RPMA - Roadway Project Mapping Application

RPMA Training Documentation
Version: 1/9/2018

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Background Info on Roadway Project Mapping Application

MnDOT implemented the Linear Referencing System (LRS), an Esri Suite of tools, in 2015. LRS replaced the TIS (Roadlog) system and GIS Basemap. The data in TIS (Roadlog) and BaseMap are no longer being updated and have been frozen/outdated as of January 2014. Please refer to iHub to Linear Referencing System for more information. http://ihub.dot.state.mn.us/gis/lrs_index.html

As new applications are being implemented at MnDOT, there is a need for them to integrate with LRS data. CHIMES (Capital Highway Information Management Enterprise System) is one of the first applications to integrate with LRS data. There will NOT be any old, TIS data in CHIMES – only LRS data. Because of this**, all location data interactions for the life cycle of a construction project, must reference LRS data in CHIMES.**

The RPMA Roadway Project Mapping Application is referencing a frozen subset of LRS, which is the Highway Performance Monitoring System (HPMS) data that is sent to FHWA on an annual basis. Because this is the data used for FHWA to federally authorize funds on trunk highway projects, the underlying data for RPMA will be the last approved HPMS submittal by FHWA.

What does this mean to me?

As previously mentioned, moving forward, all location data interactions for the life cycle of a construction project must reference LRS data in CHIMES. As such, the following are true:

- RPMA should be used to determine the begin and end points of a project

- RPMA should be used when segmentation of a project's components are needed for the different federal fund types on a project, as is required for federal authorization

- The Logpoint Listing is using old, frozen TIS data (from 2014) and should no longer be used for programming project location. If True Miles for the Logpoint listing continue to be used, there is the risk that you will be corrupting data, and project location data could be inaccurate.

- The Videolog is using old, frozen TIS data (from 2014) and should no longer be used for programming project location. If True Miles for the Videolog continue to be used, there is the risk that you will be corrupting data, and project location data could be inaccurate.

- If any other documents, tools, etc. that reference old, frozen TIS data (from 2014) continue to be used for programming project location, there is the risk that you will be corrupting data, and project location data could be inaccurate.

General Navigation

To access RPMA in production, go to: http://mndotgis/rpma

There will also be a hot key so that if users are connected to MnDOT, they can just type in "rpma" in the URL and it will bring users into the application.
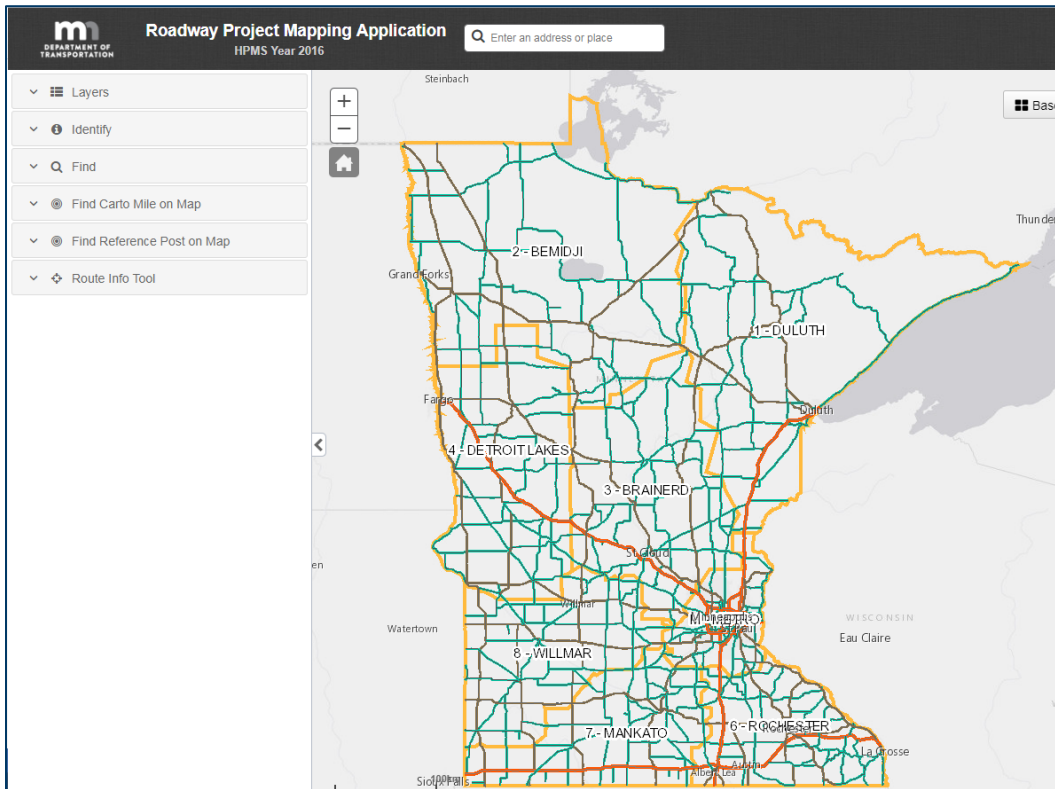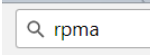

