

BOPR/Google Earth Instructions

06/17/10 - NHDOT Bureau of Bridge Design

Introduction

This program, Bridge Overweight Permit Review (BOPR), is designed to enable overweight permit applicants to review the adequacy of State highway bridges for their specific overweight vehicle. Once the applicant inputs the axles weights and spacings for their specific vehicle, the computer program reviews the effect of the proposed load configuration and compares it to the current rated capacity of all State bridges. The output provides the applicant with a file (which can be viewed or printed) listing each State bridge and indicating whether or not it is “OK to Cross” the bridge with the proposed load. A Google Earth map is also provided that depicts all State bridges and displays pertinent bridge data and review results (“OK TO CROSS”, “NHDOT REVIEW REQUIRED”, etc.). The output files and maps also list and display all municipal bridges and include the note “MUNICIPAL REVIEW REQUIRED”, since each municipality is responsible for their specific bridges.

Program Download and Setup Information

The BOPR program can be downloaded from the following NHDOT web address:
http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/ow_bridge_review.htm

At this website, you will find the most current version of the BOPR program, along with other useful information including links to supporting software downloads, frequently asked questions, and contact information.

BOPR requires the following supporting software in order to run on your Windows PC.

- Microsoft Access (2000 or newer) or Microsoft Access 2007 Runtime.
- Google Earth (required for mapping only).

It is recommended that the BOPR program be downloaded and stored on your computer within a dedicated folder (for example, create a new folder named “BOPR” on your desktop, and store the downloaded BOPR program within this folder). BOPR creates and stores several output files automatically on your computer. These files must be kept within the same directory as the BOPR program to ensure trouble-free operation.

Please note that the BOPR program has a built-in expiration period of 14 days. You will be required to revisit the BOPR website to download the newest version of the program at least once every 14 days. This ensures that the applicant is using the most current bridge inventory and load capacity data available. Again, to ensure trouble-free operation, the BOPR program should be downloaded and stored in the same location as the previous version that you are replacing.

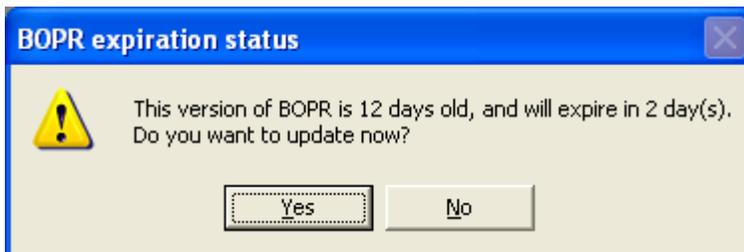
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Launching the BOPR program

To launch the BOPR program, double click on the BOPR icon. This will launch the program either through Microsoft Access or Microsoft Access Runtime. You may be prompted to answer security questions depending on your software configuration.

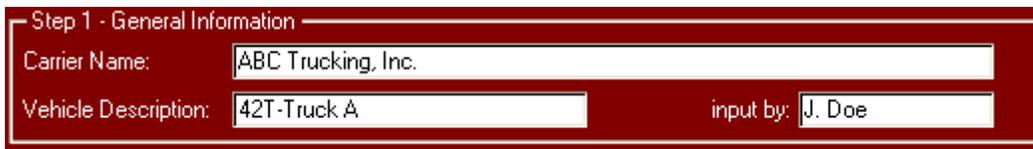
Once you reach the “Welcome to BOPR” window, you have accessed the BOPR program. Please click “Continue” after you have viewed the welcome screen. Depending on the version and expiration date of your BOPR program, you may see a “BOPR expiration status” message appear:



By clicking “Yes,” the BOPR program will close, and you will be brought to the NHDOT BOPR download page (if connected to the internet) where you may obtain the most current version of the program. By clicking “No,” you will bypass the download page and be directed to the next step. Please note that you will be unable to continue to the next step if your BOPR program is more than 14 days old.

Step 1: General Information

Three pieces of general information must be entered in Step 1:



Carrier Name: Enter your company’s name (example: ABC Trucking, Inc.). This name should match the *Carrier Name* entered in your typical OVERHAUL permit applications.

