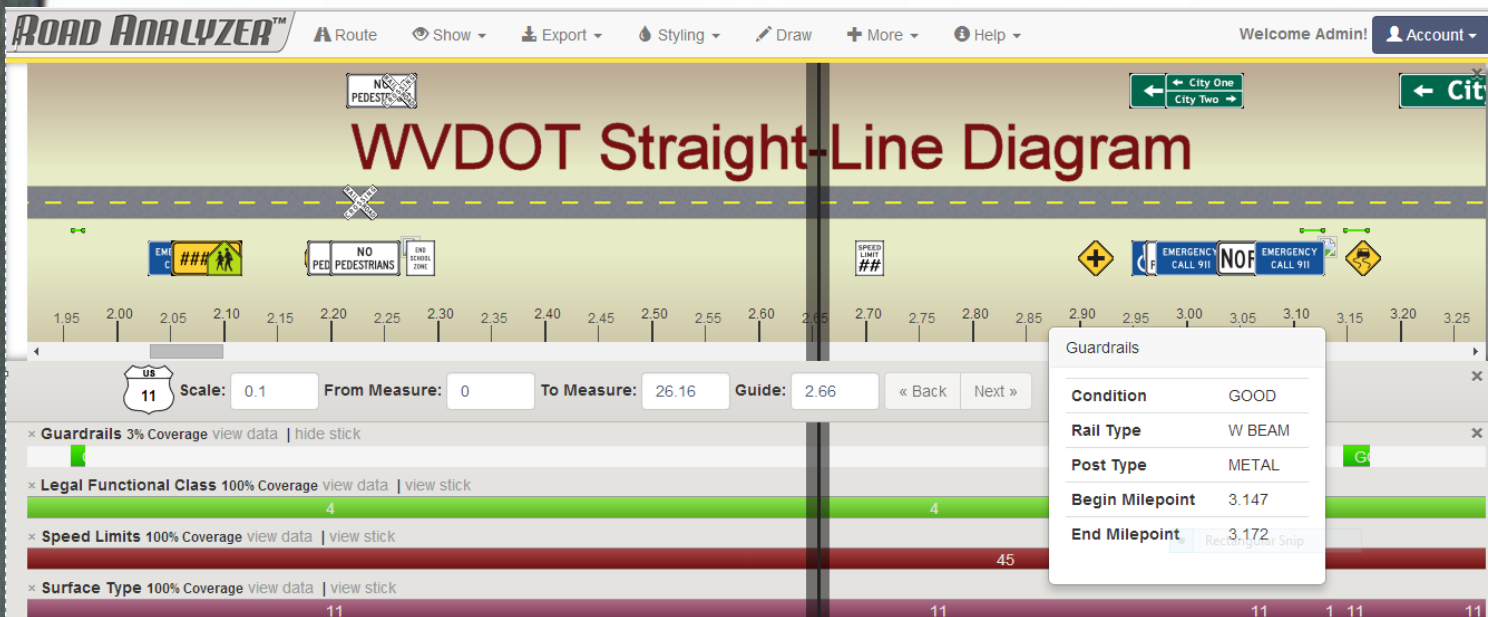


Visualizing Transportation Assets presented by Hussein S Elkhansa



Why a new SLD at WVDOT?

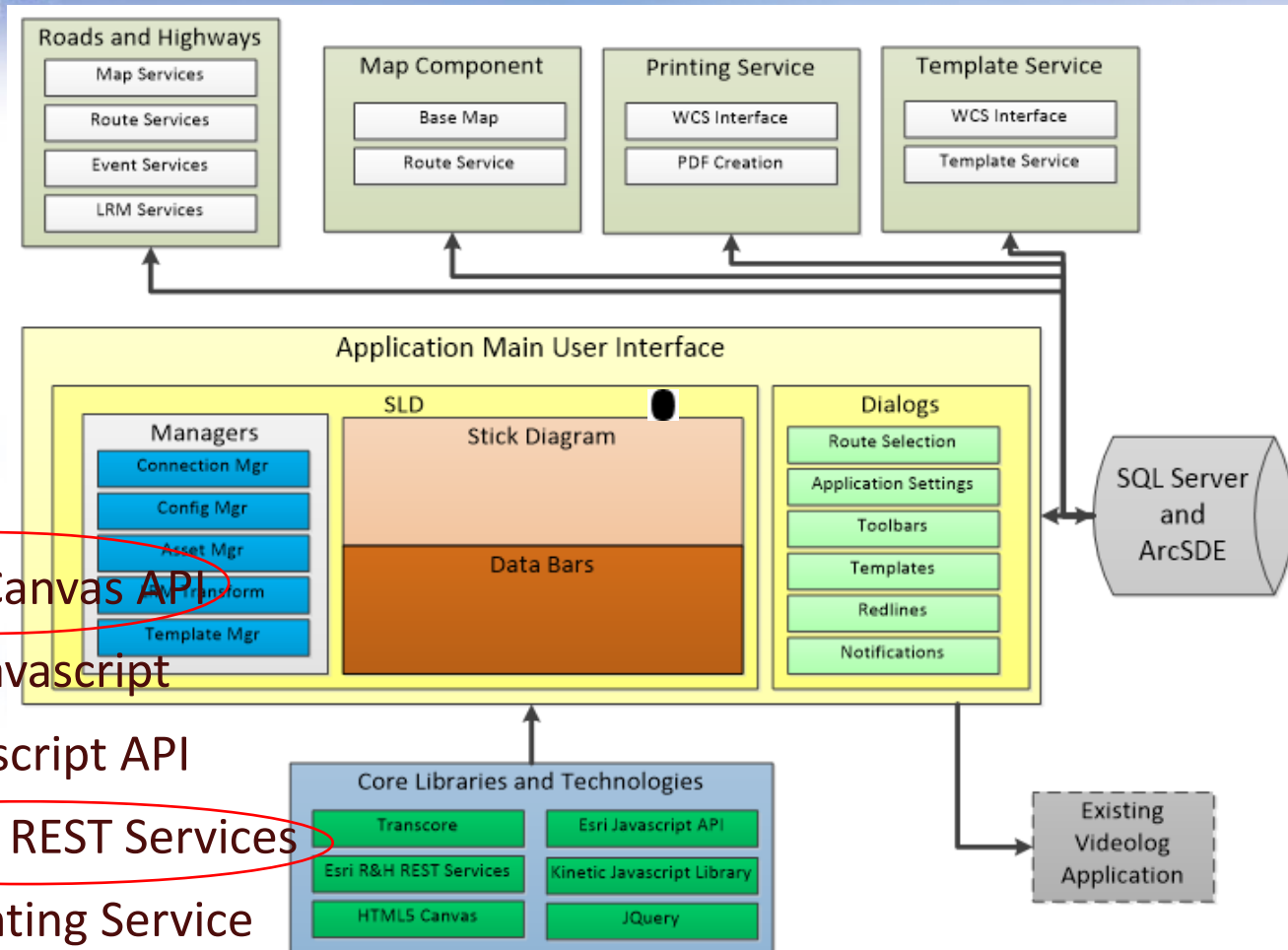
Project introduction

- Transition from a paper based SLD
- Replace Scalable Vector Graphics (SVG) with HTML5
- Take advantage of Roads and Highways services
- Become technology compatible agency-wide
- Apply a more sustainable technology set
- Integrate WVDOT VideoLog Viewer, iVision by Fugro
- Expand to mobile devices