HPMS Year

The year of the latest approved HPMS data submittal will appear in the upper left hand corner of the screen. If a user is wondering what the latest approved submittal the data is going against, this is where to look. Because this says "HPMS Year 2016", this indicates the application is currently going against the 2016 HPMS data submittal approved by FHWA.
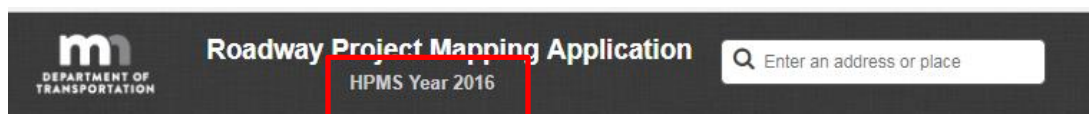
Tool Activation

The tools available for the user to select from are Layers, Identify, Find, Find Carto Mile on Map, Find Reference Post on Map, and Route Info Tool. Please see the next sections for more detail on what each tool does. In order to activate a tool, a user clicks on the tool option they want to activate. In the example below, the user clicked on "Find Reference Post on Map" which activated that tool and made more data input options available to the user for finding a reference post on a map.
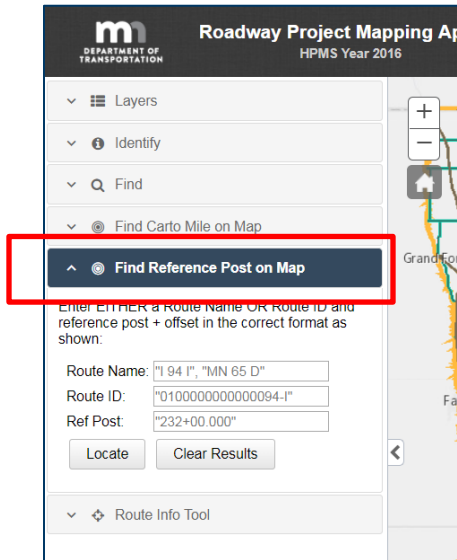
Search

There is a quick search tool that can be used as a shortcut to get to a City, County, Street or an exact address. As an example, you can simply type in an address, hit Enter, and it will bring you to that place on the map.   *Note, users will always want to start with the City if possible. If they don't have that, they should use County next.
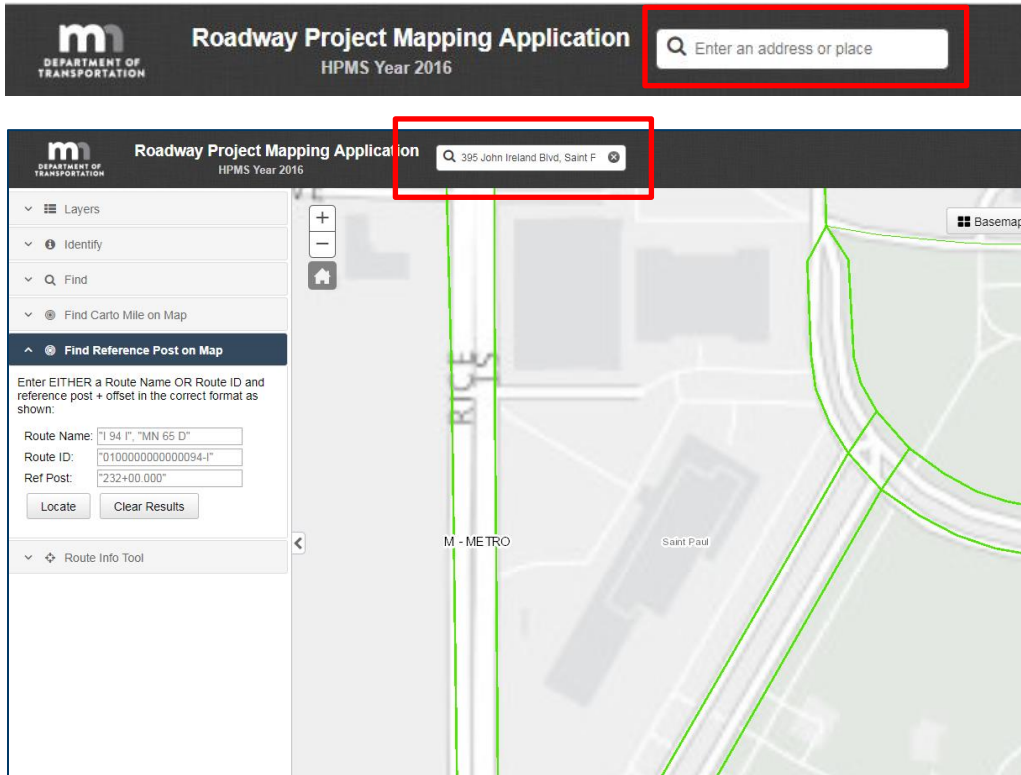