Vehicle Description: Enter a short description that identifies your vehicle (example: 42T-Truck A). Please note that the program will use this description to create names for your output files. Therefore, this description should be unique and specific to your vehicle.

Input by: Enter your name or initials (example: J. Doe).

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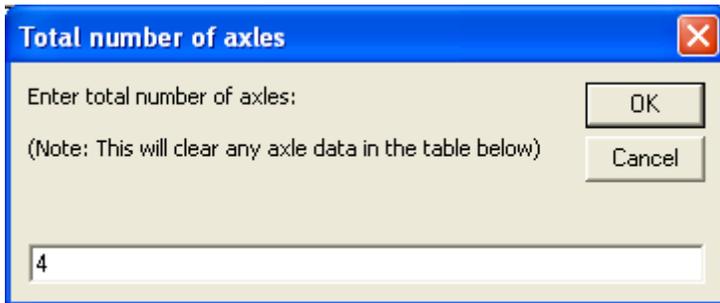
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Step 2: Create Axles

Create Axles

Click the “Create Axles” button.

The following window will appear. Enter the total number of axles for your vehicle; then click the “OK” button to continue. For this example, four (4) axles will be entered.



The screenshot shows a dialog box with a blue title bar that says "Total number of axles". Inside the dialog, there is a text input field containing the number "4". Above the input field, it says "Enter total number of axles:". Below the input field, there is a note: "(Note: This will clear any axle data in the table below)". To the right of the input field are two buttons: "OK" and "Cancel".

Step 3: Enter Axle Weights and Spacings

Enter the axle weights and spacings for your vehicle. A blank table is generated based on the data entered in Step 2.

	Axle Number	Axle Weight (lbs)	Axle Spacing (ft)	Axle Spacing (in)
▶	1			
	2			
	3			
	4		0	0

For the example vehicle, the following configuration is assumed:

Axle 1 = 12,000 lbs; Axle 2 = 20,000 lbs; Axle 3 = 26,000 lbs; Axle 4 = 26,000 lbs.

Spacing 1 = 14'-6"; Spacing 2 = 30'-0"; Spacing 3 = 4'-6".

This example information is entered into the table as shown below.

	Axle Number	Axle Weight (lbs)	Axle Spacing (ft)	Axle Spacing (in)
	1	12000	14	6
	2	20000	30	0
	3	26000	4	6
▶	4	26000	0	0

This concludes the input for our first example vehicle.

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Step 3 (Continued):

The following screenshot shows the input information for our example 4-axle vehicle.

The screenshot shows a software window titled "Vehicle Input" with a blue title bar and standard Windows window controls. The interface is divided into four steps:

- Step 1 - General Information:** Includes text boxes for "Carrier Name" (ABC Trucking, Inc.), "Vehicle Description" (42T-Truck A), and "Input by" (J. Doe). Buttons for "New Truck" and "Delete Truck" are on the right.
- Step 2 - Required only for new input:** Contains a "Create Axles" button.
- Step 3 - Enter Axle Weights and Spacings:** Features a table with the following data:

Axle Number	Axle Weight (lbs)	Axle Spacing (ft)	Axle Spacing (in)
1	12000	14	6
2	20000	30	0
3	26000	4	6
4	26000	0	0
- Step 4 - Process your vehicle:** Contains a "Process now" button and an "Exit Program" button.

At the bottom, there is a record navigation bar with the text "Record: 1 of 2" and several arrow buttons. A note above the bar says "Use the arrow buttons below to change between vehicles (if you have more than one)".

If you or your company only utilizes a single overweight vehicle configuration, you may continue to Step 4. For users that wish to create and save multiple overweight vehicle configurations, please read the following section, "Creating and Saving Data for Multiple Trucks (optional)."

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Creating and Saving Data for Multiple Trucks (optional)

The BOPR program has the ability to save data for multiple vehicles if desired. Two text files containing your vehicle specifics are automatically generated and stored in the same folder as the BOPR program.

To create additional vehicles, click the “New Truck” button (located in the upper right corner of the “Vehicle Input” window). A blank record will be created. Similar to the input for the first truck, user is required to enter information in Steps 1 through 3 for the new truck. The user has the ability to navigate between trucks using the forward and backward arrows located at the bottom of the “Vehicle Input” screen (if you have more than one vehicle). Note that a unique vehicle description is required for each truck that you create. The screenshot below shows the details of a second example vehicle.

