eden Prairie	2	1:13	stalled vehicle	1	0:09
			incident	1	0:29
I-494 at Carlson Pkwy N in Plymouth	2	3:26	debris on roadway	1	0:44
I-494 at W 62nd St in Minnetonka	3	1:12	stalled vehicle	2	3:26
			debris on roadway	2	0:49
I-94 EB mile 217.4	1	6:11	incident	1	0:23
			debris on roadway	1	6:11

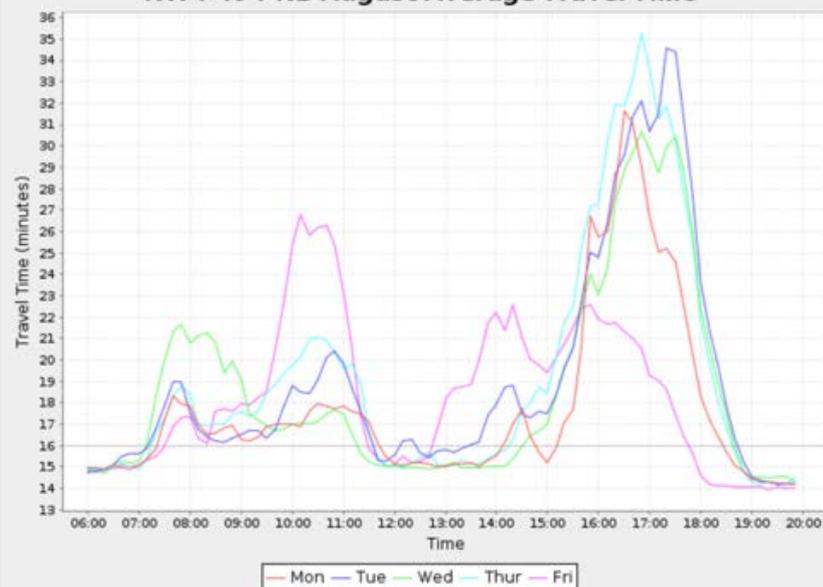
Route NW I-494 NB

Sensor covered distance
15.29 Posted travel time
15.98

Monthly Travel Time Average
by Day of the Week for August
2015

start MM 11.0 end MM 28.0
start Hwy5 end 494 at 694

NW I-494 NB August Average Travel Time





“I appreciate the chance to use this tool and was impressed by its format. It did help find spots to concentrate on when we made MOT changes.”

Mike Fairbanks
Metro Signal Operations & Design Build Engineer
1500 W. County Road B-2
Roseville, MN 55113
Waters Edge Office