


II. Highway Map

10/13/2010

1. Add Data

Open a new map in ArcMap. Using the **Add Data** button, , on Standard toolbar, add the shapefiles required for the Highway Map. It is suggested that if already completed, save the Adoption map as Highway map and then start work on it. The following is a list of files which are required for this map:

- a. Shapefiles Required:
 1. Planning Boundary
 2. County Boundary
 3. City Boundary / Municipal Boundary
 4. Roads (Ex: Local, Road State System_Arcs and Thoroughfares)
 5. Railroad
 6. Rivers and Streams (Ex: Hydro24k_arcs)
 7. Water Bodies (Ex: MajorHydrography_polys;
HighQualityOutstandingResourceWatersDWQ_polys;
LIDARFloodMaps_polys)
 8. If applicable, consider adding the following shapefiles:
 - Airports
 - Ferries
 - Ports
 - National/State Forests
 - Parks and Game Land
 - Military Bases
 - Mountain Ranges
 - Schools
 - Blue Ridge Parkway
 - Other significant features of the area

Note: Keep in mind that these shapefiles are to help citizens find their surroundings.

- b. Use the spreadsheet “**CTP GIS Data Layers.xls**” to download above data to your local drive. The spreadsheet is located here:
S:\Shared\TPB Reference\Comprehensive Transportation Plan
- c. The above shapefiles should be clipped in advance using your study area boundary/planning boundary, to contain only what is needed for the map, and then used for the CTP map.

***NOTE*:** Make sure you clip out your area using the shapefiles from the ‘S drive’, save the clipped output on your hard drive and immediately remove/release the original ‘S drive’ files from your maps so that others can have access to the same.

2. Save Map

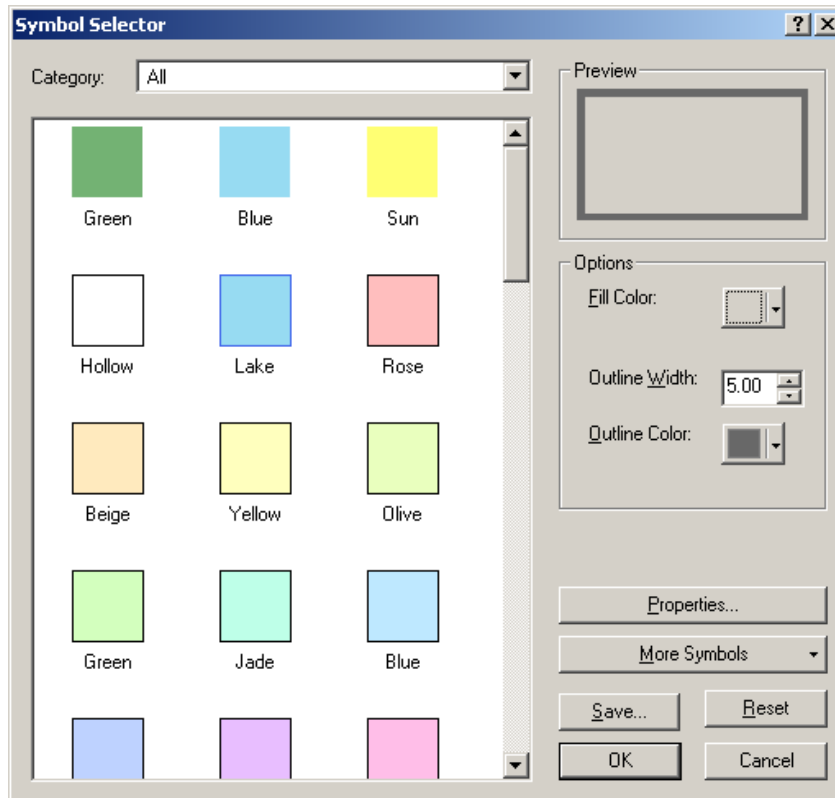
Use **File – Save As** and save the map as ‘UrbanAreaName Highway Map’.