The screenshot shows the 'Vehicle Input' window with the following details:

- Program Version: 5/27/2010
- Step 1 - General Information:
 - Carrier Name: ABC Trucking, Inc.
 - Vehicle Description: 55T-Truck B
 - Input by: J. Doe
- Step 2 - Required only for new input:
 - Create Axles button
- Step 3 - Enter Axle Weights and Spacings:

Axle Number	Axle Weight (lbs)	Axle Spacing (ft)	Axle Spacing (in)
1	12000	14	6
2	20000	30	0
3	26000	4	6
4	26000	4	6
5	26000	0	0
- Step 4 - Process your vehicle:
 - Process now button
 - Exit Program button
- Navigation: Record: 2 of 2 (with arrow buttons for navigation)

To delete a truck from your records, find the record you wish to delete and click the “Delete Truck” button.

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Step 4: Process Your Vehicle

Click the “Process Now” button to initiate the analysis. For users with multiple trucks, it is important to make sure that you are processing the intended vehicle.



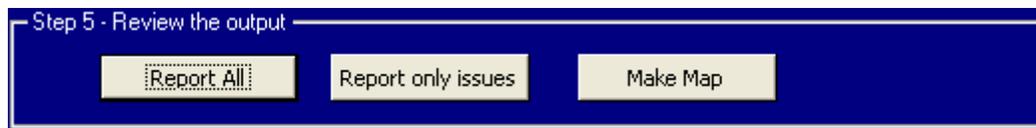
Once the program is finished processing your vehicle, the following message will appear. Click “OK” to continue.



Step 5: Review the Output

The objective of the BOPR program is to enable the user to choose a route from their origin to destination utilizing bridges that are capable of safely carrying their overweight vehicle and load. This is accomplished when the user chooses a travel route that exclusively crosses bridges that are “OK to Cross” (represented by green paddles within Google Earth). The results for your specific analysis must be studied carefully in order to achieve this objective.

There are three options for viewing the results of the analysis. Output from Step 5 must be reviewed prior to advancing to Step 6:



 The “Report All” button provides a complete list of results from the analysis of the entire inventory of State-owned highway bridges. The report also includes all municipally-owned bridges, and reminds the applicant that municipal reviews are required before they can be granted permission to cross municipal bridges with an overweight vehicle.

In the “STATUS” column of the report, the result is shown for each bridge. There are five possible statements displayed in the status column:

- 1) OK to Cross
- 2) Cross Alone – Review Req’d
- 3) NHDOT Review Req’d
- 4) Do Not Cross
- 5) Municipal Rev. Req’d

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Step 5 (Continued): Review the Output

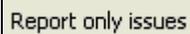
“[OK to Cross](#)” is displayed for a bridge which has enough calculated live load capacity to safely carry the specified overweight vehicle traveling at typical highway speed while mixed with ordinary highway traffic. If all bridges on your planned route are displayed as “O.K. to Cross” for your specific overweight vehicle, you are eligible to self-validate the adequacy of the particular route and bypass the formal NHDOT bridge review process.

“[Cross Alone – Review Required](#)” is displayed for a bridge that does not have enough calculated live load capacity to safely carry the specified overweight vehicle traveling at typical highway speed while mixed with other traffic. However, it is likely that the bridge has enough capacity to safely carry the overweight vehicle when traveling alone on the bridge at typical highway speed. The specified overweight vehicle is not permitted to cross this bridge without an applicant-requested bridge review conducted by NHDOT Bridge Design staff. Upon further engineering review, the specified overweight vehicle is likely to be able to cross this bridge alone (no other vehicles on the bridge while crossing).

“[NHDOT Review Req'd](#)” is displayed for a bridge which does not have enough calculated live load capacity to safely carry the specified overweight vehicle traveling alone on the bridge at typical highway speed. The specified overweight vehicle is not permitted to cross this bridge without an applicant-requested bridge review conducted by NHDOT Bridge Design staff. Upon further engineering review, the specified overweight vehicle may or may not be able to cross this bridge with additional restrictions (for example, no shifting, no braking, not to exceed 5 miles per hour).