Basemaps

There are different Basemap options for the user. The user can click on the Basemaps option and select from Streets, Imagery, Imagery with Labels, National Geographic, and Light Gray Canvas based on his/her preference. Light Gray Canvas is the default.
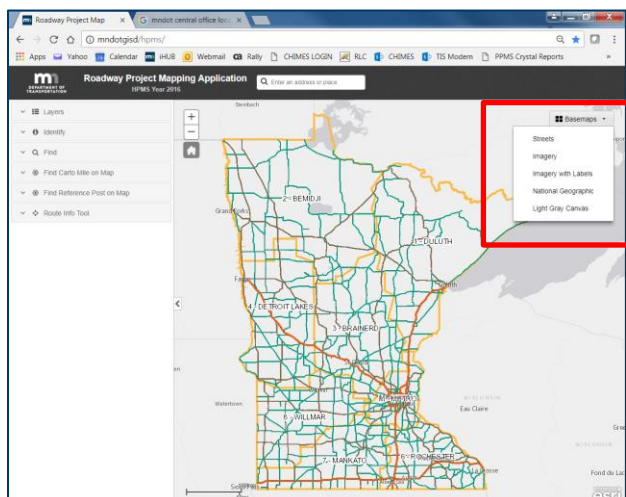
Expand Map

If the user prefers to see just the map and not the tool options on the left, he/she can click on the option to expand to make the map a full screen. *Note, user will likely want to select his/her tool first prior to doing this so when clicking on a point on the map the applicable data attributes needed return.
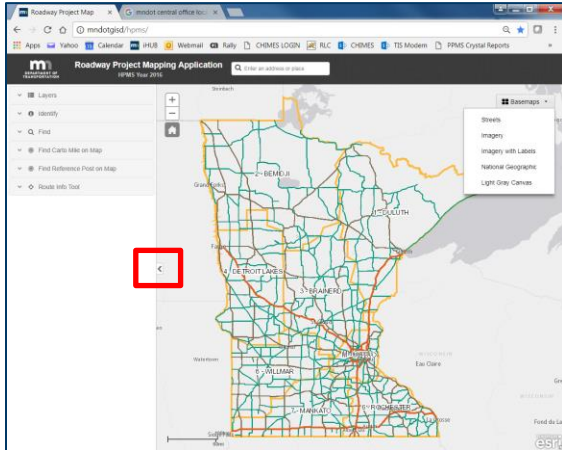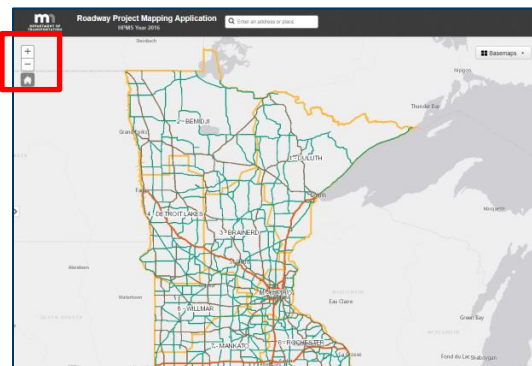

Here is the expanded map view; notice the tools on the left don't appear. To re-expand, click on the icon outlined in red.
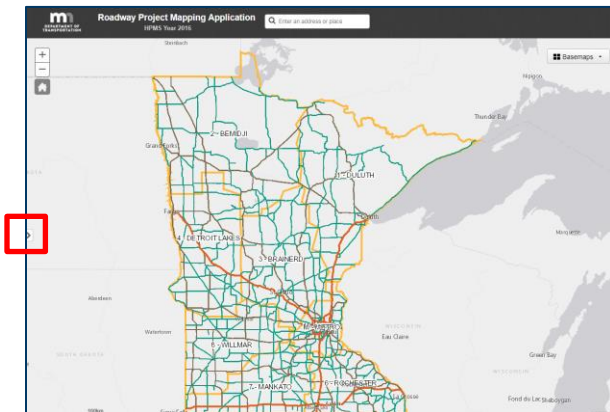

Zooming Feature

Users are able to zoom in and out on the map using the '+' and '-' feature.

