



ROUTE PLANNER TRAINING GUIDE

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Version 3.0



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CHAPTER 1: INTRODUCTION

ABOUT ROUTE PLANNER

The Route Planner application gives authorized staff the ability to quickly determine the safest route for oversized and overweight (OS/OW) vehicles. Unfortunately, when it comes to carrying oversize and overweight loads, the shortest route is not always the safest. To ensure safe movement of oversize loads and overweight loads the Route Planner application evaluates the vehicle dimensions against the restrictions on the network. It is designed to generate a safe, efficient route for the vehicle while avoiding any roadway restrictions.

The Route Planner application offers a variety of intuitive options to define the route. The user can define the route's origin, destination, and intermediate stops using a combination of options such as map click, street address, intersects with, or coordinates. The user can also save commonly used routes and recall them to expedite the routing process.

THIS MANUAL...

This manual is intended to use as a training guide and a reference guide for the day-to-day operations of the Route Planner application. It is designed to help the user quickly learn about the application and its features, as well as share tips to help the user use Route Planner to its fullest potential.

This Guide will instruct how to do the following:

1. Login to Route Planner
2. Navigate Route Planner
3. Locate a Stop
4. Build a Simple Route (Origin and a Destination)
5. Build a Complex Route (Via Points)
6. Route an Oversize Vehicle
7. Route an Oversize/Overweight Vehicle
8. Manage Saved Routes
9. Print a Route

Upon completion of the training, personnel will be familiar with all the steps necessary to determine the safest route for a vehicle using the Route Planner application.

CHAPTER 2: LOGGING IN (STANDALONE MODE)

To Login to the Route Planner application in standalone mode:

1. Enter the Login ID in the username text box.
2. Enter the Password in the password text box.
3. Select the Login button.



Note: If the user has trouble logging in, contact the System Administrator.

Sign into your account

If the login information the user entered is valid, the system will display the home page for the Route Planner application.



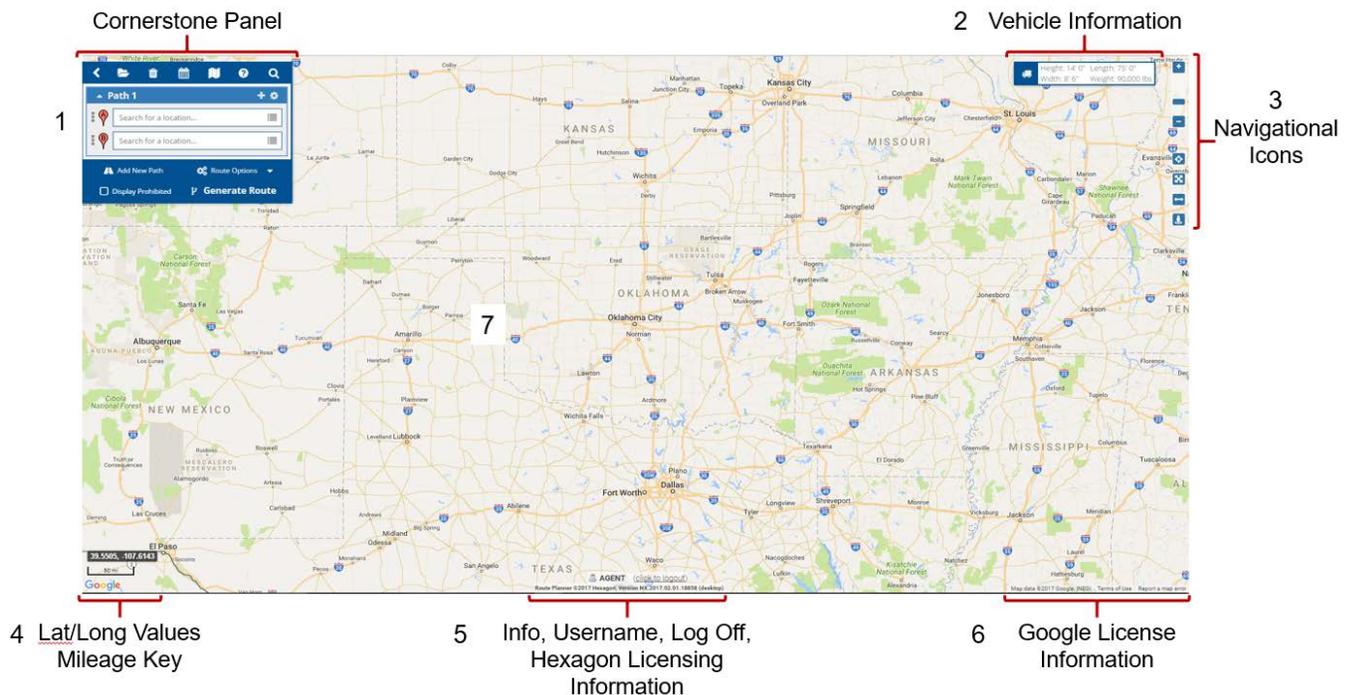
Note: If you are using Routing component as part of OkiePros, login into OkiePros and select any of the route options to transition to Route Planner application.

CHAPTER 3: ROUTE PLANNER NAVIGATION OVERVIEW

STAND ALONE MODE

The Stand Alone Mode for Route Planner application is divided into these sections:

1. Cornerstone—It is comprised of the Routing section and once the route is generated, driving directions are displayed.
2. Vehicle Information – The vehicle dimensions, configuration type, bridge posting, weight classification, number of axles, and other items pertaining to the OSOW vehicle defined in the permitting process.
3. Navigational Icons – Zoom functions, coordinate information, center map, measure, and street view.
4. Latitude and Longitude Coordinates and Mileage Scale – Lat/Long readings will change as the cursor moves around the map. Mileage Scale will change with the zoom function.
5. Username, Log Off, Hexagon Licensing Information
6. Licensing Information – Map Data, Terms of Use, and Report a Map Error (used for Google Maps).
7. Map of the State

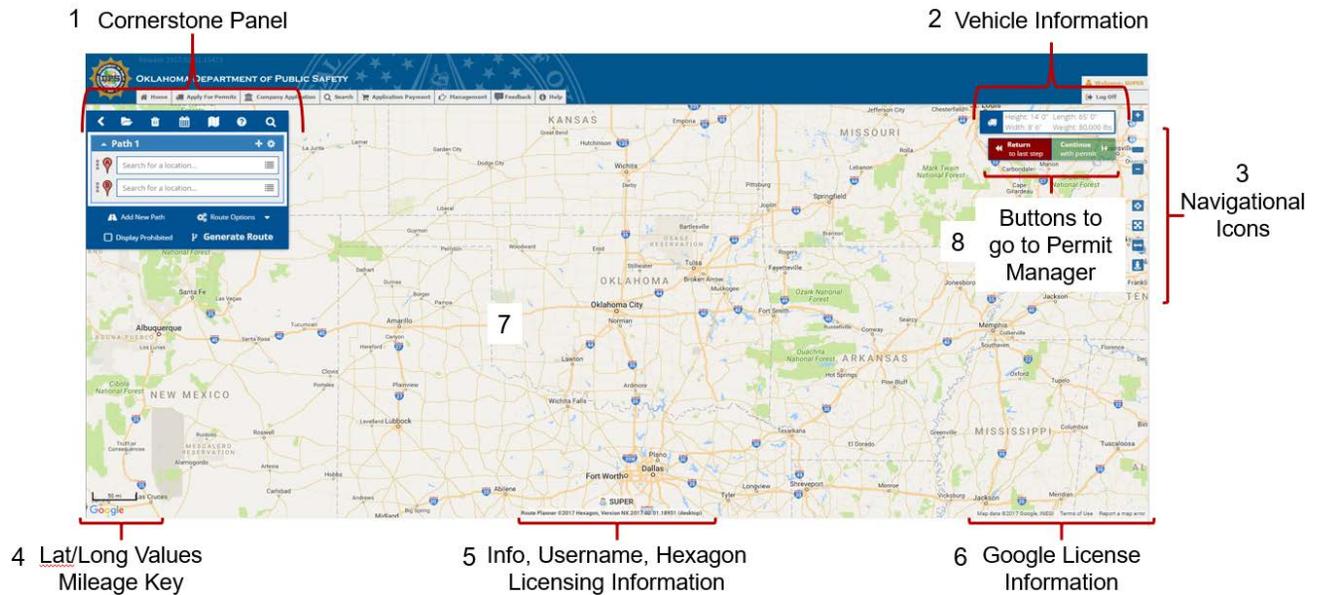


INTEGRATED MODE

The Integrated Mode for Route Planner application is divided into these sections:

1. Cornerstone—It is comprised of the Routing section and once the route is generated, driving directions are displayed.
2. Vehicle Information – The vehicle dimensions, configuration type, bridge posting, weight classification, number of axles, and other items pertaining to the OSOW vehicle defined in the permitting process.

3. Navigational Icons – Zoom functions, coordinate information, center map, measure, and street view.
4. Latitude and Longitude Coordinates and Mileage Scale – Lat/Long readings will change as the cursor moves around the map. Mileage Scale will change with the zoom function.
5. Username, Log Off, Hexagon Licensing Information
6. Licensing Information – Map Data, Terms of Use, and Report a Map Error (used for Google Maps).
7. Map of the State
8. Return or Continue to the Permit Manager



WHAT IS NEW?

The new Route Planner Application has a different routing panel with the features previously found on the ribbon bar. In the Route Planner (New) Application, the routing panel is smaller to allow more of the map to display. Since the Ribbon Bar has been removed in Route Planner (new) Application, most of the functions are available. The table below will highlight some of the changes, new features, and removed features.

Route Planner (New)	Route Planner

Route Planner (New)

Many of the features on the new Cornerstone Panel replaces the Ribbon Bar to give the user a more compact view of the map and features.