“[Do Not Cross](#)” is displayed for a bridge that is not capable of carrying the specified overweight vehicle. The bridge may be closed to traffic, tonnage-posted (e.g. Weight Limit 6 Tons, Weight Limit 20 Tons, etc.), or may have a structural element incapable of safely carrying the specified overweight vehicle under any circumstances.

“[Municipal Rev. Req'd](#)” is displayed for a bridge that is municipally-owned. All overweight vehicles are required to obtain permission from municipalities before traveling on municipally-owned roads and bridges. Municipally-owned bridges on numbered routes are shown in the results to remind the applicant that these are not NHDOT-owned structures.

 Report only issues

The “Report only issues” button filters your results to show only those results for bridges that are inadequate or require further action. All bridges that result in “OK to Cross” status are excluded from this report.

 Make Map

A Google Earth viewable map file of your results is automatically created, named, and stored on your computer when the “Make Map” button is clicked. For detailed instructions regarding the Google Earth map, please refer to the *Google Earth Instructions* section at the end of this document.

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Step 6: Creating Your Unique Self-Validation Statement

Step 6 presents a sequence of questions that must be answered in order to create your unique self-validation statement. Once created, your self-validation statement must be copied and pasted into the carrier comments field within your OVERHAUL permit application. You will be asked the following questions:

Question #1: Does your planned travel route cross municipal (Blue) bridges?

If you respond, “Yes,” you will receive the following message:
“Please contact the municipalities for permission to cross their bridges.”
If you respond, “No,” you will not receive any additional message.

Question #2: Does your planned travel route include a return trip?

If you respond, “Yes,” you will receive the following message:
“Note: Some divided highways have separate bridges for each direction of travel. Be sure to check all bridges along the return route.”
If you respond, “No,” you will not receive any additional message.

Question #3: Are ALL NHDOT-jurisdiction bridges “OK to Cross” (Green) along your planned travel route?

If you respond, “Yes,” you will receive the following message:
“Since ALL NHDOT-jurisdiction bridges are “OK to Cross,” you can self-validate with the BOPR statement.” Click the “Open Statement” button to view the unique self-validation statement.
If you respond, “No,” you must proceed to question #4.

Question #4 (only applicable when answering “No” to Question #3):

Do you have a previous bridge review (conducted by NHDOT Bridge Design) for ALL Red and Yellow bridges along your planned travel route?