What is Road Analyzer

- Database driven, dynamic web-based interactive **straight-line diagramming** environment
- Tool for viewing roadway assets and events by:
 - ✓ Stick Diagram
 - ✓ Data Bars
 - ✓ Map
 - ✓ Dashboard
 - ✓ Drilldowns to Attribute Details
 - ✓ VideoLog

What were the technology changes?



✓ HTML5 Canvas API

✓ jQuery javascript

✓ Esri Javascript API

✓ Esri R&H REST Services


✓ WCF Printing Service


Get started by Selecting a Route

Search by Geography

Latitude


Longitude

 My Location

 Find

Search by Hierarchy

 Clear

 Apply Filter

Search with Query Builder

Layer

Fields

<input "="" type="text" value="="/>	<input type="text" value=">"/>	<input type="text" value="<"/>	<input type="text" value="Is"/>	<input type="text" value="Like"/>	<input type="text" value="Not"/>
<input type="text" value="<>"/>	<input "="" type="text" value=">="/>	<input "="" type="text" value="<="/>	<input type="text" value="%"/>	<input type="text" value="And"/>	<input type="text" value="Or"/>

Values

 Load

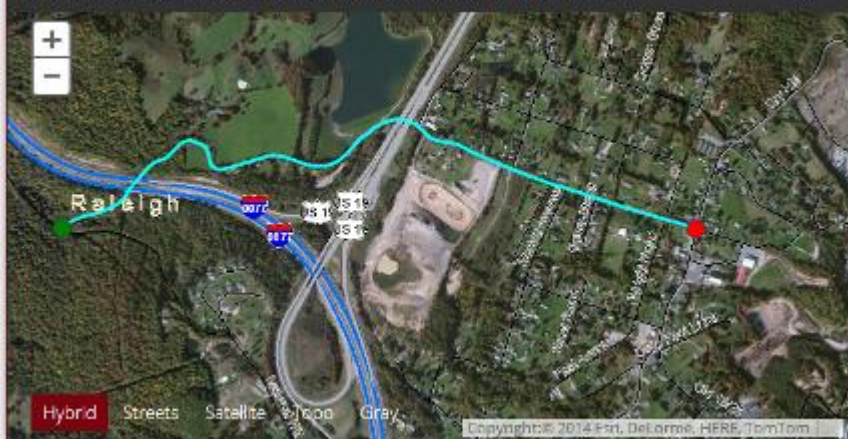
Select * From Grade Width Where

Clear

Verify

Apply

Route '4140004010000' selected (click on the map to change selection)



After Route Selection, launch SLD



West Virginia Road Analyzer

Search by Hierarchy

Berkeley
Interstate
0081
00
Not Applicable
Northbound

✕ Clear

✓ Apply Filter

Route (total of 1)

181

From Measure

To Measure

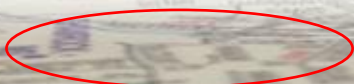
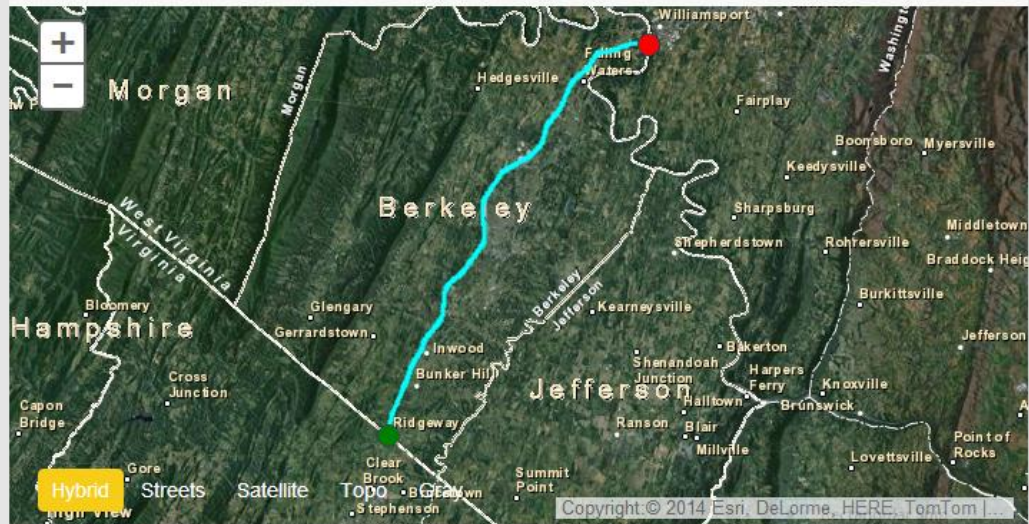
0

26

Recent ▾

Analyze Route »

Route '181' selected (click on the map to change selection)



Get to know the User Interface

The screenshot displays the ROAD ANALYZER™ user interface. At the top, a navigation bar includes the logo, a 'Route' button, and several utility icons: 'Show', 'Export', 'Styling', 'Draw', 'More', and 'Help'. On the right side of the navigation bar, it says 'Welcome Admin!' and has an 'Account' dropdown menu.

The main workspace is divided into two vertical panels. The left panel shows a road segment with various signs and markers, including 'TRUCKS USE RIGHT LANE', 'NO PEDESTRIANS', and 'SLOW MISS TURN-OFF'. A scale bar at the bottom of this panel ranges from 0.00 to 0.30. The right panel shows a similar road segment with signs like 'TRUCKS USE RIGHT LANE', 'BUS LANE ENDS', 'MILE #', and 'NO PEDESTRIANS'. A scale bar at the bottom of this panel ranges from 0.60 to 1.35.