- A OK-51, STILLWATER, OK**
[36.115821,-97.151904]
- 0.0 ft
- ↑ Start on OK-51 (6th St, W 6th Ave) 11.4 mi
- ↶ (Ramp) 322.5 ft
- ↑ Take exit 174 0.2 mi
- ↑ Continue onto I-35 N 52.4 mi
- ↑ Continue onto I-44 E (OK-3 W, Will Rogers Expy N) 58.3 mi
- ↷ Turn RIGHT onto (Unknown road name) (Contact Local Municipalities) 35.5 ft
- ↶ Turn LEFT onto H. E. Bailey Tpke W (I-44 W) 88.9 mi
- ↶ Turn LEFT onto OK-34 (State Highway 34) 16.0 mi
- ↷ Make a U-TURN onto W Main St (Contact Local Municipalities) 503.1 ft
- ↷ Turn RIGHT onto Bryan St (Contact Local Municipalities) 0.2 mi
- B OK-6, ELDORADO, OK**
[34.482333,-99.628611]
- 0.0 ft

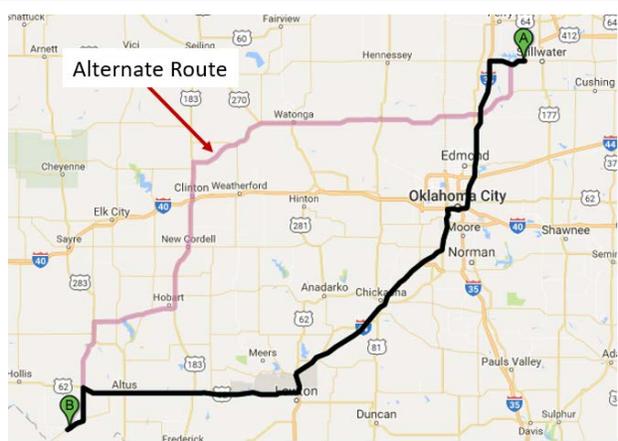
When the route is generated, the cornerstone panel turns into the driving directions.

Route Planner

- A OK-51, MULHALL, OK**
[36.115582, -97.281648]
- 1 Start on OK-51 (W 6th Ave, W Highway 51) 3.5 mi
- 2 Turn LEFT onto (Unknown road name) (Contact Local Municipalities) 66.8 ft
- 3 (Ramp) 0.3 mi
- 4 Continue onto I-35 N 52.4 mi
- 5 Continue onto I-44 E (OK-3 W, Will Rogers Expy N) 58.3 mi
- 6 Turn RIGHT onto (Unknown road name) (Contact Local Municipalities) 35.5 ft
- 7 Turn LEFT onto H. E. Bailey Tpke W (I-44 W) 88.9 mi
- 8 Turn LEFT onto OK-34 (State Highway 34) 8.8 mi
- B OK-34, ELDORADO, OK**
[34.542112, -99.561498]

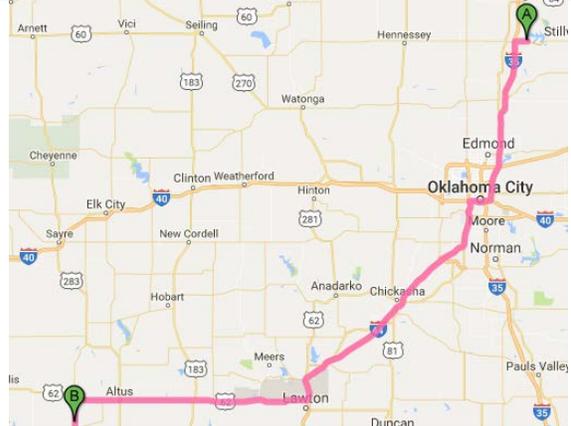
When the route is generated, the routing panel expands to provide driving directions.

Route Planner (New)

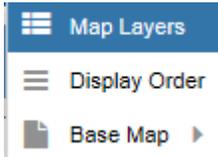


Alternate Route may be turned on or off for different roles in the System Manager.

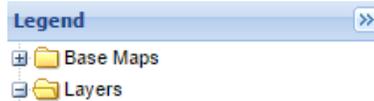
Route Planner



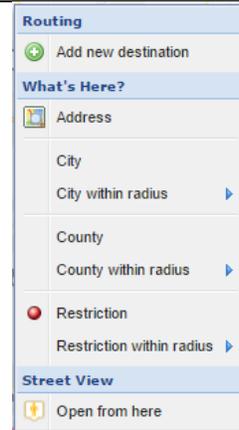
The application allowed the user to pick different impedance models but not show all of them on the route.

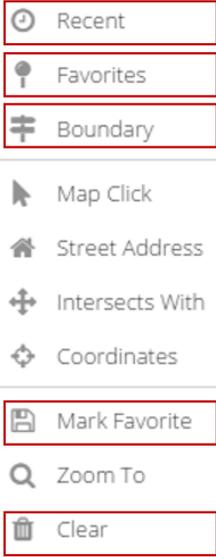
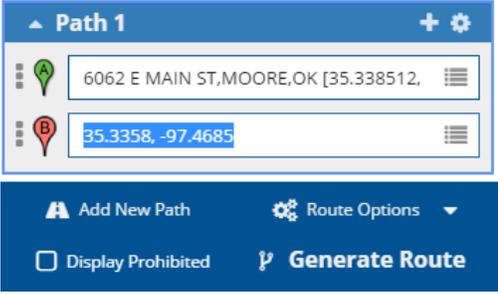
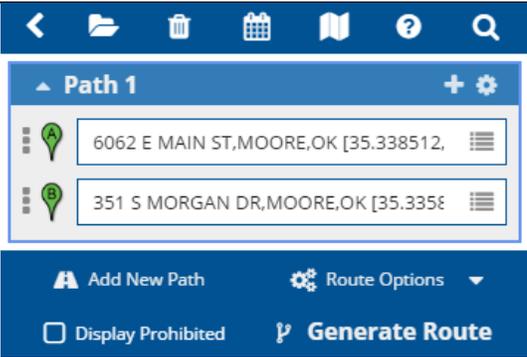


These legend is replaced by selecting the  on the upper toolbar of the Cornerstone Panel.



The right click options for the map in the new application:



New Feature or Improved Features	Information
	<p>Recent – Recent Stops defined a respective user.</p> <p>Favorites – ability for a user to use their favorite stops and with an optional unique name.</p> <p>Boundary – Predefined boundaries for states to help users pick boundaries for stops. Only management users have the ability to modify the list.</p> <p>Mark Favorite – ability for the user to define favorite stops.</p> <p>Clear – erases the stop information and it does not resize the map or clear out other stop inputs.</p>
	<p>In Stand Alone Mode the user may apply a specified route to a permit, if the user knows the permit number.</p>
	<p>The user may enter either a street address, point of interest, or coordinate information directly into the stop input bars. This allows the user to bypass the menu of options such as map click, street address, et al.</p>
	<p>Instead of right clicking in the older version of Route Planner, the user may select the street view from the navigational area in Route Planner (new).</p>
	<p>The location of the find toolbar has been collapsed by default into the Cornerstone Panel. The user will need to select the Find Icon, and then the find toolbar information will expand to display the information.</p>

New Feature or Improved Features	Information
	<p>The information button has been moved to the bottom center of the map. In the older application, the information icon was found on the routing panel.</p>
	<p>Select the Coordinates Icon on the Navigational Tool Bar.</p> <p>Once selected, the user can enter coordinates directly or they can use their current physical location (if the users have properly set their privacy settings).</p>
	<p>Guided Tours always the users to have tours to show different features and functions in the Route Planner (New). Including the cursor and messages are placed at the location of the feature described.</p>

New Feature or Improved Features	Information
	<p>The vehicle information is found on the top, right part of the map near the navigational tools. In the older application, the vehicle information was found in the ribbon bar. To access the vehicle information in detail, the user clicks on the truck icon  in the summary vehicle information. The detail panel of vehicle information works identically to the older Application.</p>

Changed/Deprecated Features	Information
<p style="text-align: center;">Ribbon Bar from the older Route Planner</p> 	<p>The ribbon bar is no longer a feature in Route Planner (New). The features are available but most are in the Cornerstone Panel or along the edges of the Map.</p> <p>Manage button is no longer relevant.</p> <p>The Load Icon  handles both saving and editing routes.</p>

CORNERSTONE PANEL

The Cornerstone Panel is comprised of: Upper Toolbar, Routing Section, and Routing Specifics. The Routing section is intended to support *building the route* and *generating the route*.

Once a successful map has been generated, the Driving Directions section will display. The Driving Directions panel is intended to display the driving directions, save/share/print route, and define alternate impedance route.

The screenshot shows the Cornerstone Panel interface. On the left, the 'Routing Section' contains two search boxes for locations A and B. Below it are buttons for 'Add New Path', 'Route Options', 'Display Prohibited', and 'Generate Route'. On the right, the 'Origin Directions Destination' section shows a 'New Route' with a travel estimate of 8.8 mi and a path of 4.2 mi. The route details include: 4210 N LEWIS AVE, TULSA, OK; Start on N Lewis Ave (N 24th East Ave); Turn RIGHT onto E Mohawk Blvd; Continue onto E Mohawk Blvd; Turn LEFT onto N Peoria Ave; Turn RIGHT onto E Apache St; Turn LEFT onto N Martin Luther King Jr Blvd; Continue onto N Martin Luther King Jr Blvd; Turn RIGHT onto E Tecumseh St; Continue onto W Tecumseh St; Turn LEFT onto N Cheyenne Ave; and 1809 N CHEYENNE AVE, TULSA, OK. A vertical red line on the right side of the screenshot indicates the 'Origin Directions Destination' section.

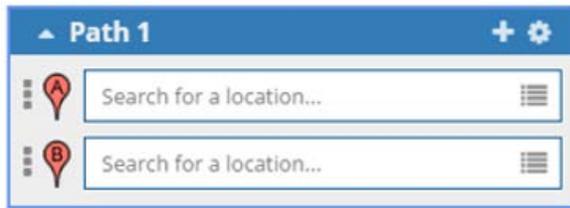
UPPER TOOL BAR

The Upper Toolbar includes functions for loading saved routes, deleting all inputs, selecting permit dates, map layers, help and search. If a successful route has been generated, there is an option to go back to the driving directions.

	Return to Driving Directions - Appears only when a successful route has generated. Allows the user to go back to the driving directions panel.
	Collapse Cornerstone Menu
	Load Route – gives the user the ability to load a previously saved route.
	Permit Dates – if permitted, allows the user to amend or add permit start and end dates.
	Map Displays <ul style="list-style-type: none"> Map Layers include OSOW Roads, Designated Truck Routes, and Stops.