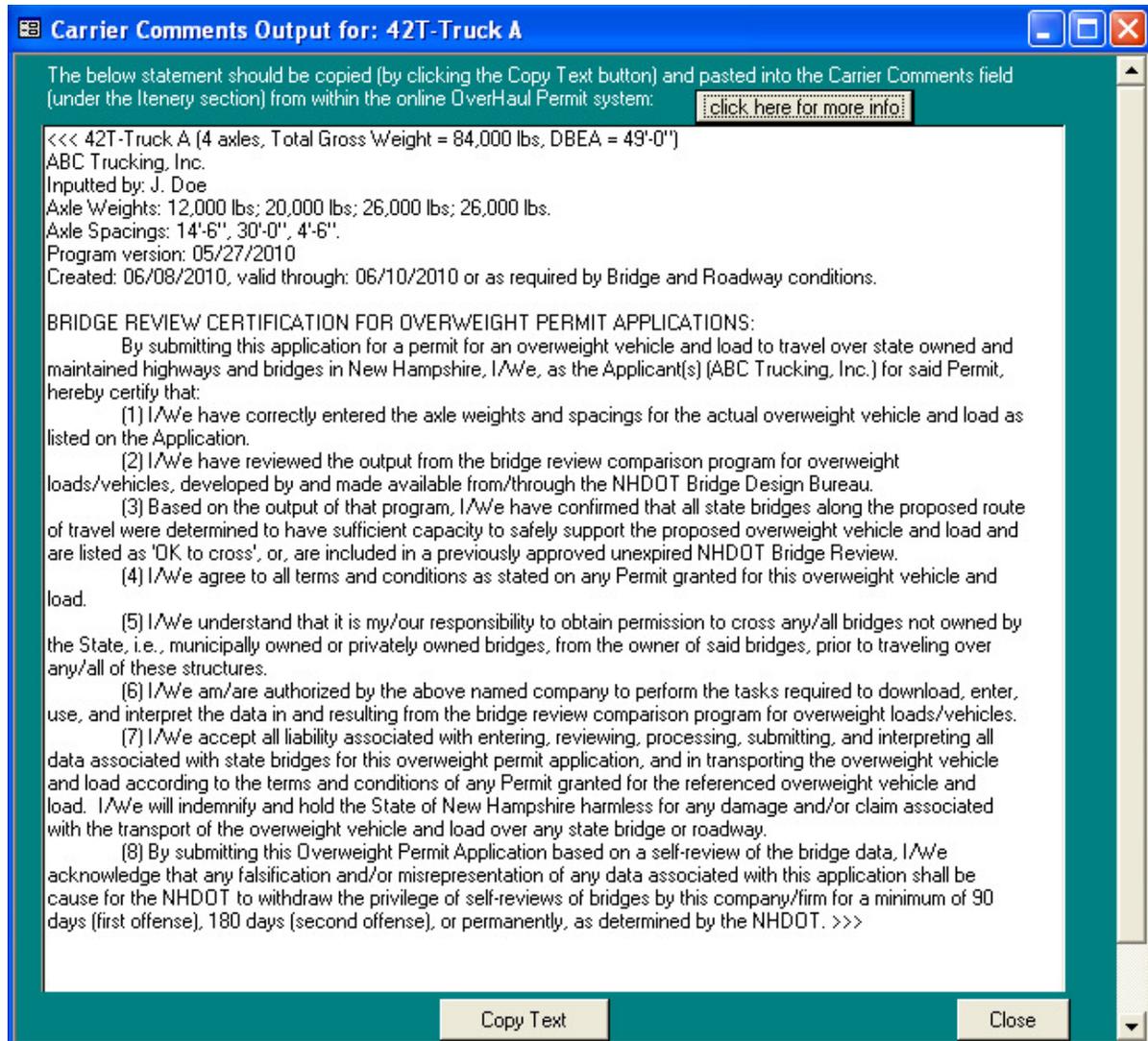
If you respond, “Yes,” you will be asked to provide the permit application number(s) corresponding to the previous applicable bridge reviews. Once the previous reviews are entered, click the “Open Statement” button to view the unique self-validation statement.
If you respond, “No,” you will need request a bridge review. Click the “Open Statement” button to view the “Bridge Review Requested” statement.

Use the “Copy Text” button, located at the bottom of the “Carrier Comments Output” screen, to copy the entire contents of the statement window. The statement must then be entered (pasted) into the carrier comments field within OVER HAUL to satisfy the self-validation disclaimer requirements.

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The following screenshot is the self-validation statement corresponding to the example vehicle described in Steps 1 through 3 above. Your unique self-validation statement will vary depending on your vehicle configuration, program version, and your responses to the questions in Step 6.