A central menu is open, listing the following options:

- Stick Panel
- Stick Panel Guide Bar
- Divider (Route Information)
- Bar Panel
- Bar Panel Guide Bar
- Dashboard
- Map
- Street View
- Drawing Tools
- Video Log
- All
- None

Below the main workspace, there are several data panels:

- A 'Scale' panel showing 'Scale: 0.1' and 'From Mea'.
- A 'Guardrails' panel showing '39% Coverage' and a 'GO' button.
- A 'Legal Functional Class' panel showing '100% Coverage' and a 'view data' link.
- A 'Speed Limits' panel showing '100% Coverage' and a 'view data' link.
- A 'Surface Type' panel showing '100% Coverage' and a 'view data' link.

The bottom of the interface shows a map view of the road network.

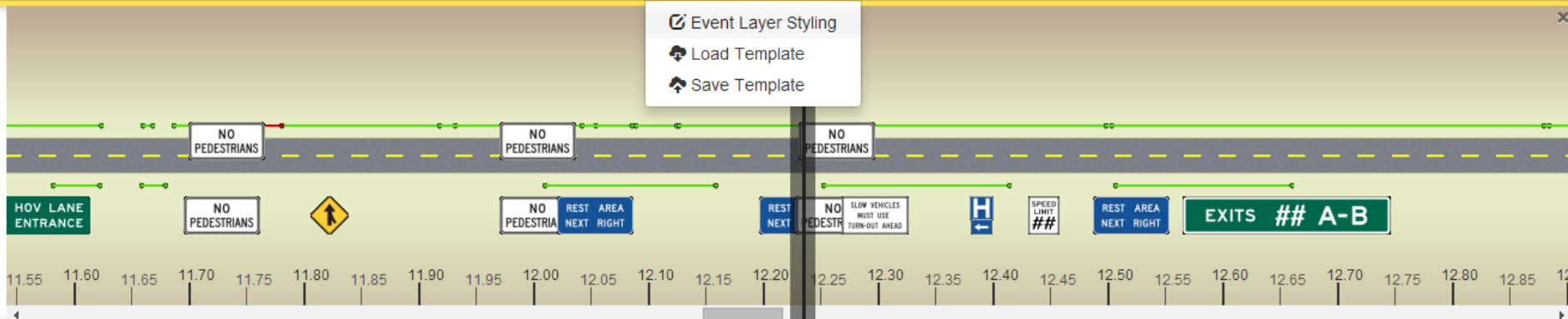
Event Layer Styling, Stick Visibility

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

- Event Layer Styling
- Load Template
- Save Template



Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.23 « Back Next »



<input type="checkbox"/>	County Milepoint	Designated Truck Routes (4 events)	🔍
<input type="checkbox"/>	County Milepoint	NHS Functional Class (4 events)	🔍

Close

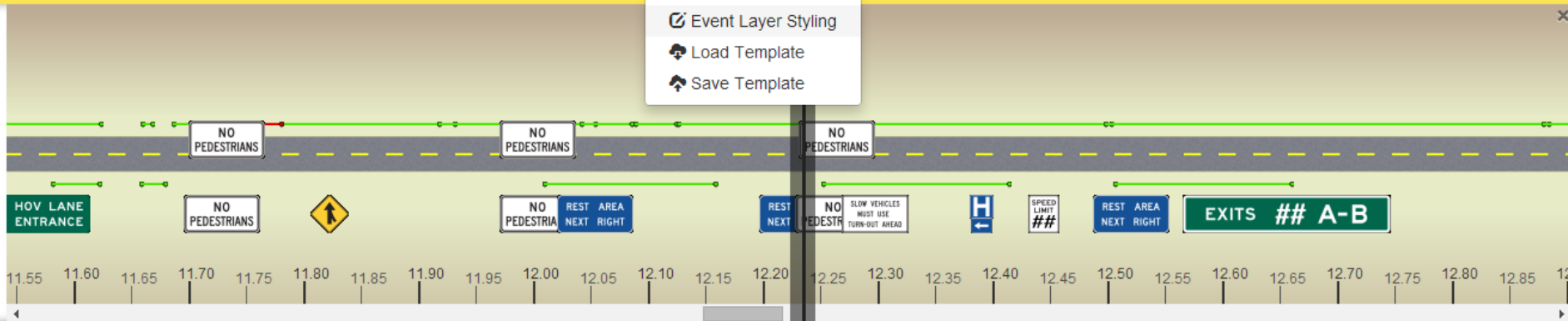
Event Layer Styling, Bar Visibility

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

- Event Layer Styling
- Load Template
- Save Template



Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.23 « Back Next »



<input checked="" type="checkbox"/>	County Milepoint	<input checked="" type="checkbox"/> NHS Functional Class (4 events)	↑ 8 ↓
<input checked="" type="checkbox"/>	County Milepoint	<input checked="" type="checkbox"/> Grade Width (21 events)	↑ 9 ↓

Close

Event Layer Styling, Fields

ROAD ANALYZER™

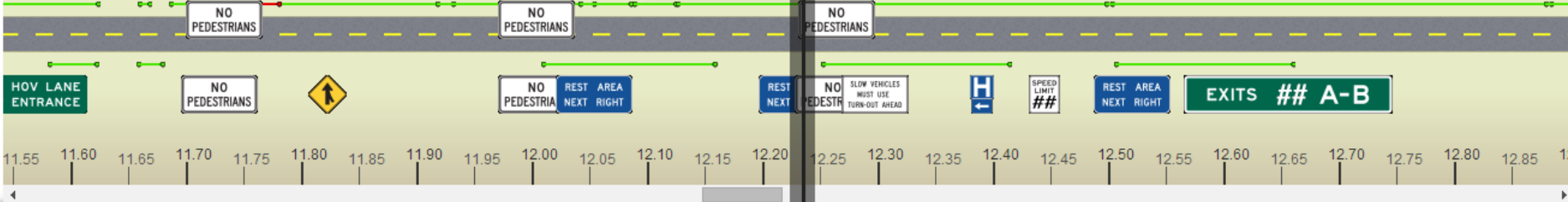
Route Show Export Styling Draw More Help