	<ul style="list-style-type: none"> ■ Display Order provides the user with the Map Layer order. ■ Base Map Selection provides different map views for the user.
	<p>Gives the user multiple ways to seek help with the application:</p> <ul style="list-style-type: none"> ■ User's Guide ■ Guided Tour <ul style="list-style-type: none"> ■ Site Overview ■ Create a Route Help ■ Feedback – survey system to handle user's satisfaction with the application ■ Report Problem – gives the user a way to report problems to the system administrator. ■ About – License information and license agreements.
	<p>Find Toolbar</p> <ul style="list-style-type: none"> ■ County ■ City ■ District ■ Troop ■ Township ■ Roads (interstate, US Highway, and State Highways) <p> Note: to retract Find Toolbar, select again.</p>

ROUTING SECTION



Routing Section:

- Collapse Path Name
- Expand Path Name
- Add Via Point or a Special Instruction.
- Rename, Reset, and Optimize Route.
- Input Origin.
- Input Destination.
- Methods to enter stops.
 - Recent
 - Favorites
 - Boundary
 - Map Click
 - Street Address
 - Intersects with
 - Map Coordinates
 - Mark Favorite
 - Move To
 - Clear

Note: The clear function is different than delete. Only the data in the stop is erased.

Below are the functions available in the Routing section:

The Generate option is used to generate the route. To generate a route, the user need to enter at least two stops (an origin and a destination). The first stop is treated as the origin, and the last as the destination. Once the user has the stops defined, click the Generate to generate the route.

DIRECTLY ENTERING STOPS

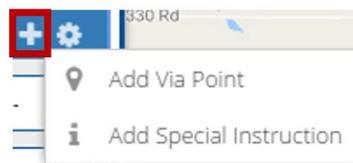
A more intuitive addition to the latest Route Planner application includes the ability to directly enter stops into the Routing inputs. For example, the user may enter an address or coordinate points directly into fields associated with each stop.

TO DETERMINE IF A STOP HAS BEEN LOCATED ON THE ROADWAY NETWORK...

If a stop has been located on the roadway network, it will appear with a located marker (📍) in the Routing section. Alternatively, if the stop has **not** yet been located on the roadway network, it will appear with an un-located marker (📍) in the Routing section. When the user select Generate, it will handle locating the route stops prior to calculating the route. If the system was able to locate each of the route stops, the mapped route and directions will be displayed on the screen.

TO ADD A VIA POINT...

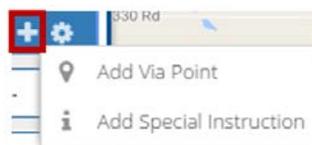
Select the  in the routing section.



Adding a Via Point between the Origin and Destination causes the route to follow the Via Points in the order that they are listed in the route. Via placement is the most common method of directing a route. The user can use as many Via Points as the user would like to direct the route to go this way and not that way.

ENTERING SPECIAL INSTRUCTIONS

Select the  in the routing section.



Adding a special instruction into the driving directions may help the carrier's driver with instructions specific to the route. The special instruction will have an  to indicate the instruction will be placed at the end of the driving directions.

Once the route has been successfully generated, the user may add special instructions along the driving route. Select a step in the driving directions and right click on the instruction. The 

will appear with *Add Special Instruction*. The instruction will be inserted directly under the step selected.

 **Note:** When locating a stop, if a single address is found, the system will automatically update the stop detailed in the Routing section to display the full street address and set the marker to a located marker (). If multiple addresses are found, the Locate Point dialog will be displayed listing the best possible matches. The Route Planner Application will use Hexagon Logo  or Google Logo  to identify which mapping application it used to generate the stop. To add the stop, select an entry from the list and the stop will be automatically updated to appear with a located marker () in the Routing section. Be sure to select the option going in the correct direction of traffic.

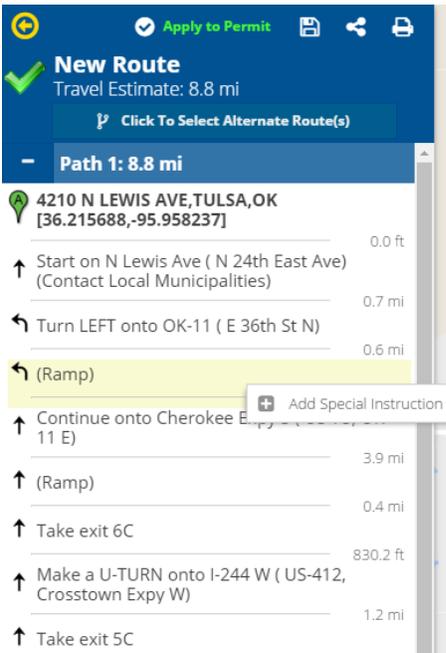
ROUTING SPECIFICS

Routing Specifics allow the user functions to make specifically defined routes.



- Add New Path – Allows the user to define additional paths to the route.
- Display Prohibited – Allows a route with restrictions to generate.
- Route Options
 - Avoid Turnpikes / Interstates
 - Test Restrictions
 - Add Alternate Routes – OSOW, OSOW Shortest, US Highways, State Highways, and Local Roads.
- Generate Route

DRIVING DIRECTIONS



The Driving Directions section provides a step-by-step breakdown of the driving directions. Included in the section is the Upper Panel, Mileage, and the Step-by-Step Driving Directions.

Upper Panel

- Return to Cornerstone Panel – takes the user back to the Cornerstone Panel.
- Apply to Permit – allows the user to apply to an existing permit if the Permit ID was known.
- Save Route – especially helpful if a carrier frequently uses the same route.
- Share Route – allows the user to share a route with other users.
- Print Route
- Alternate Routes – allows the user to pick between routes based upon different impedance route generation from OSOW, Local Roads, and State Highways.
- Travel Estimate - Estimated mileage for OSOW Impedance Model

Mileage

- Estimated mileage for the alternate route picked.

Step-By-Step Driving Directions

- Origin and Destinations bookend the step-by step directions
- Step-by-Step Directions include the mileage on each road and the directional arrows for the turns.
- The user can click on any individual driving instruction to zoom in and highlight the roadway on the map.
- The user can hover the mouse over any individual driving instruction to display a tooltip detailing the roadway name and total distance.
- The user can right click on a driving instruction to insert any special instructions that the user would like to communicate to the driver.

VEHICLE INFORMATION

The Vehicle Information is the information passed from Permit Manager to Route Planner. The information is used to safely route a specified vehicle through the state. If the user is in the Route Planner Stand-alone mode, the user may make edits to the Vehicle Information.

Vehicle Information

Height: 14' 0" Length: 75' 0"
Width: 8' 6" Weight: 90,000 lbs

Vehicle Details

Vehicle Information includes the cursory information on the vehicle: Height, Length, Width, and Weight.

Select the Truck Icon to view the Vehicle Details

General

- Configuration Type
- Bridge Posting
- Weight Classification
- Moment and Shear Analysis

Overweight

- Gross Weight
- Number of Axles

Oversize

- Height
- Width
- Trailer and Load Length
- Total Length
- Rear Overhang
- Forward Overhang
- Pike Pass Number
- Moment and Shear Analysis

Trailer/Load

- Lowboy-style Trailer

Attestation

- Maintain Turnpike Speed
- Maintain Interstate Speed

Number of Axles

- Select the gear icon next to the Number of Axles
 - The axle weights, spacing, and trunnion check boxes display
 - Select Generate New Vehicle Image
 - Vehicle image will appear based upon the vehicle dimensions.

NAVIGATION TOOLBAR

In the table below, we will examine what each of the commands on the Ribbon Toolbar do.

	<ul style="list-style-type: none"> ■ Zoom In – Allows the user to view more details on the Map ■ Zoom Scale – Allows the user to slide the zoom from close to far. ■ Zoom Out – Allows the user to see less details on the Map. ■ Enter Coordinates – Allows the user to directly enter coordinates ■ Center Map – Allows the user resize the map and center it. ■ Measure Tool – Allows the user to make estimates about the mileage of a particular road, roads, or area. ■ Street View – Allows the user to use Google's street view of the area selected.
---	--

MAP SCALE AND MAP COORDINATES

The Map Scale and Map Coordinates are available to the user. They are found on the bottom left corner of the screen.

	<ul style="list-style-type: none"> ■ Coordinates will display the respective longitude and latitude values as the cursor moves around the map. ■ Map Scale – Provides the user a frame of reference for the distance relationship on the map. As the user zooms in and out of the map, the units and values will change accordingly from 50 feet to 1000 miles.
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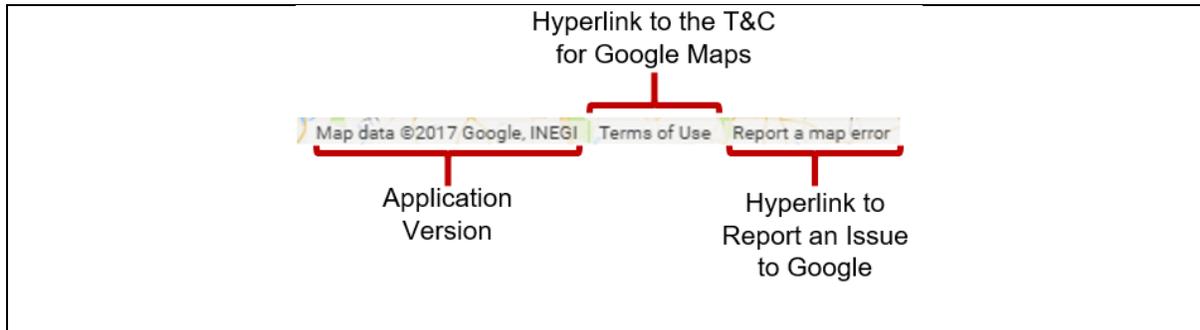
USER NAME | LOG OFF | ROUTE PLANNER VERSION

The Map Scale and Map Coordinates are available to the user. They are found on the bottom left corner of the screen.

	<ul style="list-style-type: none"> ■ Username – Specifically important for internal users to identify the username and appropriate role. Functionalities may be slightly different for each user's role. ■ Log Off ■ Application Version – useful when logging JIRA items to help HxGN identify the correct version of the application.
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GOOGLE INFORMATION | TERMS | REPORT A GOOGLE PROBLEM

The map used is based upon a Google Map which is layered with the Hexagon's Routing data and TomTom Data. Google information, Terms and Conditions, and Report a Map Error are available.