Layers

When the user opens RPMA, there are default layers that are already set for the user. Some layers do not turn on until a user zooms further into the map; likewise, some layers turn off as a user zooms further into the map. Zoom scales have been set by layer to make the map easier to read, and user friendly. At any point though, a user can go in and turn layers off and on depending on what level they are zoomed into the map and the rules around the layers. User can click on the Layers tool, and click the layers on and off as they see fit.

To understand the Symbology of the layers, simply click on the black arrow next to the item under Layers. In this example, a user can see that Interstate Highways will show on the map as a red line, US Highways will show as a black line, and MN Highways will show as a green line. If a user is looking at the map, and doesn't understand what the lines, dots, etc. are represented by, he/she can come here and click on arrows for each item to better understand the representation.
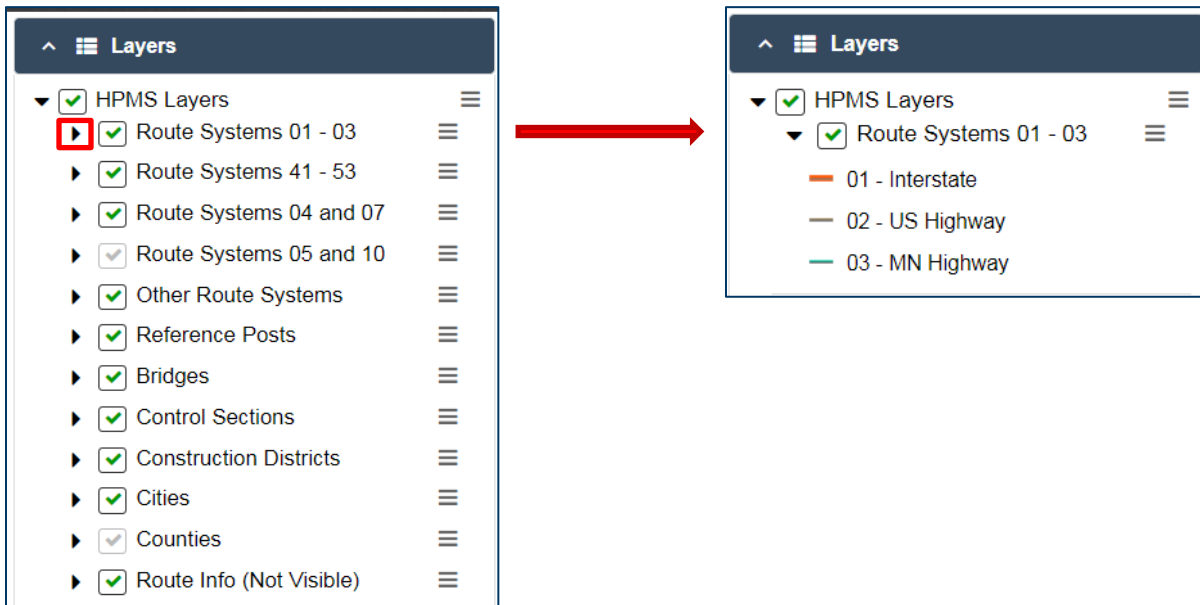
There are additional options under Layers > HPMS Layers.   User can select from the various options to Turn on All Sublayers (default), Turn Off All Sublayers, Zoom to Layer, Transparency, Layer Swipe and Metadata.
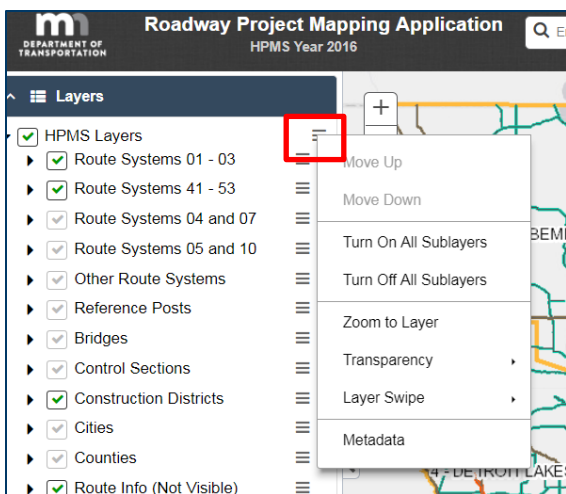
Identify

Identify is not recommended to be used, as it serves the same function as Route Info Tool. The Route Info Tool is easier to use because all data attributes appear in one pop up box. Please see the Route Infor Tool section for more information.