Welcome Admin! Account

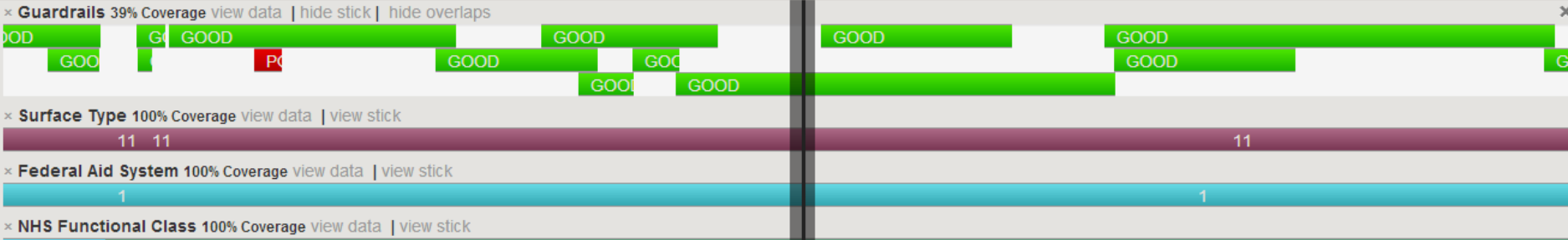
Event Layer Styling

Load Template

Save Template



Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.23 « Back Next »



<input checked="" type="checkbox"/>	BEG_MP	<input type="text" value="Begin Milepoint"/>
<input checked="" type="checkbox"/>	END_MP	<input type="text" value="End Milepoint"/>

User Preferences, Default Settings

ROAD ANALYZER™ Route Show Export Styling Draw More Help Welcome Admin! Account

- Notify
- User Preferences
- Application Configuration
- Reports

Scale: 0.1 From Measure: 0

- Surface Type 100% Coverage view data | view stick
- Special System 97% Coverage view data | view stick
- Federal Aid System 97% Coverage view data | view stick
- Designated Truck Routes 97% Coverage view data | view stick

Preferences

Defaults

Default Settings

Scale: 0.1

Stick Panel Height: 250

- Show Clicked Location on Map Selection
- Populate Route List on Load
- Use Top to Bottom Percentages for Stick Panel

Visible Route Filters: Hierarchy Geography Query Builder

Date Filter Visible

Reset to Default

Close

Application Configuration, General

ROAD ANALYZER™ Route Show Export Styling Draw More Help Welcome Admin! Account

Notify
User Preferences

App Configuration

General Marker Symbols

Heads Up! Some of these settings will not be applied until after you reload the application.

Base Map Service Uri	<input type="text" value="http://prd.tsstools.com:6080/arcgis/rest/services/wvdc"/>	Test Url
Geometry Service Uri	<input type="text" value="http://host.com:6080/GeometryServer"/>	Test Url
Lrm Transform Service Uri	<input type="text" value="http://host.com:6080/services/transform"/>	Test Url
Concurrent Route Service Uri	<input type="text" value="http://host.com:6080/services/concurrent"/>	Test Url

Application Title

Close Save

Application Configuration, Marker Symbols

ROAD ANALYZER™ App Configuration

Route Show Export Styling Draw More Help Welcome Admin! Account

Notify
User Preferences
Application Configuration
Reports

REST AREA NEXT RIGHT
EXITS ##
EMERGENCY CALL 911
REST AREA NEXT RIGHT
REST AREA NEXT RIGHT
REST AREA NEXT RIGHT
NO PEDESTRIANS
NO PEDESTRIANS
SPEED LIMIT ##

Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 13 « Back Next »

Category	Coverage	View Data	View Stick
Surface Type	100%	view data	view stick
Special System	97%	view data	view stick
Federal Aid System	97%	view data	view stick
Designated Truck Routes	97%	view data	view stick

Close

Application Configuration, Marker Symbols

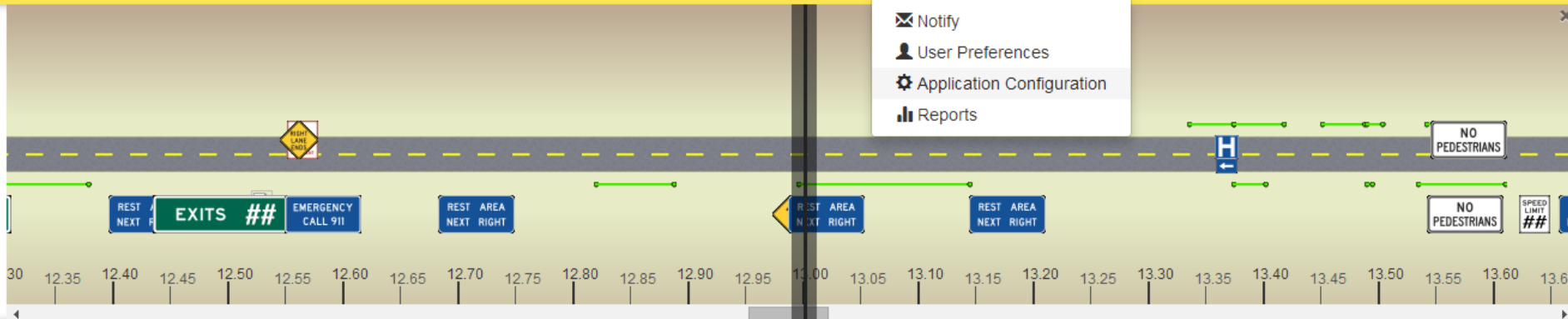
App Configuration

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

- Notify
- User Preferences
- Application Configuration
- Reports



System	Coverage	View Data	View Stick
Surface Type	100%	view data	view stick
Special System	97%	view data	view stick
Federal Aid System	97%	view data	view stick
Designated Truck Routes	97%	view data	view stick

Close

Event Layer Tooltips

The screenshot displays the Road Analyzer interface with a tooltip for the 'Guardrails' event layer. The tooltip contains the following information:

Condition	POOR
Rail Type	W BEAM
Post Type	METAL
Begin Milepoint	11.992
End Milepoint	12.200

The main interface shows a road map with various event layers and markers. The 'Guardrails' layer is highlighted in purple. Other visible layers include Surface Type (100% Coverage), Special System (97% Coverage), Federal Aid System (97% Coverage), and Designated Truck Routes (97% Coverage). The map includes markers for 'END', 'EXIT', 'NO PEDESTRIANS', 'REST AREA NEXT RIGHT', and 'EMERGENCY CALL 911'. The scale is set to 0.1, and the guide is at 12.19.