MAP

The Map panel graphically displays the route path and other geographic information to ensure the carrier fully understands the route path. Standard map navigation functions include zoom in, zoom out, pan, and zoom to area.

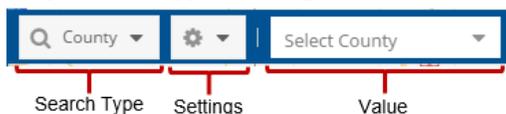
CHAPTER 4: MAP NAVIGATION OVERVIEW

When the user start Route Planner, the state of Oklahoma appears in the main map area. There are several ways that the user can navigate the Route Planner map to get the view that the user need. The user can use the mouse and several navigation tools to change the map viewing area as well as the zoom level at which the map is displayed.

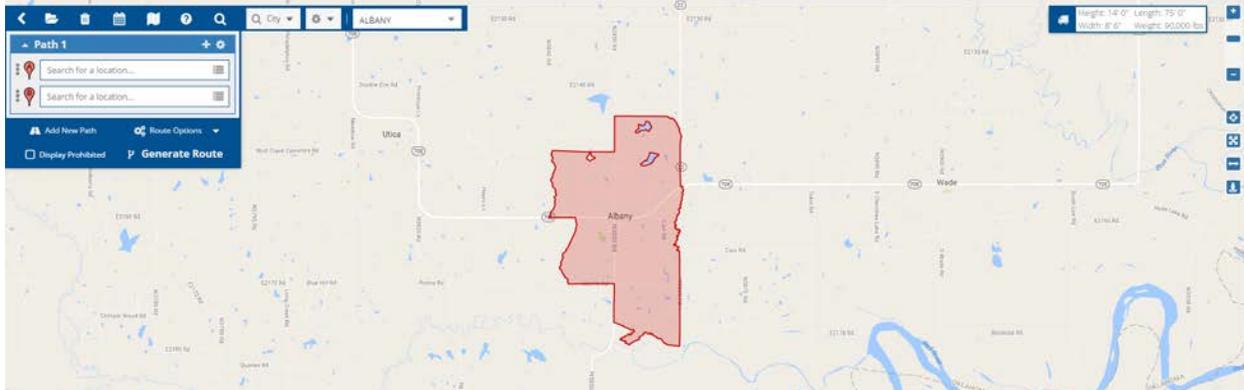
FIND TOOLBAR

The Find Toolbar allows the user to zoom to and/or highlight a City, County, Division, Troop, Turnpike, Interstate, US Highway, State Highway, or Section Township Range. The Find Toolbar by default is not expanded on the Upper Panel of the Cornerstone Panel. To expand the Find Toolbar, select the Search Icon  and conversely to collapse the Find Toolbar, reselect the Search Icon .

- Select the Search Icon .
- Verify Search Type, Settings, and Values display



- Search Type includes: City, County, Division, Troop, Turnpike, Interstate, US Highway, State Highway, or Section Township Range.
- Settings includes: Zoom To, Show on Map, and Locatable
- Value includes drop down lists for each specified Search Type such as pull down menus with county names, city names, road names, etc.



ZOOMING IN AND OUT

There are a number of ways that the user can zoom in and out on the map:

1. Zoom in and out using the mouse
2. Zoom in and out using the navigation controls
3. Zoom by Rectangle

ZOOM IN AND OUT USING THE MOUSE

To use the mouse to zoom in, scroll the mouse wheel up (away from the user) a number of times. Alternatively, to zoom out, scroll the mouse wheel down (toward the user) a number of times.

ZOOM IN AND OUT USING NAVIGATIONAL CONTROLS

The navigation control appears in the top left corner of the map. To use the navigation control, move the cursor over the top of the navigation control.



1. Zoom in by clicking the zoom in button . The user can also use the zoom scale  to zoom in by selecting the scale and sliding the control upward.
2. Zoom out by clicking the zoom out button . The user can also use the zoom scale  to zoom out by pressing the left mouse button and sliding the control downward.

ZOOM BY RECTANGLE

The Zoom by Rectangle feature allows the user to select a specific area of the map window. Users can zoom in on a rectangular area by holding the Ctrl-key and dragging a box. The Zoom by Rectangle feature is particularly useful to zoom into an area on the map quickly.

To Zoom by Rectangle, position the cursor in the approximate area the user wish to zoom in on, press both the <Ctrl> key and the left mouse button at the same time and drag the mouse in the desired direction. A rectangle with a blue edge will be displayed on the map.

PANNING THE MAP

Panning the map can be accomplished by clicking and holding the left mouse button down and drag the map to pan in the direction of the user's choice.

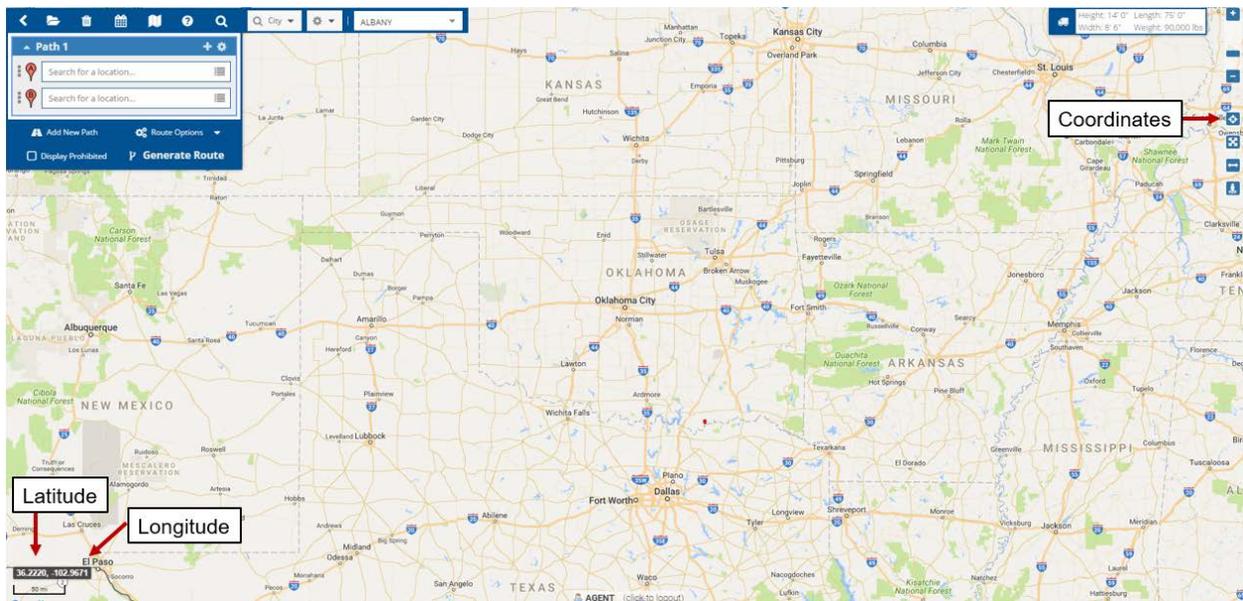
CENTERING THE MAP

Select the Center Map Icon  in the Navigational Toolbar. The map will automatically resize and center.

DISPLAYING COORDINATES

As the user move the cursor across the map, the latitude and longitude coordinates change. Hover over any area of the map to view the latitude and longitude. The coordinates are displayed in the lower right corner of the map. Defining an origin or a destination can also be accomplished by entering in the coordinates of a point.

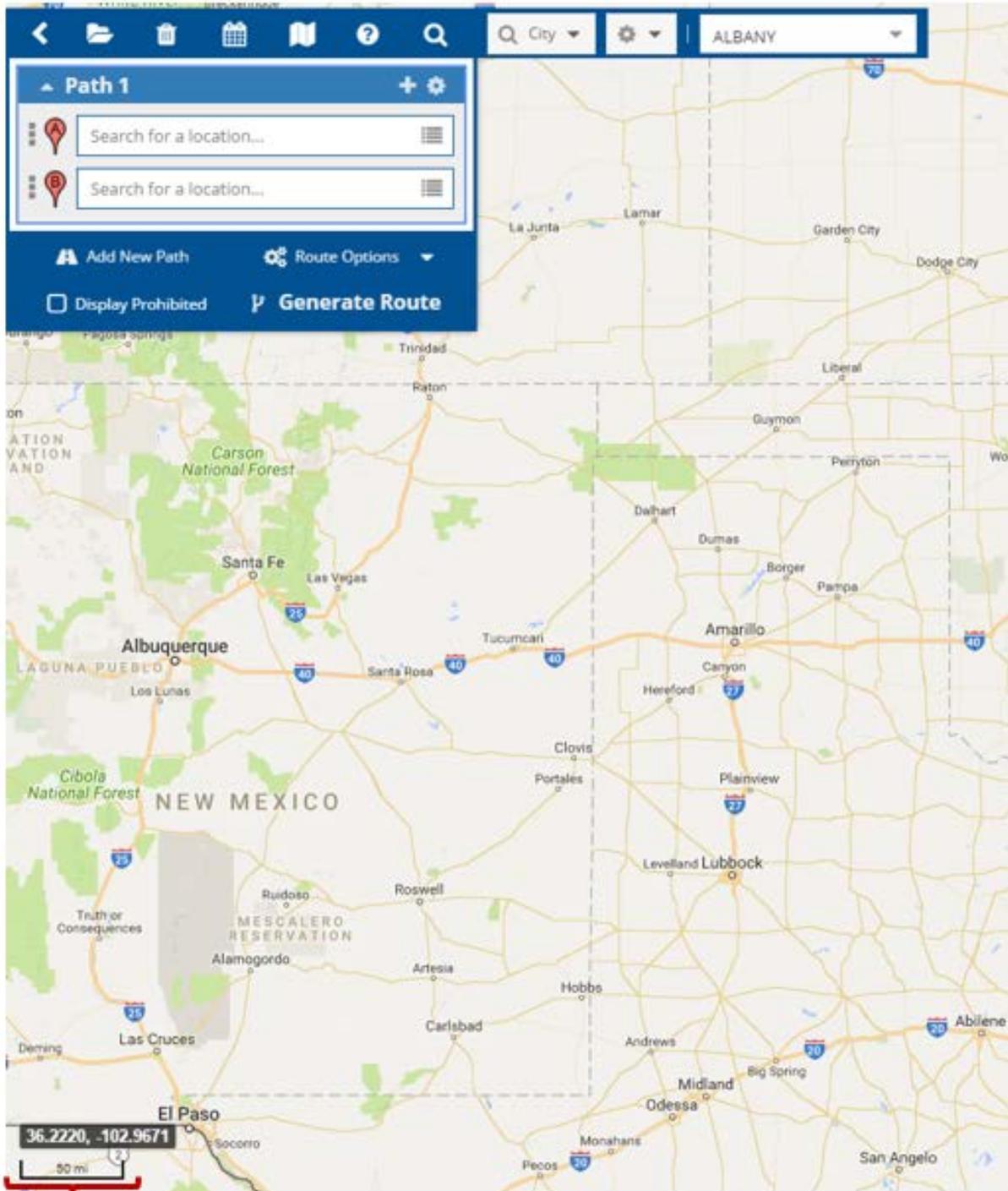
Also if a user wants to go to specified coordinates such as their current location, the user can go to the coordinates' icon on the Navigation Toolbar, and select Use Current Location. The map will automatically go to the location of the user. The Coordinates tool does not allow stop placement directly from the function but it does give the user a reference point.