Find

Find is not recommended to be used, as it serves the same function as Route Info Tool, and just shows data in a tabular format versus the data attributes in one pop up box. The Route Info Tool is easier to use because all data attributes appear in one pop up box. Please see the Route Info Tool section for more information.

Find Carto Mile on Map

Users are able to navigate directly to a point on the map if he/she knows the Route Name and From Measure or To Measure, or Route ID and From Measure or To Measure. When a user clicks on the Find Carto Mile on Map tool, Route Name, Route ID, From Measure, and To Measure become enterable data fields. When a user types information into these fields, they MUST be in the exact same format as the grayed text shows in the field. For example, a user can't type in 'MN22' for a Route Name. He/she would need to type in 'MN 22 I'. It must have the spaces in between, it is case sensitive, and the user needs to include 'I' for 'Increasing' or 'D' for 'Decreasing'. For CSAHs, users can type in the format 'Beltrami CSAH 9 I'. The user can then click on the Locate button to go to that point on the map.
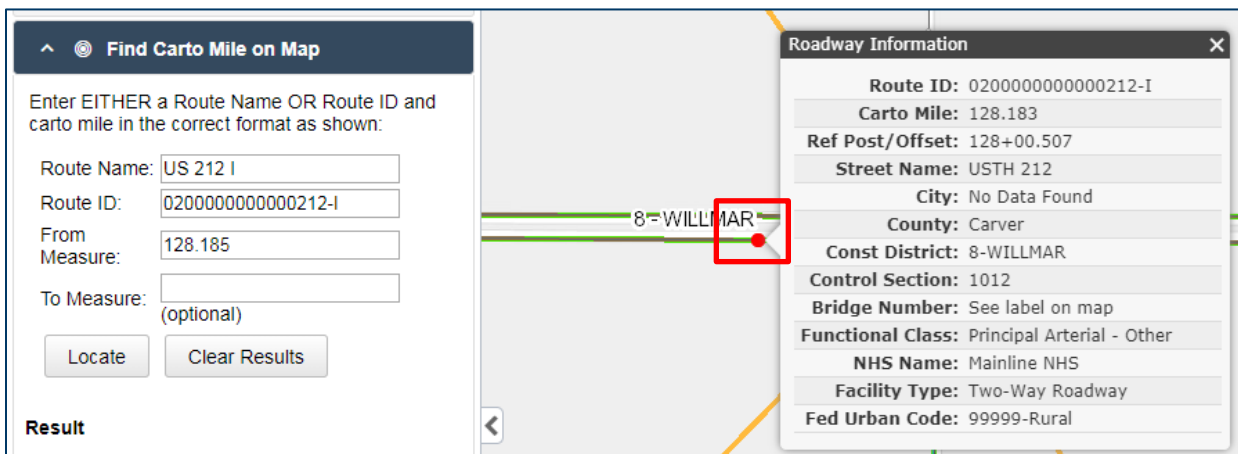

See more information on Find Carto Mile on Map on the next couple of pages.

Example:
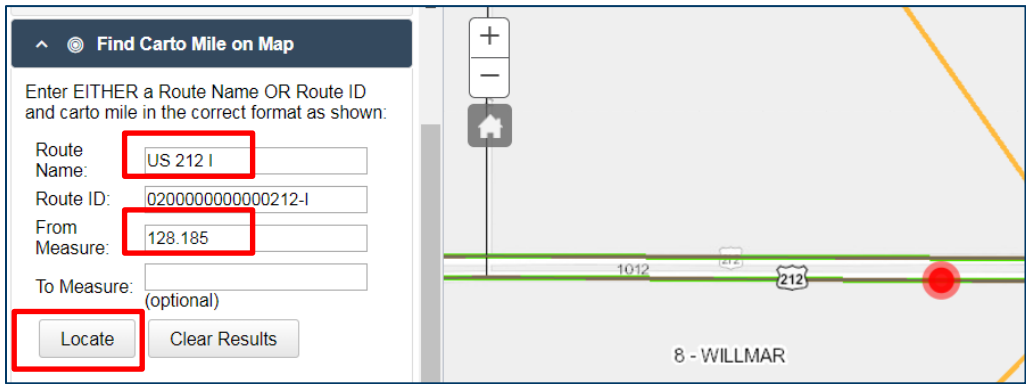
If the Route Info Tool is activated and set to 'Tool Started' (see Route Info Tool section for more information), user can click on the red point on the map and a pop up box with data attributes for that exact point/location will appear.