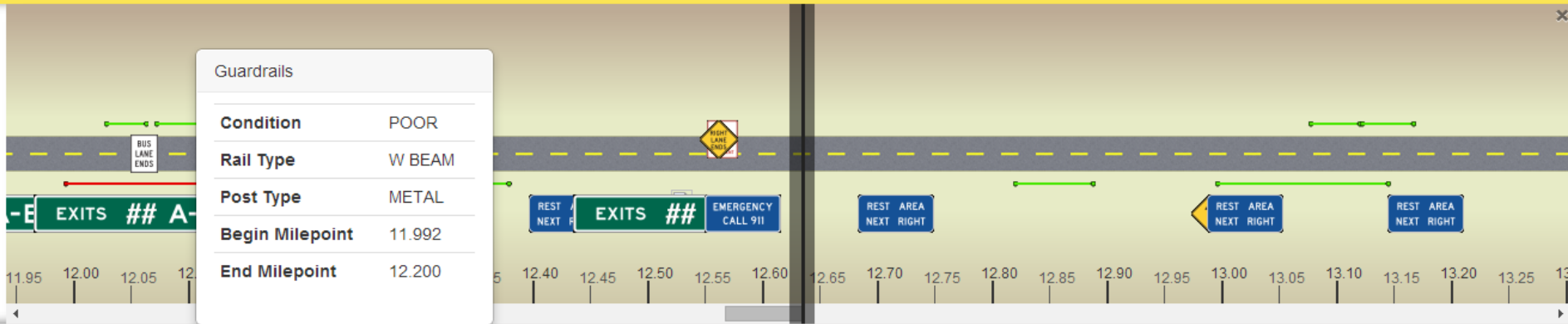
Drilldown, Layer Details

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

Guardrails	
Condition	POOR
Rail Type	W BEAM
Post Type	METAL
Begin Milepoint	11.992
End Milepoint	12.200



Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.63 « Back Next »

Surface Type	100% Coverage	view data view stick	11
Special System	97% Coverage	view data view stick	01
Federal Aid System	97% Coverage	view data view stick	1
Designated Truck Routes	97% Coverage	view data view stick	1

View Layer Data Query

Close

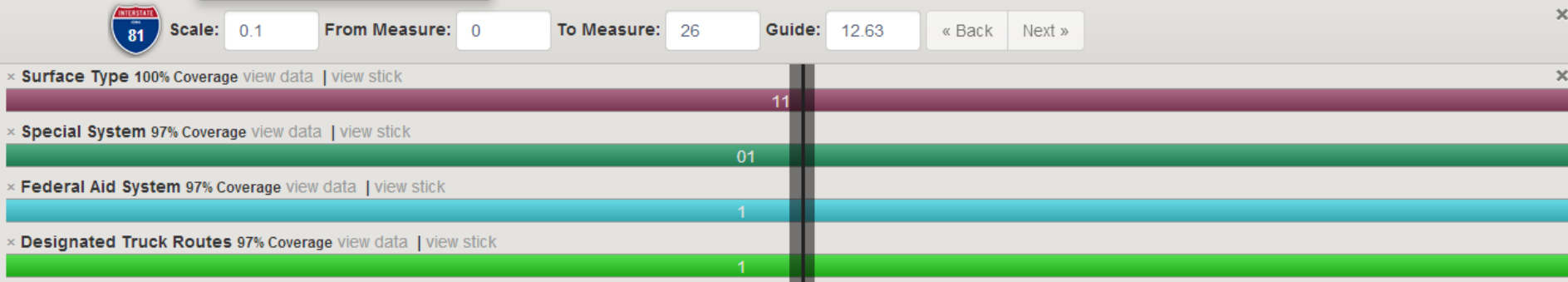
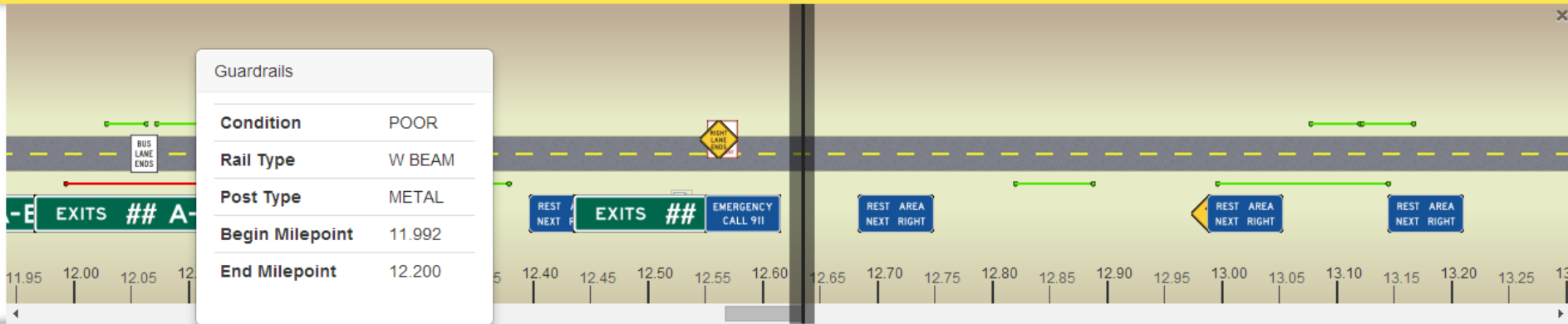
Drilldown, Layer Feature Grid

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

Guardrails	
Condition	POOR
Rail Type	W BEAM
Post Type	METAL
Begin Milepoint	11.992
End Milepoint	12.200



Total Items: 99

CSV Export

View Layer Data Query

Close



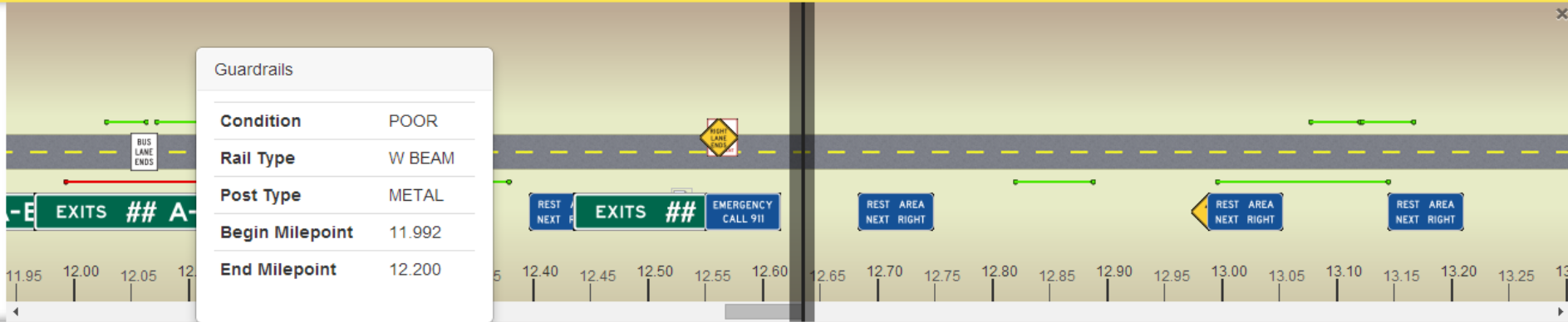
Drilldown, Layer Statistics

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

Guardrails	
Condition	POOR
Rail Type	W BEAM
Post Type	METAL
Begin Milepoint	11.992
End Milepoint	12.200