DISTANCE MAP SCALE LEVEL

The scale of the map aids the user in determining the zoom level of the map. The scale can range from 50 feet out to 5,000 miles. The change in scale is directly related to the zoom scale. The closer the zoom

the less distance; and conversely, the more the zoom the further the distance.



Map Scale

MAP DISPLAYS

The Map Displays  is located on the Cornerstone Panel, the user will find a way to change the way the map's appearance displays.

MAP LAYERS

Each map layer represents a particular theme or feature. The features have the ability to toggle on or off. One layer could be made up of all the OSOW Roads, Designated Truck Routes, and Stops. The layers can be layered on top of one another, creating a stack of information. Each layer can be turned off and on, as if the user were peeling a layer off the stack or placing it back on.



Note: The stops will only display if stops are defined on the routing section.

OSOW ROADS

See below for an example of the Google Streets base map without any overlay layers displayed and the same map with the OSOW Roads layer displayed on top of the existing Google Streets base map.

Google Streets Base Map
(With no layers applied)



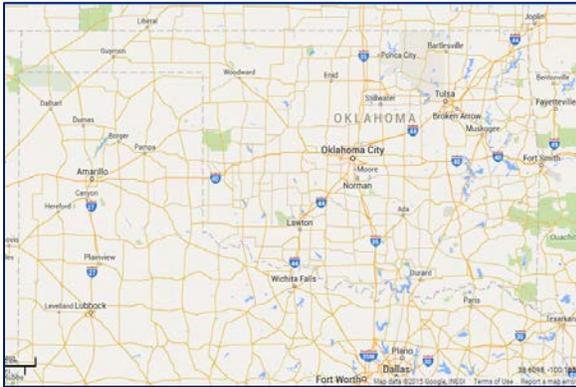
Google Street Base Map
(With the OSOW Roads layer applied)



DESIGNATED TRUCK ROUTES

The Designated Truck Route layer shows interstates as well as State and U.S. Highways.

**Google Streets Base Map
(With no layers applied)**



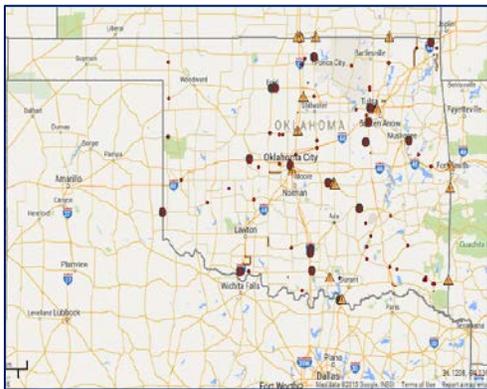
**Google Street Base Map
(With the Designated Truck Route layer applied)**



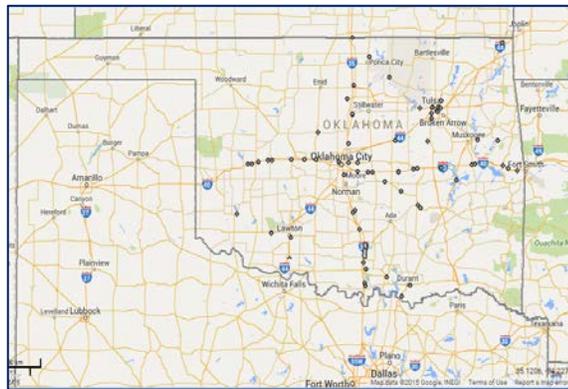
PERMANENT RESTRICTIONS / TEMPORARY RESTRICTIONS

The Temporary Restrictions layer shows where there are temporary restrictions.
The Permanent Restrictions layer shows where there are permanent restrictions.

**Google Streets Base Map
(With the Temporary Restriction layers applied)**



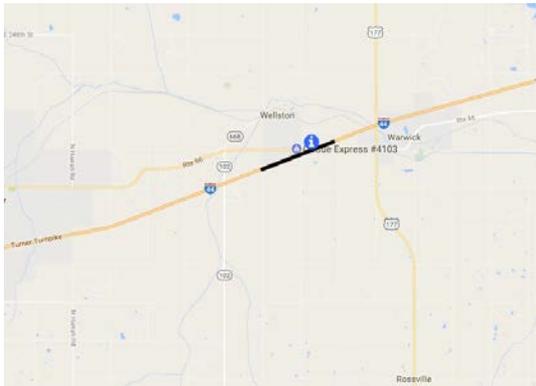
**Google Street Base Map
(With the Permanent Restriction layer applied)**



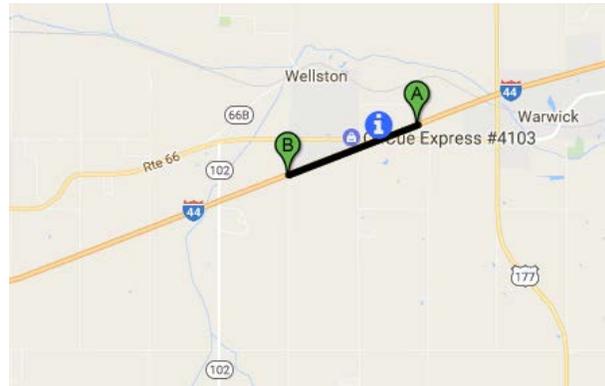
STOPS

The Stops will display if a defined route is generated.

**Google Streets Base Map
(With no layers applied)**



**Google Street Base Map
(With the Stops layer applied)**



DISPLAY ORDER

Each of the Map Layers overlay on top of each other. To better define the map for the user's best needs, the display order may be rearranged.

BASE MAPS

The Restriction Manager can be used with one of several types of base maps:

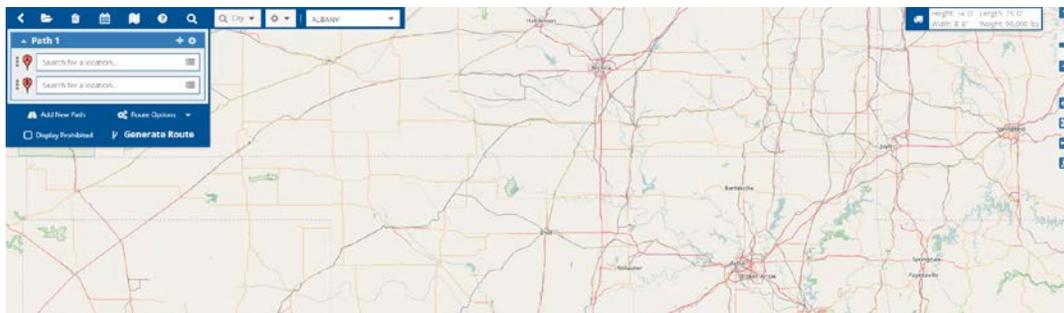
- Google Street
- Open Street Map
- Google Imagery
- Google Physical
- Google Hybrid
- Google Satellite
- OSOW Map

GOOGLE STREET

The Google Streets base map is the default map for the Route Planner. Most geographical features are displayed such as roads; streets; hundred block numbers; expressways; state highways; US highways; interstates; turnpikes; on and off ramps; state boundaries; bodies of water; rivers; town and city names; major airports; railroad lines; major cemeteries; universities; hospitals; and national parks.

OPEN STREET MAP

The Open Street Map is a base map provided by the Open Street Map project. Cities and large towns are labeled on the map, as are road names and points of interest when the user is zoomed in enough.



GOOGLE TERRAIN

The Google Terrain provides the user with a labeled road network with terrain attributes including rivers, lakes, elevation, cities, and large towns.



GOOGLE HYBRID

The Google Hybrid base map is an alternate map that can be used for the Route Planner and is a combination of a satellite view and Google Streets base map. The two highest zoom levels are not available for the Google Hybrid base map. Most geographical features are displayed such as roads; streets; hundred block numbers; expressways; state highways; US highways; interstates; turnpikes; on and off ramps; state boundaries; bodies of water; rivers; town and city names; suburbs; major airports; railroad lines; Air Force bases; major cemeteries; buildings; structures; universities and educational facilities; hospitals; and national parks.



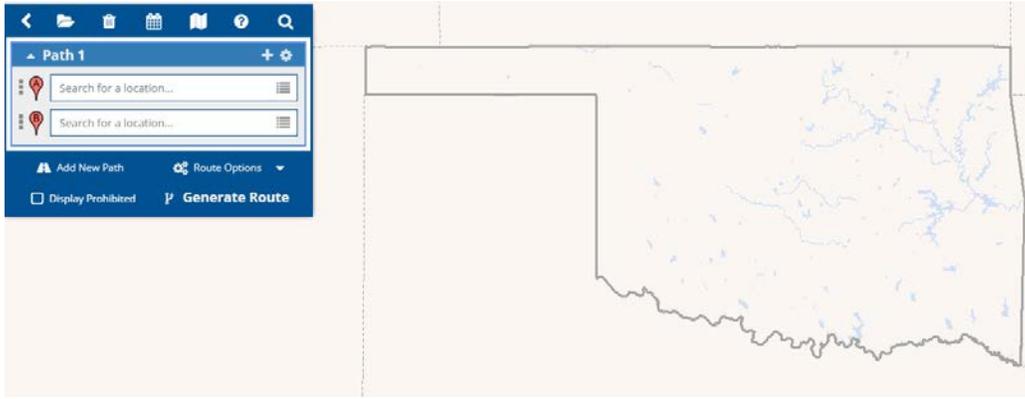
GOOGLE SATELLITE

The Google Satellite base map is an alternate map that can be used for the Route Planner and is a satellite view without the Google Streets base map. The two highest zoom levels are not available for the Google Hybrid base map. Most geographical features are displayed such as roads; streets; hundred block numbers; expressways; state highways; US highways; interstates; turnpikes; on and off ramps; state boundaries; bodies of water; rivers; town and city names; suburbs; major airports; railroad lines; Air Force bases; major cemeteries; buildings; structures; universities and educational facilities; hospitals; and national parks.