The user can copy and paste the information from the pop up box into another document.

The user can click on the Clear Results button to start over with a new set of criteria to locate a point on map.
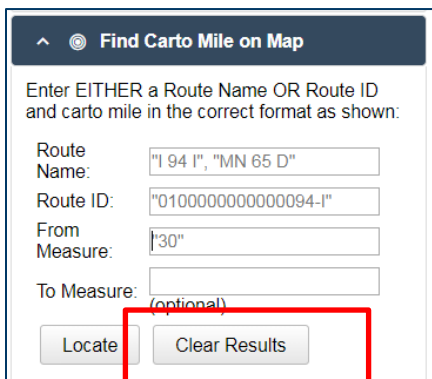
Find Reference Post on Map

Users are able to navigate directly to a point on the map if he/she knows the Route Name and Ref Post and Offset, or Route ID and Ref Post and Offset. When a user clicks on the Find Reference Post on Map tool, Route Name, Route ID and Ref Post become enterable data fields. When a user types information into these fields, they MUST be in the exact same format as the grayed text shows in the field. For example, a user can't type in 'MN22' for a Route Name. He/she would need to type in 'MN 22 I'. It must have the spaces in between, it is case sensitive, and the user needs to include 'I' for 'Increasing' or 'D' for 'Decreasing'. For CSAHs, users can type in the format 'Beltrami CSAH 9 I'. The Reference Post and Offset MUST be typed in the correct format of '000+00.000'. The user can then click on the Locate button to go to that point on the map.
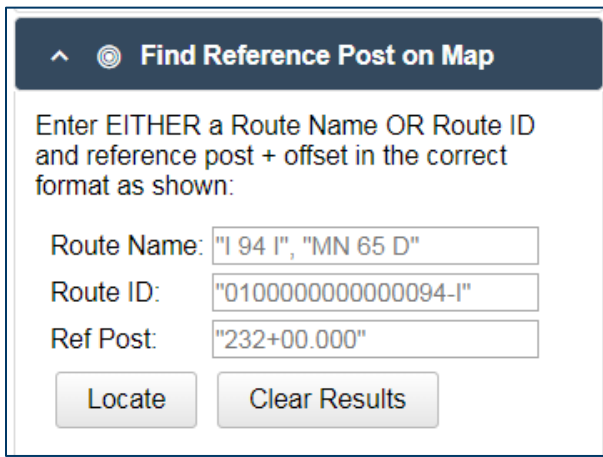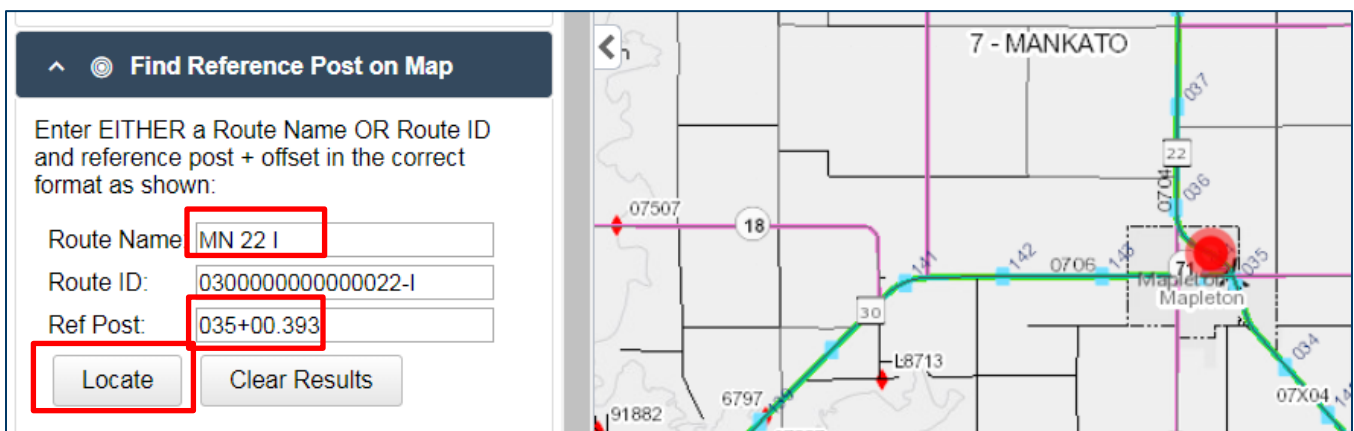

Example:

If the Route Info Tool is activated and set to 'Tool Started' (see next section for more information), user can click on the red point on the map and a pop up box with data attributes for that exact point/location will appear.