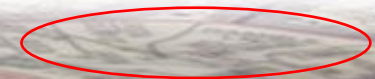


Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.63 « Back Next »

Surface Type	100% Coverage	view data view stick	11
Special System	97% Coverage	view data view stick	01
Federal Aid System	97% Coverage	view data view stick	1
Designated Truck Routes	97% Coverage	view data view stick	1

View Layer Data Query

Close



Drilldown, Layer Categories

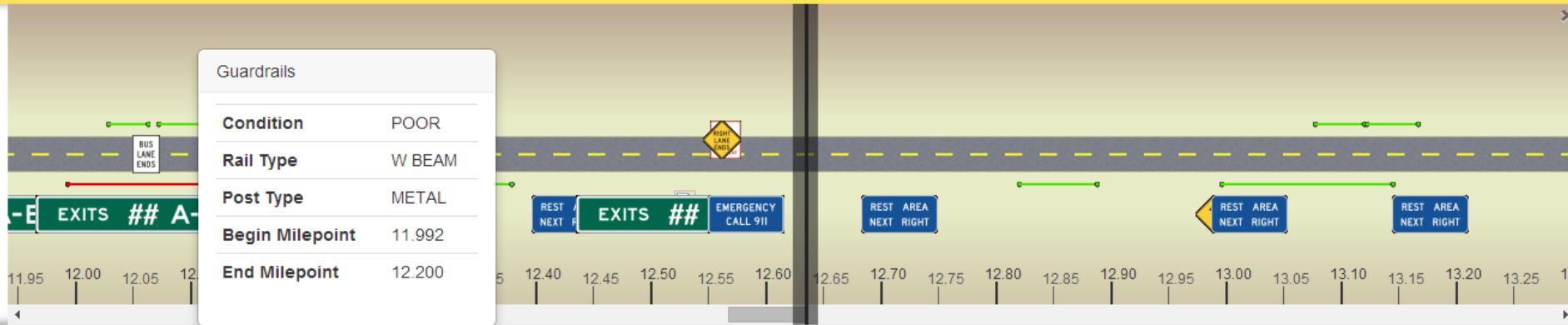
ROAD ANALYZER™

Route Show Export Styling Draw More Help

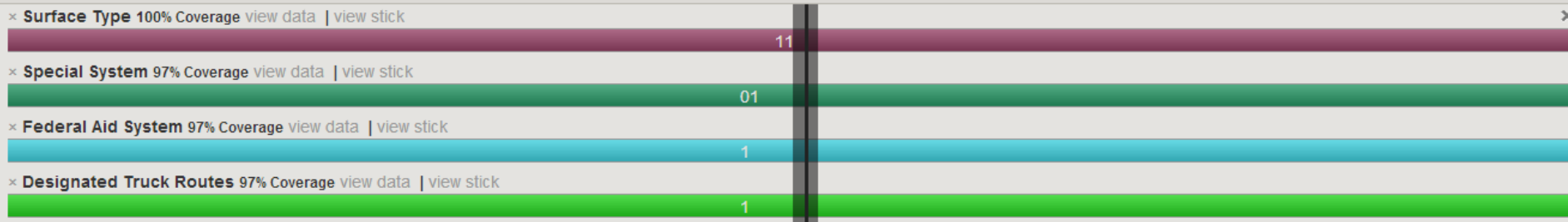
Welcome Admin! Account

Guardrails

Condition	POOR
Rail Type	W BEAM
Post Type	METAL
Begin Milepoint	11.992
End Milepoint	12.200



Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.63 « Back Next »



Empty 19.56 75%

View Layer Data Query Close

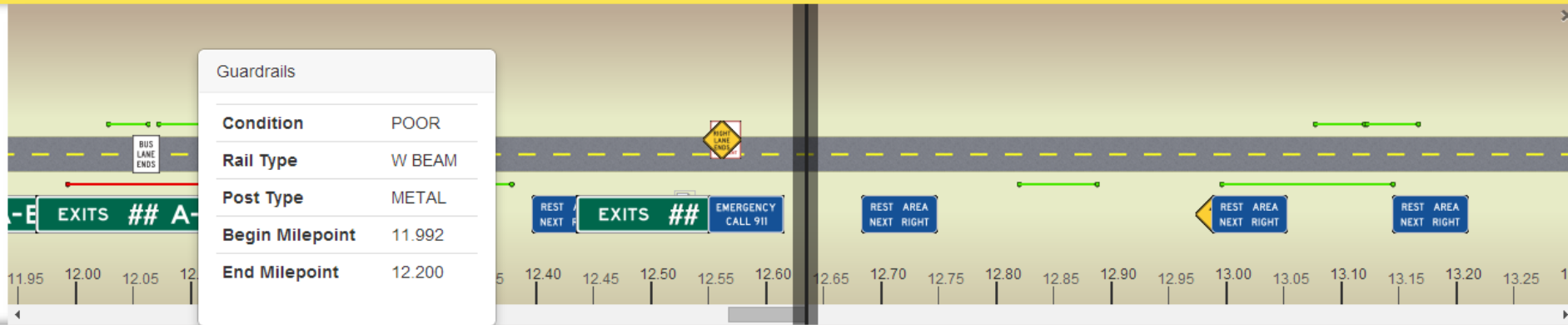
Drilldown, Layer Coverage

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account

Guardrails	
Condition	POOR
Rail Type	W BEAM
Post Type	METAL
Begin Milepoint	11.992
End Milepoint	12.200



Scale: 0.1 From Measure: 0 To Measure: 26 Guide: 12.63 « Back Next »

Layer Name	Coverage	Count
Surface Type	100%	11
Special System	97%	01
Federal Aid System	97%	1
Designated Truck Routes	97%	1

1.535 1.741

View Layer Data Query Close

Integrated VideoLog, iVision

ROAD ANALYZER™ Route Show Templates Print Draw

Scale: 0.1 Begin Mile: 0 End Mile: 16 Guide: 0.71

- Guardrails view data | view stick
- Special System view data | view stick
- Federal Aid System view data | view stick
- Designated Truck Routes view data | view stick
- NHS Functional Class view data | view stick
- Grade Width view data | view stick