OSOW IMAGERY

The OSOW Imagery



OSOW MAP

The OSOW Map is an alternate state map that can be used and is supplied by the state. Most geographical features are displayed such as roads; streets; expressways; state highways; US highways; interstates; turnpikes; on and off ramps; county names and boundaries; county boundaries; state boundaries; bodies of water; rivers; troop boundaries; and city names.



CHAPTER 5: ROUTING OVERVIEW

The routing engine uses the information the user provides to calculate a safe route. After the user define the vehicle dimensions and build the route the user can view the detailed route map complete with driving directions.

ROUTING OVERVIEW

The basic steps for building a route are:

1. Set the vehicle dimensions
2. Set the route start (Origin)
3. Set the route end (Destination)
4. Add Via Point(s) (optional)
5. Generate the route
6. Review the route details and driving directions
7. Save the route (optional)

ROUTE EVALUATION

The basic components required for automated restrictive routing include:

1. A highway network that accurately represents the on-routes for the State
2. A bridge network that accurately accounts for all the bridges within the State
Accurate bridge locations and properties are essential

The routing engine will analyze all bridges along the route for weight (if required) and size (horizontal and vertical clearances). The routing engine will also check for any temporary restrictions along the route. Temporary restrictions can consist of numerous conditions that may be encountered along a route. Some examples are road closures due to construction, weather events, roadway width, length, or height restrictions.

When calculating the route, the Routing Engine will offer the safest/shortest route for an OS/OW vehicle that takes into account bridge height and clearances, load limits, one way road designations and allowances, construction zones and weather events. An impedance model has been defined that ensures the route returned is the least-costly path. By default, the route returned will favor major highways in the order of Interstate, US highways, State routes, and local roads.

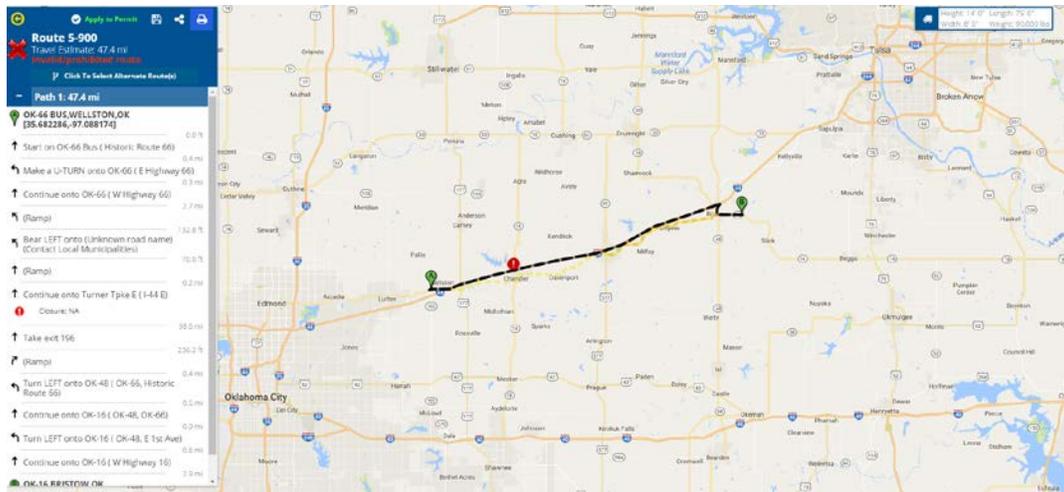
The routing engine will avoid bridges the vehicle is not permitted to travel on.

In order to perform a route analysis, a vehicle must be defined and a valid route must be defined. When running in integrated mode, the vehicle is automatically known from the permit application. This leaves only the route definition that is required.

PROHIBITED ROUTE

If a safe route for the vehicle is not possible, the system will prompt the user to generate and display the *Prohibited Route*. A prohibited route is not considered safe and must be manually reviewed by an appropriate agent or engineer before it can be approved and assigned to a permit.

If the user prefers, the user can select the Display Prohibited route option to view the hazards associated with the route. This may help the user better understand why the user cannot get the route returned that the user route preferred. An example of an invalid route is detailed below:



RESTRICTIONS

The user can view the restrictions reported along the route by selecting the Restrictions option in the View region on the Ribbon Toolbar.



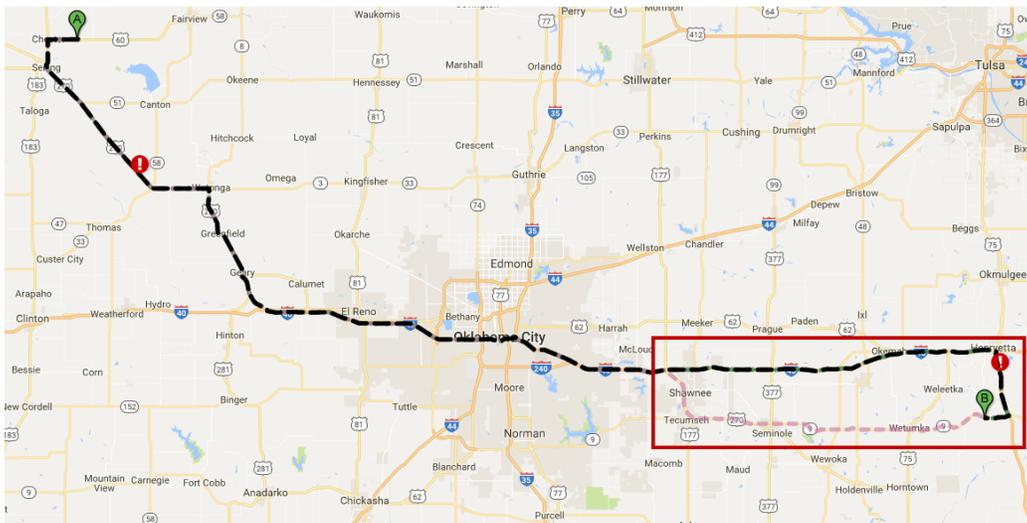
Tips:

1. If restrictions are reported along the route, the route will be identified as Invalid.
2. If no route could be generated, zoom into the route stops to verify that the stops are oriented to the correct side of a divided highway.
3. If an invalid route is returned and there are no restrictions displayed along the route, report this to the System Administrator.
4. When the user clicks on a restriction displayed in the Driving Directions panel, the restriction is highlighted in green on the map and the restriction details are displayed in a call-out dialog that can be closed by selecting the close option (x).

Severity:	Restriction
Asset Id:	4831
Description:	On I-20
County:	KERSHAW
Road Name:	I-20
Routable Value:	75600
Type:	Weight
Id:	163563977

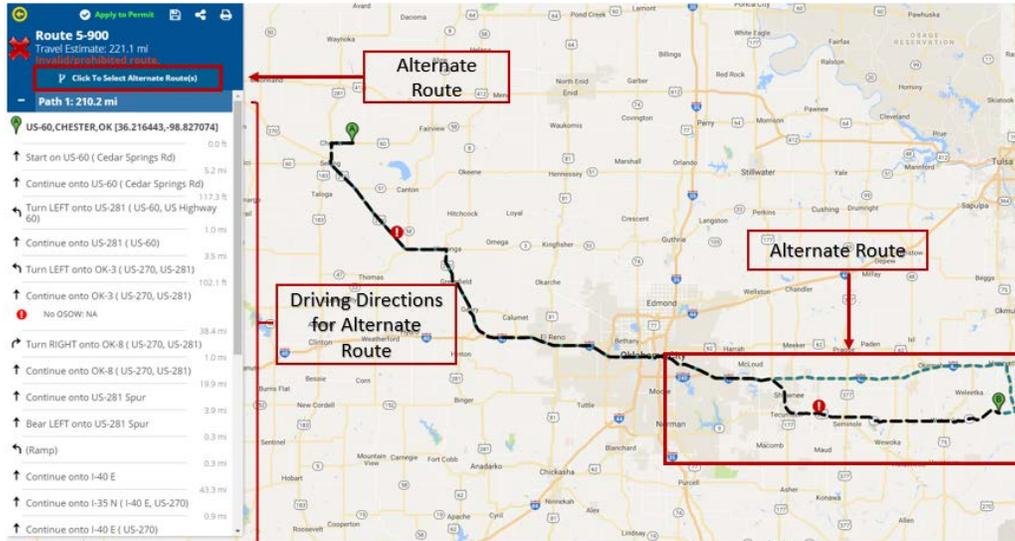
ALTERNATE ROUTES

Alternate Routes, is a privilege added by a System Administrator for different user groups, which allows multiple routes to be defined based upon different impedance models: OSOW, OSOW Shortest, US Highways, Interstates, State Highways, and Local Roads. The impedance models may be toggled on and off to route the vehicle based upon one to six different options. When the route is generated the user will see a message describing the different route number being generated.



If an alternate route generates, the route will appear as a dashed line and different colors depending upon the number of routes returned. **Note:** Even if the user checks all six of the alternate routes, the alternate routes may not all return with six different routes.

The user may select the Click to Select Alternate Route(s)  so the driving directions will represent the alternate route.



Note: Not all routes will display because the stops defined may only have a specified route where, for example, local roads or state highways are not along the route.

The user can use the following actions to request a different route:

1. Use the **Avoid Interstates** option in the Ribbon Toolbar to request a route that keeps the vehicle off the interstates.
2. Use **Via Points** to route through a particular place or along a particular or breadcrumb routes by selecting the  on the routing section in the Path area.
3. Use the **Display Prohibited** route option in the Route region on the Ribbon Toolbar to retrieve a restricted route to see why the vehicle was not allowed to travel along a roadway.