The user can copy and paste the information from the pop up box into another document.

The user can click on the Clear Results button to start over with a new set of criteria to locate a point on map.

Route Info Tool

The Route Info Tool allows users to click on a point on the map and have data attributes return for that specific location. The information that returns in the pop up box can be copy and pasted into other documents (ie. Project Charter or Project Scoping documents, etc.) Users must click within 10 meters of road, and must be zoomed in far enough to retrieve results. If a user clicks on an intersection that has multiple routes, the pop up box will display the data attributes for the first route, then the data attributes for the 2 second route, and so on. It does sort by the Route Type (01, 02, 03), then Route ID-Increasing, then Route ID-Decreasing.

When the user opens the application the Route Info Tool will appear as highlighted. The user must click on the 'Tool Stopped' button; once the user clicks on the 'Tool Stopped' button it will switch to show as 'Tool Started.' If the user no longer wants to use the Route Info Tool, the user can click on 'Tool Started' and will go back to 'Tool Stopped.'
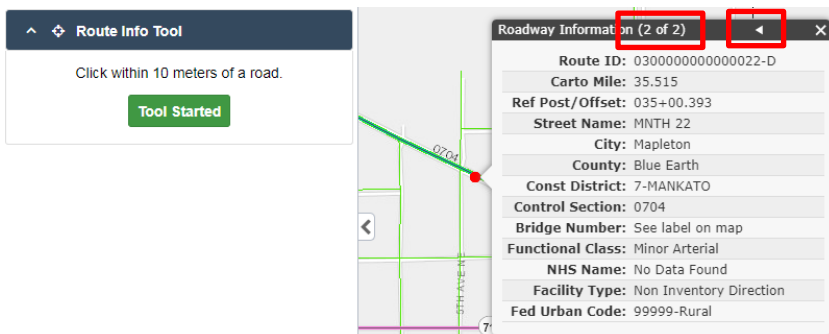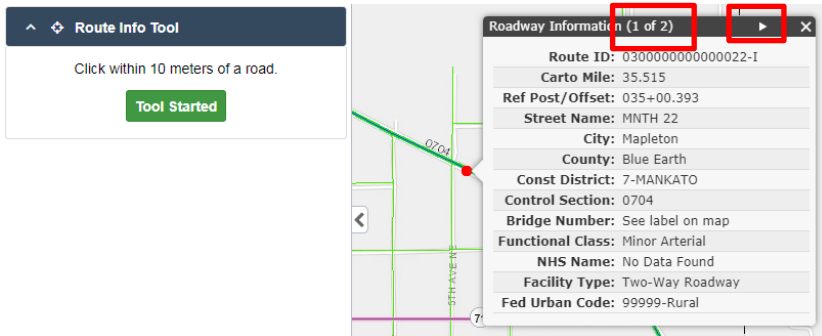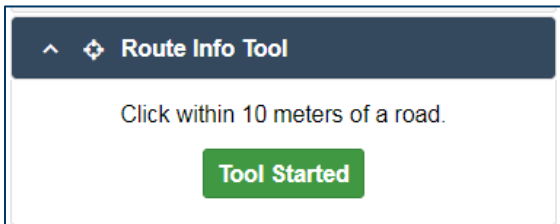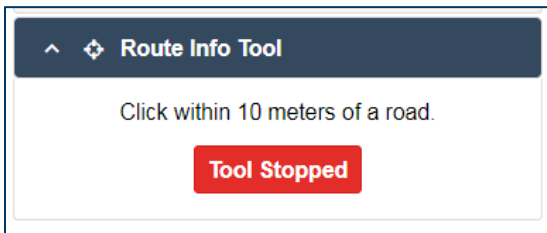
Examples

1. You know the route and reference post and offset for a bridge project, and need to get the value of the Carto Mile and the Bridge Number. You know it's MN 18 I and the Reference Post and Offset is 037+00.382. What is the Carto Mile and Bridge Number?