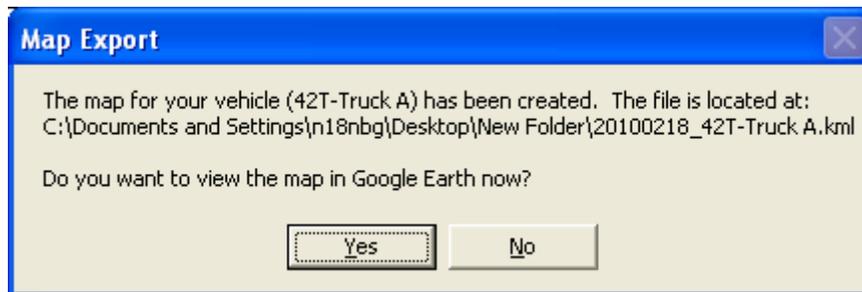
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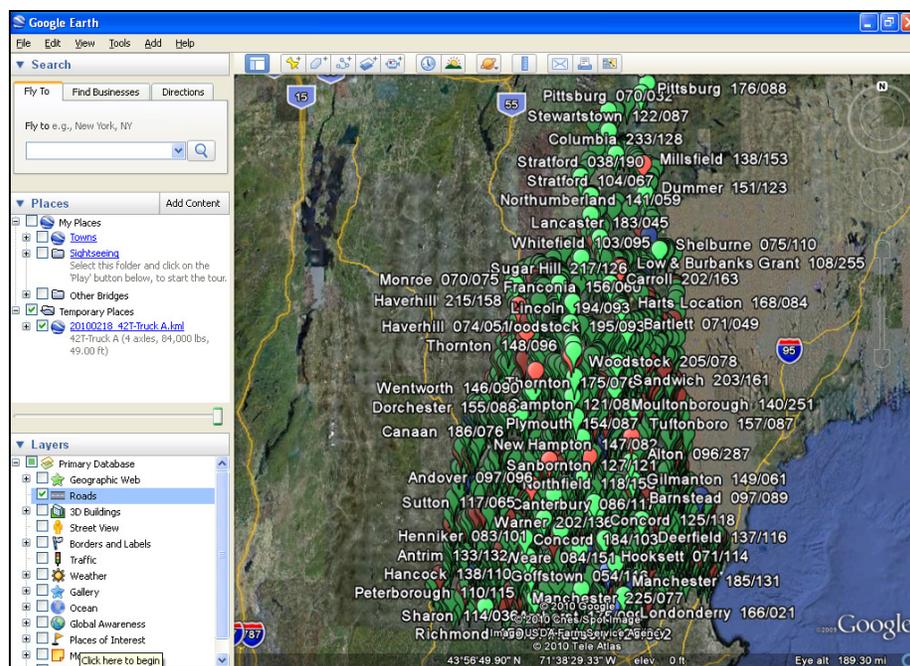
Google Earth Instructions

To view your automatically generated Google Earth map file, you must first have Google Earth installed on your computer. Google Earth is free software, available for download at <http://earth.google.com/>. It is recommended that you use the most current version of Google Earth available. When possible, it is encouraged that Google Earth be configured to download and install updates automatically. Once the current version of Google Earth is installed on your computer, you can view your “results map”.

Opening your “results map”: The unique map file for your overweight vehicle is created by clicking the “Make Map” button as described in Step 5 (above). To automatically open Google Earth and load your “results map”, just click “Yes” as shown in the example box below. The file name of the map consists of the program version date and the vehicle description (as specified in the general information in Step 1, above).



Once your “results map” is open, you should see an aerial image of the State of New Hampshire and hundreds of “placemarks” representing the results for each analyzed bridge. The screen should look like this:

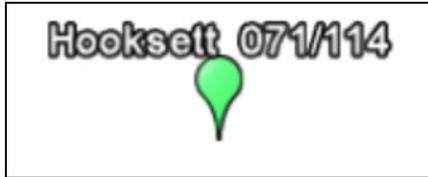


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Google Earth Instructions (Cont'd)

Understanding your “results map”: Each analyzed bridge is depicted by a placemark consisting of its “Bridge Number” (for example, Hooksett 071/114), and a color-coded “paddle”. The following five examples illustrate the various results:



“OK TO CROSS.” This green paddle represents a state-owned bridge that is adequate to carry your overweight vehicle in accordance with the conditions specified in Step 5 (above). If all bridges on your planned route are displayed as “O.K. to Cross” for your specific overweight

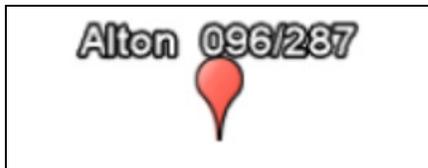
vehicle, you are eligible to self-validate the adequacy of the particular route and bypass the formal NHDOT bridge review process



“CROSS ALONE – NHDOT REVIEW REQUIRED.”

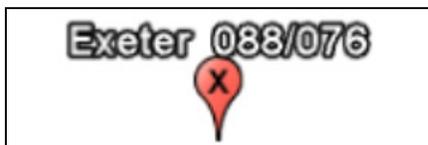
This yellow paddle represents a state-owned bridge that cannot be crossed by your overweight vehicle without engineering review by NHDOT Bridge Design staff. Upon further engineering review, the specified

overweight vehicle is likely to be able to cross this bridge alone (no other vehicles on the bridge while crossing).