Fugro Roadware iVision Year 2012 Level 100

ROW

ROW Left Rear Right

SYS	SUPP_CODE	SUPP_DESCR	DIRECTION	BEG_MP	END_MP	LOC
CO	00NA	Not Applicable	EB	0.175	0.208	RIGHT
CO	00NA	Not Applicable	NB	10.891	10.913	RIGHT

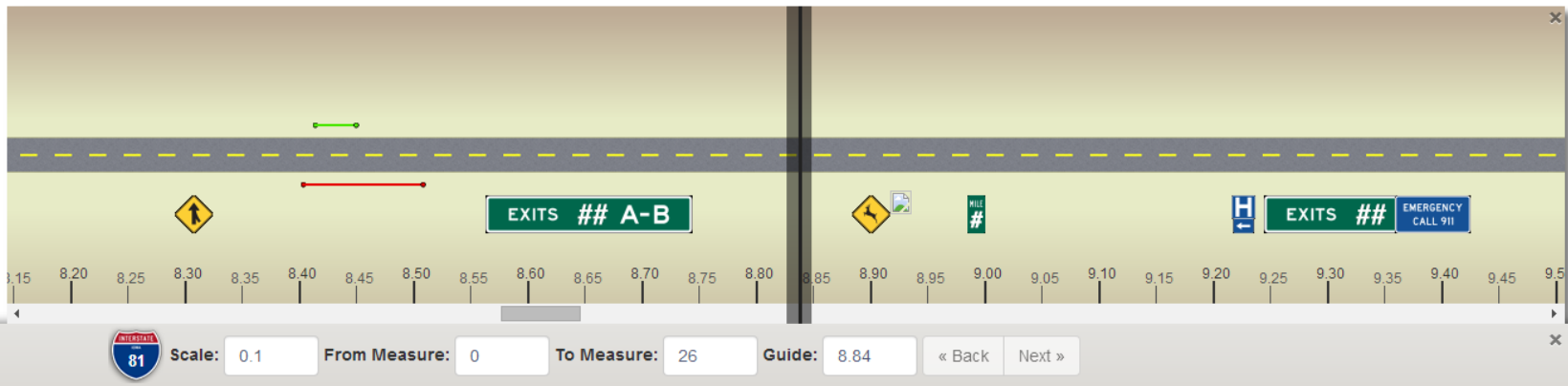
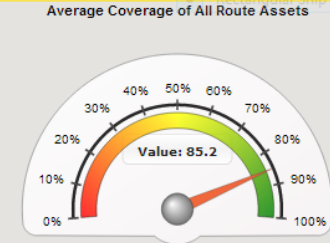
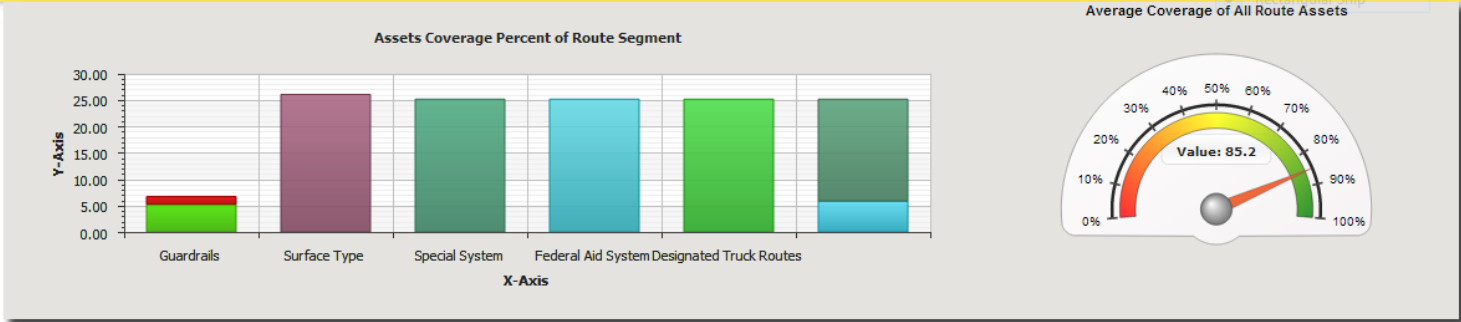
Bridges Lanewidths Guidarails

Dashboard

ROAD ANALYZER™

Route Show Export Styling Draw More Help

Welcome Admin! Account



Integrated or Pop-out Map

ROAD ANALYZER™ | A Route | Show | Export | Styling | Draw | More | Help | Welcome Admin! | Account

The screenshot displays the ROAD ANALYZER™ software interface. The main window shows a road analysis tool with a scale bar (8.15 to 8.55) and a yellow diamond warning sign. A pop-out window titled "External Map - Google Chrome" is open, showing a satellite map of the Berkeley area in West Virginia. The map includes labels for Morgan, Berkeley, Hampshire, and Jefferson counties, as well as various towns and landmarks. The pop-out window's address bar shows the URL: prd.tsstools.com/tds/apps/ra/external-map.html?client=wwdot&esriMap=%7B%22zoomToLayer%22%22base. The main interface also features a list of analysis categories on the left side:

- Guardrails 25% Coverage view data | hide stick | hide overlaps
POOR (red bar)
GOC (green bar)
- Surface Type 100% Coverage view data | view stick
11 (purple bar)
- Special System 97% Coverage view data | view stick
01 (green bar)
- Federal Aid System 97% Coverage view data | view stick
1 (cyan bar)
- Designated Truck Routes 97% Coverage view data | view stick
1 (green bar)
- NHS Functional Class 97% Coverage view data | view stick
1 (green bar)

Drawing or Annotation Tools

The screenshot displays the ROAD ANALYZER software interface. At the top, the title bar includes the logo and navigation options: Route, Show, Export, Styling, Draw, More, and Help. A user account is logged in as 'Admin!'. The main workspace shows a road map with various annotations. A blue oval highlights a section of the road, with a blue arrow pointing to the text 'Check Guardrails'. The map includes several signs: 'NO PEDESTRIANS', 'SPEED LIMIT ##', a shield sign, 'City One ##', 'City Two ##', 'City Three ##', 'NEXT # MILES', and 'TRUCKS USE RIGHT LANE'. A scale bar at the bottom of the map shows distances from 18.75 to 20.05. Below the map is a 'Drawing Tools' panel with options for Select, Line, Ellipse, Rect, Path, Text, Delete, and Clear. The 'Line' tool is currently selected. The 'Fill' color is set to 93,17,168,0.3 and the 'Stroke' color is 17,50,168,1. The 'Stroke Width' is set to 2. Below the drawing tools is a 'Scale' panel for a specific road segment (Route 81) with a scale of 0.1, a 'From Measure' of 0, and a 'To Measure' of 26. The 'Guardrails' section shows a coverage of 25% with status indicators: 'POOR' (red), 'GO' (green), and 'GOOD' (green). The 'Surface Type' section shows 100% coverage with a status of '11 1 11'. The 'Special System' section shows 97% coverage with a status of '01'. A 'Rectangular Snip' tool is also visible in the bottom right corner.