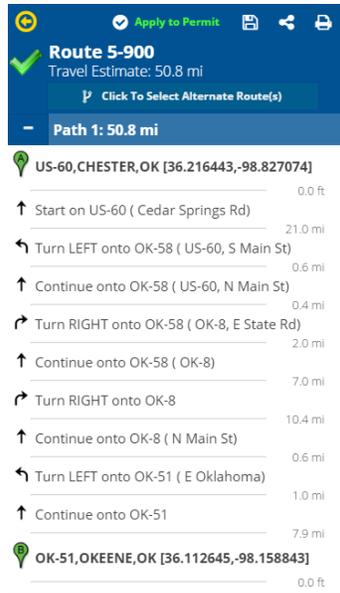
IMPEDANCE MODELS

The Routing Service finds the best route by computing the quickest or shortest route on the network. The alternate routes also work together with the impedance models.

DIRECTIONS PANEL

The Directions Panel displays the turn-by-turn directions and summary information about, the calculated route, with average mileage. The user can show or hide the Directions Panel.

The Directions Panel provides specific directions for safely completing the route.



Tips:

1. The route traverses *Stops* (origin, optional via points, and destination) in the order the user defined.
2. When the user clicks on the route, the route will be highlighted with a label indicating the route type.
3. When the user clicks on a restriction in the Driving Directions panel, the restriction for the segment of the route is highlighted in green on the map and the restriction details are displayed in a call-out dialog that can be dismissed.
4. If the user hovers the mouse over a driving direction the roadway and total mileage will be displayed as a tooltip style message.
5. If the route returned contains one or more restrictions the route will be classified as Invalid.
6. A trip cannot begin and end in the same location.

MAPPED ROUTE

The Route Planner uses different line symbology to distinguish between a Safe Route and an Invalid Route. An Invalid Route will always be displayed using dashed lines, whereas a Safe Route will always be displayed using a solid line.

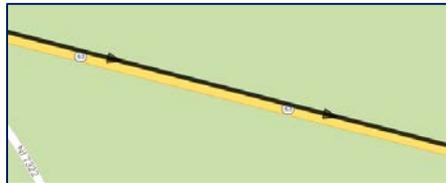


Tips:

1. The user may have to zoom in closer, to see that a broken line is being used to display the INVALID Route. (Especially, if the route crosses the entire state.)

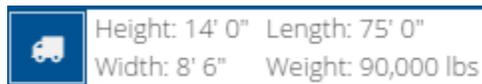


2. If the user zoom in closer, the line symbology used to display the route will include a directional arrow that indicates the direction the vehicle is traveling.



VEHICLE INFORMATION

The user can view/set the vehicle dimensions by selecting the Vehicle option in the View region on the Ribbon Toolbar.



Tips:

1. When running in integrated mode the vehicle dimensions that were entered on the permit will be displayed as read-only. The Routing engine will use this vehicle data to calculate a safe route.
2. When running in standalone mode, the user can configure the vehicle dimensions in the Route Planner application. The Routing engine will use this vehicle data to calculate a safe route.
3. To view the vehicle's axle configuration used for bridge analysis, select the Truck  icon. A vehicle will be classified as valid or invalid depending on the axle weight and spacing configuration. If the vehicle is classified as Invalid, the routing engine will calculate a route that avoids Bridge Formula restrictions.
4. Changes made in the Vehicle Information dialog take effect immediately. The Routing engine will **always** consider the *active* vehicle settings.
5. The Load, Save Manage, and Share commands located in the Cornerstone Panel and Driving Directions apply specifically to the route, not the vehicle.

BRIDGING

The OKDOT Bridge Engineering group has assigned a vehicle classification to each bridge that reside on the Oklahoma state roadway network. The vehicle classification is used to regulate the vehicle that can be put on an individual bridge. The vehicle classification is necessary to prevent heavy vehicles from damaging roads and bridges.

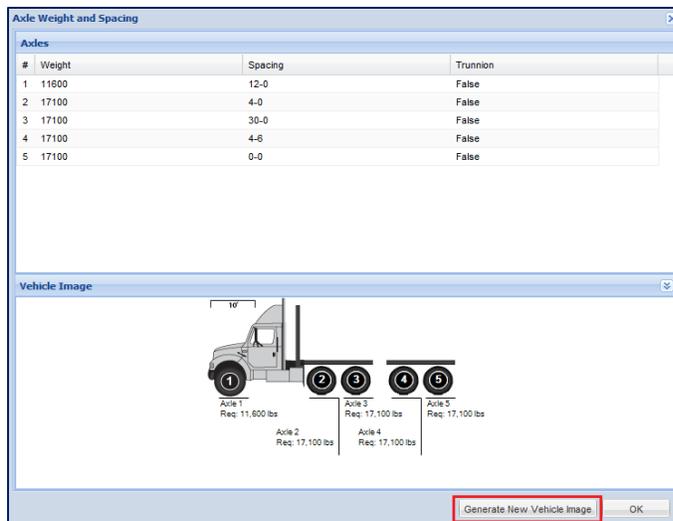
A *Divisible Load* is a load that can reasonably be dismantled or disassembled and does not meet the definition of non-divisible.

A *Non-Divisible Load* is any load or vehicle exceeding applicable length, width, height, or weight limits which cannot be separated into smaller loads or vehicles without compromising the intent of the load or vehicle.

All legal loads will consider the bridge posted weight limits to ensure that appropriate routes are used. The legal load will not be routed over a load restricted bridge when exceeding the posted capacity of the bridge, unless a special exception is granted by OKDOT.

All Non-OL1 vehicles will consider the OL1 bridge restrictions to ensure that appropriate routes are used. Non-OL1 loads will not be routed over a restricted bridge, unless a special exception is granted by OKDOT.

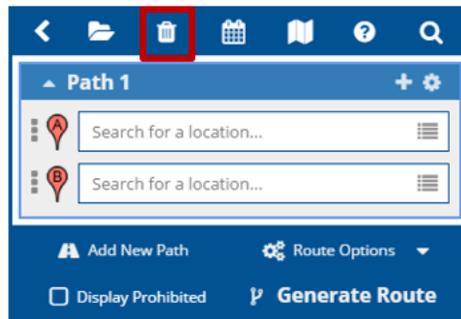
To generate a new vehicle image, select *Generate New Vehicle Image*. When selected, the new vehicle image will be displayed.



Tips: The Axle Weight and Spacing dialog is displayed when the user select the gear icon located on the Vehicle Information dialog.



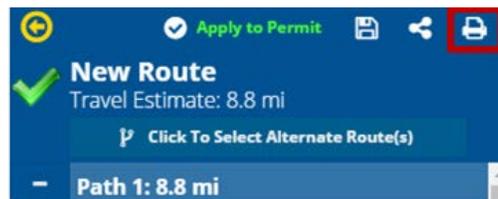
CLEAR ROUTE



To clear the route and start / end location markers, click Reset All located in the View region on the Ribbon Toolbar. When selected, the Routing panel and the map will be returned to the default settings. The route will be cleared from the map and the routing panel. The map will be returned to the state view. The vehicle dimensions will not reset when the user select Reset All.

To clear one stop select the hamburger or context menu  beside the stop the user wants to clear. Select Clear in the drop-down menu.

PRINT ROUTE



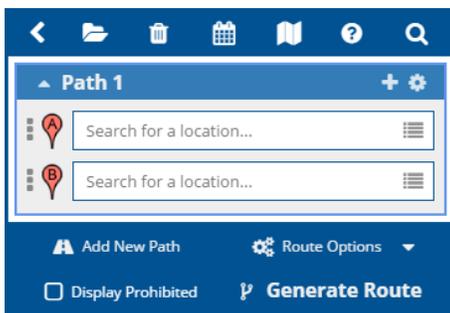
To print the route map and directions, click Print located in the Driving Directions once the route is generated from the Cornerstone Panel. If the user want to include the map in the printout check the Show Map option.

CHAPTER 6: BUILDING A ROUTE

Before the user can generate a route, the user must build the route. Building a route consists of defining the route stops. A minimum of two stops (Origin/Destination) is necessary to create a route. Optionally, the user can define the route to include Via Points. Via Points allow the user to lay a virtual 'breadcrumb trail' to define the roadways that the user would like the vehicle to travel along.

BUILD THE ROUTE

The first step in building a route is to establish precisely where the route will begin and where the route will end.



Define the Route Origin

To define the Origin, click on the *<Enter Origin>* prompt in the Routing panel. Select the desired locate option from the drop down menu.

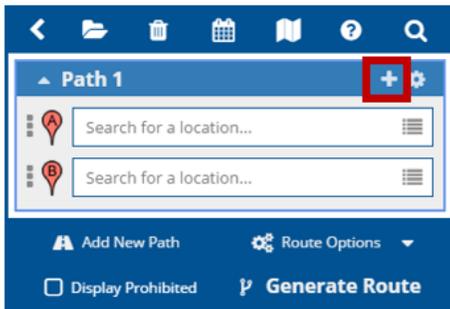
To define the Origin, click on the *<Enter Origin>* prompt in the Routing panel. Select the desired locate option from the drop down menu or directly enter the address | coordinates | or point of interest.

Define the Route Destination

To define the Destination, click on the *<Enter Destination>* prompt in the Routing panel. Select the desired locate option from the drop-down menu or directly enter the address | coordinates | or point of interest.

Optionally, Define a Via Point

To add a Via Point, select the + Icon and Select Add Via Point. The Routing panel will be updated to display the newly added via point. More than one Via Point may be added to make a virtual breadcrumb route.



GENERATE THE ROUTE

As soon as the user has defined at least two stops, the user can select Generate Route to calculate an accurate and safe travel route. The routing service is designed to automatically route the vehicle around active roadway restrictions ranging from construction projects, bridge weight restrictions, bridge width/height restrictions, weather events, and more.

LOCATE OPTIONS AVAILABLE IN THE ROUTING PANEL

When building a route, the following locate options are available in the routing panel to define the route stops: Map Click, Street Address, Intersects With, Coordinates, and Point of Interest (Free Form Entry).

MAP CLICK

When the user does not have an address, street intersection, point of interest, or coordinates, the map click option is a nice feature that allows the user to easily define the stop by clicking on the map.