2. You have the beginning Carto Mile for a project, and want to know what the reference post and offset is, as well as which county the project falls in. It is US 14 I, and Begin Carto Mile 75.882. What is the Beginning Reference Post and Offset and County?

Frequently Asked Questions

1. Where do I access RPMA from?
   a. The application can be accessed from: iHub > A to Z > Roadway Data
      i. Scroll down to "Roadway Project Mapping Application (RPMA)" and click on the "RPMA Page" link.
   b. The application can be accessed from: iHub > A to Z > Transportation Data and Analysis
      i. Under "Popular links" you can click on the "Roadway Project Mapping Application (RPMA)" link.

2. Why can't we use Georilla to get the project measures? Why do I have to use yet another tool?
   a. Currently Georilla does not have Linear Reference System (LRS) data behind it. Eventually the next version of Georilla will have LRS data behind it, and if the decision is to use the static LRS measure data from the latest FHWA approved HPMS submittal, we may be able to use Georilla. For consistency the CHIMES application needs users to provide one set of measure data (Reference Post Begin/End and Carto Measure Begin/End) for mapping purposes of Highway projects. In addition all Federal Highway projects require the use of the latest approved HPMS data to be used. In order to be consistent the decision has been made that all projects requiring location data will use the RPMA data. The current SOPL form also has the same data behind it as RPMA, however, that form is submitted with the project as part of plan turn in, too late for STIP/CHIP/MNSHIP and the plan is to retire the SOPL form as soon as possible.

3. I have the Route Info Tool activated, the button is set to 'Tool Started', but when I click on a spot on a map the pop up box doesn't appear with the data attributes. Why is this?
   a. Answer: It could be that the tool has timed out. This shouldn't happen, but if it does, click on the 'Tool Started' button so it goes to 'Tool Stopped.' Then click on the 'Tool Stopped' button again so it goes back to 'Tool Started' to essentially refresh it.

4. I am looking at a point on the map, and I know the data displaying back to me is not correct (ie. incorrect route number, or street name, etc.) What can I do so this information gets corrected?
   a. Answer: There is a web application called RACER, where users can submit requests to have LRS data corrected.   (http://racer/)

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5. Are there any shortcuts to zoom into an area on the map?
    a. If you push down on the "Shift" key on your keyboard, and then point and click on the mouse and drag it over a certain area and release, it will automatically zoom you into that area of the map.

6. I typically use the Videolog to get my reference post and offsets. With RPMA now in place, will I go to the Videolog and get my reference post and offsets, and then go to RPMA to get the Carto Measures?
    a. It is recommended that you get all project programming location information from the RPMA application, including begin and end reference post and offsets and Carto Measures. With the TIS to LRS conversion, there could have been a slight change to the reference post and offsets. Users should be going to get all RPMA to get this information, and live in the LRS world going forward. The Videolog is going against old TIS data.

7. What is the source for the RPMA Imagery Basemap?
    a. RPMA is using ESRI's Imagery Service, and it being updated by a variety of sources.

8. When I type in the Route Name, the Route ID isn't automatically populating – is there something wrong?
    a. No. The Route ID won't populate until you click on a button to take an action. Once the button is clicked, it will trigger the Route ID to be populated.

9. Can RPMA include the Township/Section/Range as a layer for the interactive map?
    a. We can look into adding this as a layer in the future as an enhancement.

10. If it's a coincident route, will it show both routes or just the primary?
    a. If it's truly a coincident route, it will show the primary. If there are routes that intersect, it will show both routes.

11. Should RPMA be used on the title sheet of plans?
    a. Nothing should change on title sheets. The information for location data should either come from RPMA or another system connected to live LRS data (there is some timing difference if an actual reference post is changed in LRS between live and static but LRS is the system of record for location data and should have the most current location data).

12. Can Reference Points still be used within a plan set?
    a. Yes Reference Point should be used within a plan set. No one without our spatial data and know how would be able to determine exactly where a project is from Carto Measure. From a boots on the ground perspective Reference Points are the best indicator of location.

13. Can we continue to use Reference Points in our other applications and asset management?
    a. Yes, you can still use Reference Points in your other applications.

14. When I clicked into the map, is there anyway way to use my 10 key keypad to navigate around? Yes.
    a. 1-Move Diagonally SW
    b. 2-Move South
    c. 3-Move Diagonally SE
    d. 4-Move West

      e.   5-Doesn't do anything
      f.   6-Move East
      g.   7-Move Diagonally NW
      h.   8-Move North
      i.   9-Move Diagonally NE
      j.   10-Nothing