Notify Tool

ROAD ANALYZER™

Route

Show

Export

Styling

Draw

More

Help

Check Guardrails

Notify

User Preferences

Application Configuration

Reports

Notification

Note:
A PDF will be generated based on your current view and a link to this PDF will be inserted into the body of your email.

From:

To:

Subject:

Comment:

Send Current View Only (displayed screen)

Cancel

Send

19.40 19.45 19.50 19.55 19.60 19.65 19.70 19.75

Guide: 19.41

« Back

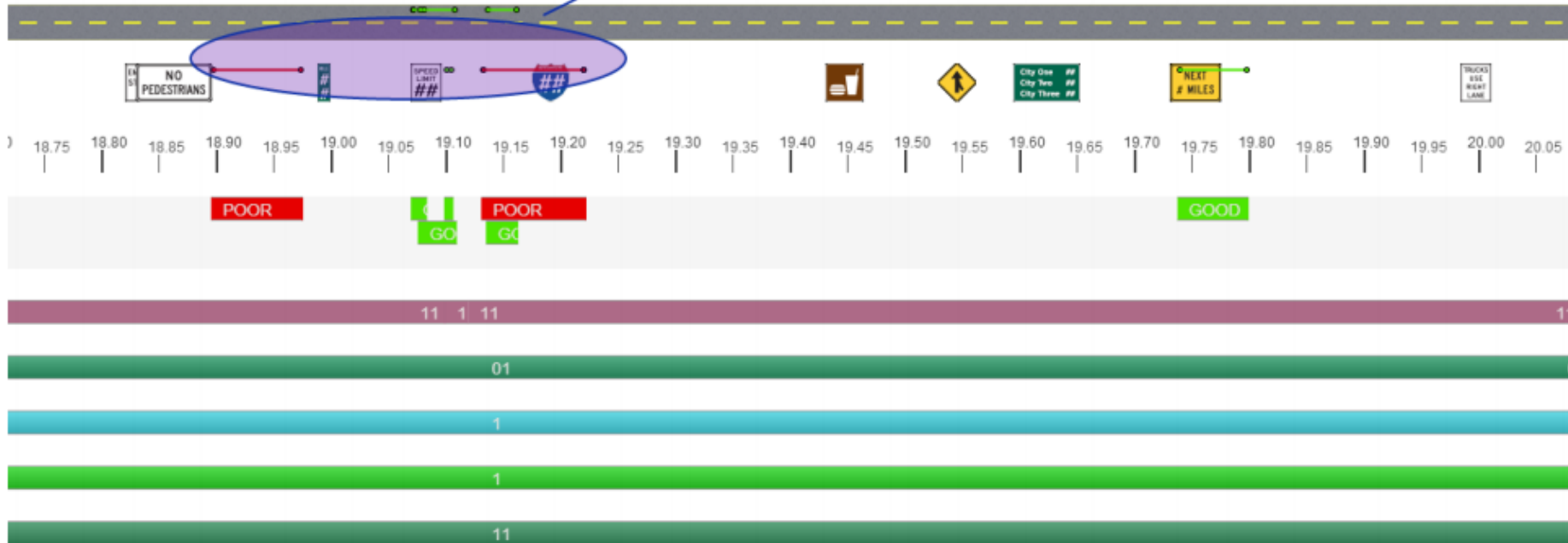
Next »

Resulting Notification



Route : 02100810000SB from MP 0 to MP 26

Check Guardrails



Export to PDF - Printing

ROAD ANALYZER™ Route Show Export Styling Draw Help User Name Password Sign in

View PDF Exports
Export Current Route to PDF

Print Options

Print Options

Page Size: 8.5" X 11" (Letter)

Color: Black/White

(1" = 0.1 miles) Scale: 0.1

Routes (1)

Route	Status	Template	Action
02100810000NB	Queued	Change	Cancel

Close when done

Close Print

TRUCKS USE RIGHT LANE

NO SPEED LIMIT PEDESTRIAN ##

SLOW VEHICLES MUST USE TURN-OUT AHEAD

KEEP OFF MEDIAN PEDESTRIAN

00 0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40

Scale: 0.1 From Measure: 0

INTERSTATE 81

Guardrails 39% Coverage view data | hide stick | hide overlaps GO

Legal Functional Class 100% Coverage view data | view stick 1

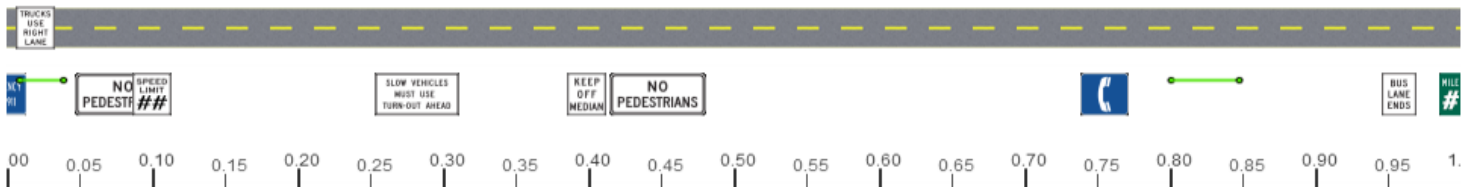
Speed Limits 100% Coverage view data | view stick 75

Surface Type 100% Coverage view data | view stick

PDF Output



Route : 02100810000NB from MP 0 to MP 26



Guardrails 39% Coverage

GO

GOOD

Legal Functional Class 100% Coverage

1

1

Speed Limits 100% Coverage

75

75

Surface Type 100% Coverage

11

11

Special System 100% Coverage

01

01

Federal Aid System 100% Coverage

1

1

Designated Truck Routes 100% Coverage

1

1

NHS Functional Class 100% Coverage

1

1



Questions?