1. When placing a stop on a divided highway, zoom in close so that the user can clearly see the divided highway displayed on the map.
2. Sometimes the map click option is unable to locate a stop. When this happens, zoom in closer and try again.
3. Be sure to place the mouse pointer on roadway that the user is interested in.
4. Be sure to place the mouse pointer on a roadway that resides within the state of Oklahoma.
5. The map click may return several address options. The addresses will be denoted with either a Hexagon Logo  or a Google Logo  to let the user know what database the address came from. If the user finds that none of these addresses are correct, they may cancel this search. Try again by zooming in closer to the map to narrow the address choices.

STREET ADDRESS

The user can enter a street address or a common place by using the Locate by Street Address option.

1. If the street address cannot be found in Google maps, then odds are it will not be found in the Route Planner application. (Behind the scenes, the Route Planner application is using the Google Places service to locate an address.)
2. When entering a street address, the user has the option of entering the street number in the Number field and the street name in the Street Name field or entering both the street number and the street name in the Street Name field.
3. If the user discover that the street address cannot be found when the user enter both the street number and the street name in the Street Name field try breaking the information up by entering the street number in the Number field and the street name in the Street Name field to see if the street address can be found.
4. When entering a street address, the user does not have to include a city name. The city name is useful to filter the list of results that are returned.
5. When entering a common place, the user has the option of entering the common place in the Street Name field or the City Field.
6. When entering a street address, the user can simply enter the city name. The locate service will return the street address of the city center.
7. All addresses entered must be related to the state of Oklahoma.

INTERSECTS WITH (STREET INTERSECTION)

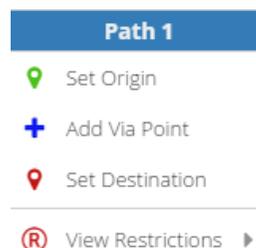
1. When defining a street intersection, the user has the option of selecting a roadway that crosses a state border, county border, or city border. Additionally, the user has the option of selecting the intersection of two crossing roads.
2. The locate service will convert the street intersection to a valid street address.
3. The locate service will not be able to locate the street intersection, if an invalid intersection was entered.

COORDINATES

1. Latitude/Longitude
 - If the user knows the latitude and longitude coordinates of a location, select the Latitude/Longitude option on the Locate by Coordinates dialog and enter the values.
 - The Lat/Long values are entered in decimal format. In general, the format of the Lat/Long is a decimal number with 5 decimal places. No leading zeros are required. Example: 34.076123, -81.183196
 - When entering the Lat/Long coordinates, the user must enter both values.
2. X/Y
 - If the user knows the X and Y coordinates of a location, select the X/Y option on the Locate by Coordinates dialog and enter the values.
 - The X/Y values are also entered in decimal format. In general, the format of the X/Y is a decimal number with 5 decimal places. No leading zeros are required. Example: 613707.924082429, 248718.109847927
 - When entering the X/Y coordinates, the user must enter a value for both X and Y.
3. The locate service will not be able to locate the stop, if a roadway does not exist at the location entered.
4. The locate service will not be able to locate the stop, if invalid coordinate values are entered.
5. The system will automatically calculate the X/Y coordinates for all stops that are located.

LOCATE OPTIONS AVAILABLE IN THE MAP

The user can right-click on the map to get a pop-up menu of locate options including: Set Origin, Add Via Point, Set Destination and View Restrictions. These options can be used to build the route.



SET ORIGIN

1. If the user wants to find a stop for a location on the map, use the Set Origin function.
2. The function for Set Origin works identically to the map click option.

ADD VIA POINT

1. If the user wants to find a Via Point to make a virtual “breadcrumb” route that will likely differ from the routes returned by the application. However, the Via Points may use the route returned as a reference or as a way to avoid the restrictions from a prohibited route.
2. The function for Add Via Point works identically to the map click option.

SET DESTINATION

3. If the user wants to find a stop for a location on the map, use the Set Destination function.
4. The function for Set Destination works identically to the map click option.

RESTRICTION WITHIN RADIUS

1. If the user wants to find the restrictions near a location on the map, use the Restriction by radius option.
2. Sometimes the *Map Click* option is unable to locate a restriction for the selected radius. When this happens, select a higher radius.
3. The restriction address will be placed in the order added to the route. The first two stops added are treated as the route origin and destination. Additional stops are treated as Via Points and placed in the order the user add them to the route.
4. The application will only return restrictions that apply to the current vehicle dimensions. If the vehicle would legally clear a restriction found within the radius, it will not be shown to the user.

STREET VIEW

Street View Tips:

- This enables the user to visually tour the area using the Google Street View anywhere along the route or a specified area.
- To view street-level imagery for a specific location, zoom into the area of interest. Click on the Street View Icon  located in the navigational tools to the right of the screen, then click on the specified point to view the street view.
- The user may rotate the view, advance the view, or retreat the view to gain the visual information needed.

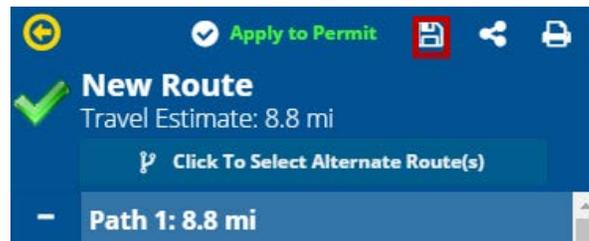
SAVED ROUTES OVERVIEW

Saved Routes can come in very handy. A good rule of thumb is to save the route if the user finds that they are getting numerous route requests that are routinely traveling between the same origin and destination.

SAVED ROUTES

Saved Route tips:

1. Give it a name that is easy for the user (and the colleagues) to find.
2. The route name cannot be longer than 40 characters long.
3. Manage the list of saved routes. As time goes by, the user may discover that the routes fall into the category of *Here Today, Gone Tomorrow*. Periodically, take time to delete the saved routes that the user is no longer using.
4. Route related commands are located in the Driving Directions Panel. The save route function may be accessed after a route has been generated by selecting the Save Icon .

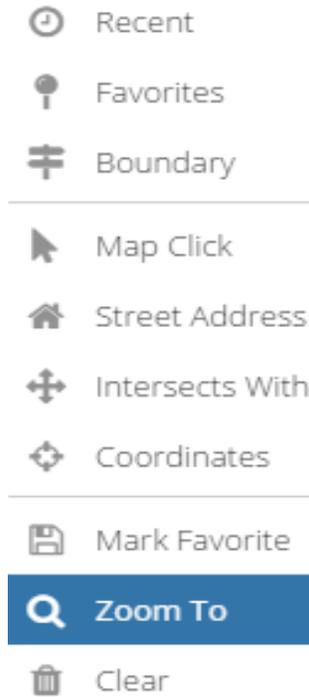


LOCATE A STOP – RECENT | FAVORITE | BOUNDARY | ZOOM TO

The user may notice that when the user uses any one of the *Map Click* options to locate a stop, the stop is automatically marked on the map with a green balloon but, when the user use the *non-Map Click* options (Street Address, Intersects with, or Coordinates) the stop is not being displayed on the map. At any point when the user is building the route, if the user want to find out where a stop is located on the map, or if a user wants to use a recent stop, a favorite stop or a boundary stop, the options are available for each stop including via points.



Tip: If a user is a first time or not a very active user, there may be no data in the *Recent* and *Favorites* until the user begins defining routes. The *Recent* Stop will start displaying once the routes are generated. However, *Favorite* Stops will need to be defined from the *Recent* listings. *Favorite* Stops will be discussed in more detail in this section. Default *Boundaries* are listed and the user may add more depending upon their needs.



Before Beginning

- Click on the Stop's Hamburger or Context Menu.
- The user will find multiple ways to find stops.

RECENT

- The user may select recent to view recently used stops to choose.
- When the user selects Recent, a table will populate with up to a couple of dozen entries to choose.

FAVORITES

- Select the stop either origin, destination, or via point
- When the user selects Favorites, a table will populate with the list of the user's favorite stops.
- To make a stop a Favorite, review the Recent List, highlight the record, then select the Fav Icon.
- A message box will prompt the user to add the stop and the user may also rename the Stop.
- The Fav Pin will change colors in the Recent Stops from gray to blue, indicating a favorite stop.

Boundary

- Works similarly to the Favorites stops. Select any stop and it is recommended that the stop be a city, county, state, district, et al stop.
- When the user selects Boundary, a table will populate with the list of the system's Boundary stops.
- To make a stop a Boundary, review the Recent List, highlight the record, then select the Bnd. Icon.
- A message box will prompt the user to add the stop and the user may also rename the Stop.

- The Bnd Icon will change colors in the Recent Stops from gray to blue, indicating a Boundary stop.

ZOOM TO

- Select the Zoom To
- The user will be relocated to the respective stop.

APPENDIX A: TERMINOLOGY

Bridging – In integrated mode, the vehicle information entered in the Permit System will be passed to the Route Planner application. The routing service always considers the vehicle dimensions when generating a safe route. If a vehicle fails validation, the routing service will route the vehicle so that it avoids the Bridge Formula restrictions.

Notification – Notifications are informational in nature. They are used to inform the driver of issues that may impede travel, but not necessarily prevent travel.

Permanent Restriction - Permanent restrictions are typically created from a known enterprise data source and are used to set minimums or maximums on the roadway network for aspects such as width, height, and weight.

Prohibited Route / Invalid Route – A prohibited route/Invalid route is a route generated by the system that is NOT considered safe and must be manually reviewed by an appropriate agent or engineer before it is approved and assigned to the permit.

Restriction – Routing restrictions are limitations such as weight, height, width that are used to ‘restrict’ travel.

Safe Route – A safe route is a route generated by the system that is considered safe.

Temporary Restriction - Temporary Restrictions typically occur in real time and affect travel in the network, but do not exist in an enterprise data source. The restriction varies from construction zones, roadway alerts or weather events.

Warning – Warnings are advisory in nature. They are used to alert the driver of travel advisories such as when an escort is required.

APPENDIX B: REPORT PROBLEMS

1. To contact the Oklahoma Department of Public Safety with questions or comments, use the **HELP LINE – 405-522-9060**.
2. When reporting a problem be sure to include:
3. Date and time of the error.
4. Application version number.
5. A one-sentence description of the problem in the subject line.
6. The page where the user is encountering the problem.
7. A step-by-step description of the actions the user performed that led to the problem. Include data the user was entering.
8. Error message(s) that appeared. (Screenshots are encouraged!)