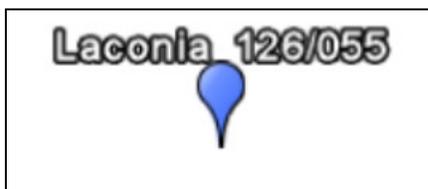
“NHDOT REVIEW REQUIRED.” This red paddle represents a state-owned bridge that cannot be crossed by your overweight vehicle without engineering review by NHDOT Bridge Design staff. Upon further engineering review, the specified overweight vehicle may be able to

cross this bridge with additional restrictions (for example, no shifting, no braking, not to exceed 5 miles per hour).



“DO NOT CROSS.” This red paddle with a black “X” represents a state-owned bridge that is closed to traffic, tonnage-posted (e.g. Weight Limit 6 Tons, Weight Limit 20 Tons, etc.), or has a structural element incapable of

safely carrying the specified overweight vehicle under any circumstances.



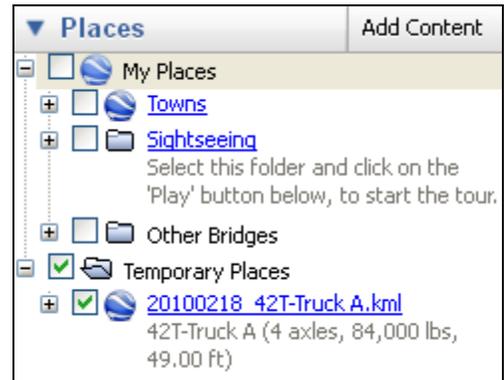
“MUNICIPAL REVIEW REQUIRED.” This blue paddle represents a municipally-owned bridge. All overweight vehicles are required to obtain permission from municipalities before traveling on municipally-owned bridges and roads.

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Google Earth Instructions (Cont'd)

It is essential that you manage your maps carefully in the “Places” window, typically located in the middle-left portion of the screen. Your results map may be automatically loaded into your “Temporary Places” folder through the BOPR program by selecting “Yes” at the map export window (explained previously). Your results map can be toggled on and off by clicking in the checkbox next to the map name. **To avoid viewing multiple sets of data, it is recommended that only one map be loaded into Google Earth at a time.** If multiple

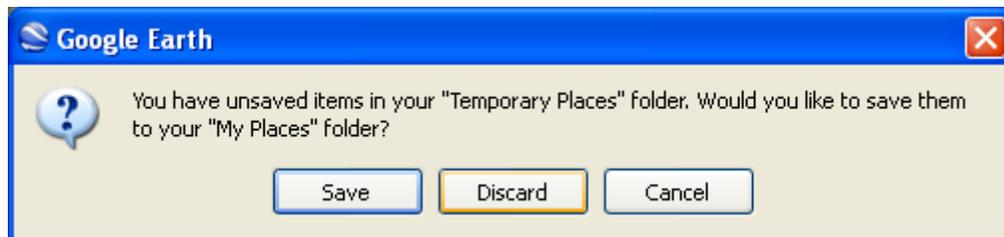


maps are loaded into Google Earth, the user must carefully manage the checkboxes in the “Places” window to ensure that only the pertinent data is being displayed within Google Earth.

Navigating through the State’s network of roads within Google Earth is simplified when the road labels are displayed. To turn on road labels, click the checkbox next to “Roads” in the “Layers” window, typically located at the bottom-left corner of the screen. Once road labels are turned on, a green checkmark will appear in the checkbox.



It is critically important to make the correct selection in the window shown below when you are finished using Google Earth. The program will ask you if you would like to save any “unsaved items in your Temporary Places folder.” It is highly recommended that you select “Discard” or “No” or “Do Not Save” (the closing message may vary based on the version of Google Earth you are operating). This will not delete the map file; it will simply unload it from Google Earth. The original map file can be re-opened by navigating to its location on your computer and double-clicking on it.



For additional Google Earth guidance, please consult the User Guide, Tutorials, and instructional materials located in the “Help” menu within Google Earth.