3. Update Symbols

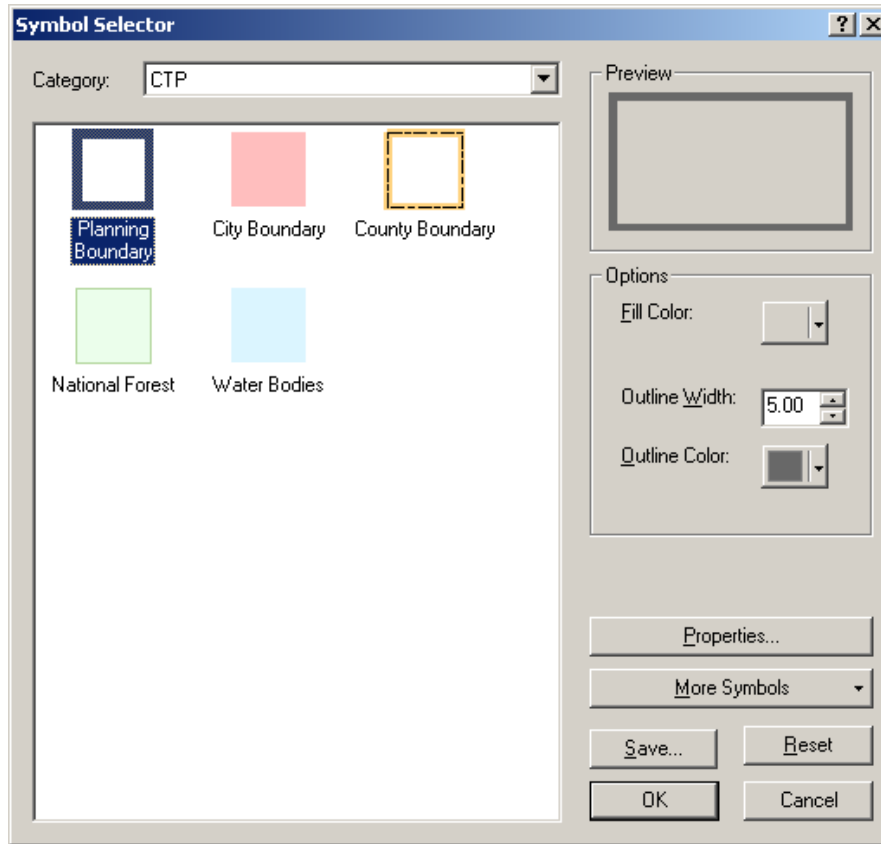
- a. Change the symbols for all the shapefiles added in Step 1 to match the standard CTP symbols by adding the TPB standard CTP symbols to your Symbol Selector. Use instructions mentioned below.

***NOTE*:** You can avoid re-doing this if you have already done this in the Adoption Sheet. You can **Copy** layers from Adoption Sheet (which already have CTP standard symbols) and **Paste** them in the Highway Map. Use **Shift** button to select and copy multiple layers at one time.

- b. In the **Table Of Contents** on left, click on the symbol under the 'Planning Boundary' shapefile to open the **Symbol Selector** window.



- c. Click on the **More Symbols** dropdown. Select **Add** and navigate to the location on your local drive where you saved the "**Comprehensive Transportation Plan.style**" file. (To be extracted from "CTP_Style.zip" located here: S:\Shared\TPB Reference\Comprehensive Transportation Plan\CTP Map Templates)
- d. Select the **Comprehensive Transportation Plan.style** file and click **Open**.
- e. In the Symbol Selector window, select **CTP** under the **Category** dropdown window.
- f. Select the **Planning Boundary** symbol and click **OK**.



g. Now, you should be able to select the appropriate standard CTP symbol for any shapefile feature (point, line, or area) using the symbols you just added under the **CTP** category in Symbol Selector.

h. Symbols Look Up.

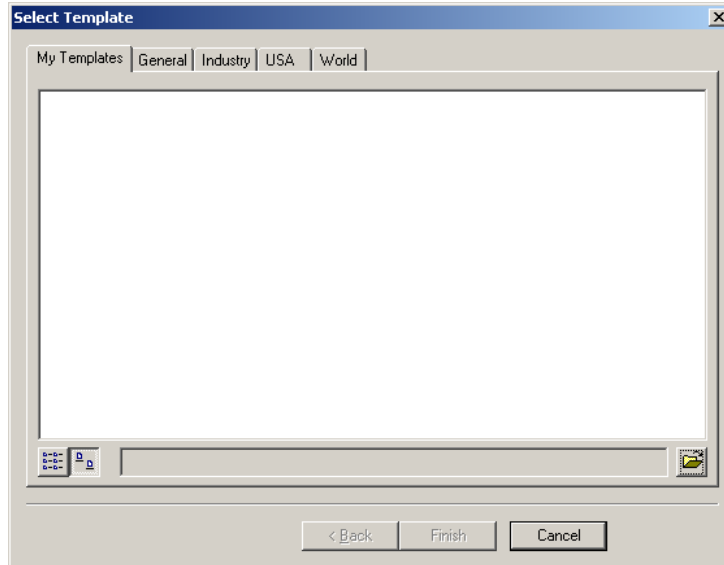
Read as: Shapefile - Symbol terminology in **CTP Category**


1. Planning Boundary - Planning Boundary
2. County Boundary - County Boundary
3. City Boundary / Municipal Boundary - City Boundary
4. Roads – Reference Road
5. Railroad – Reference Railroad
6. Rivers and Streams - Rivers and Streams
7. Water Bodies - Water Bodies

4. Obtain the CTP Standard Template for Highway Map

a. Click and navigate to **Layout View** in your map.

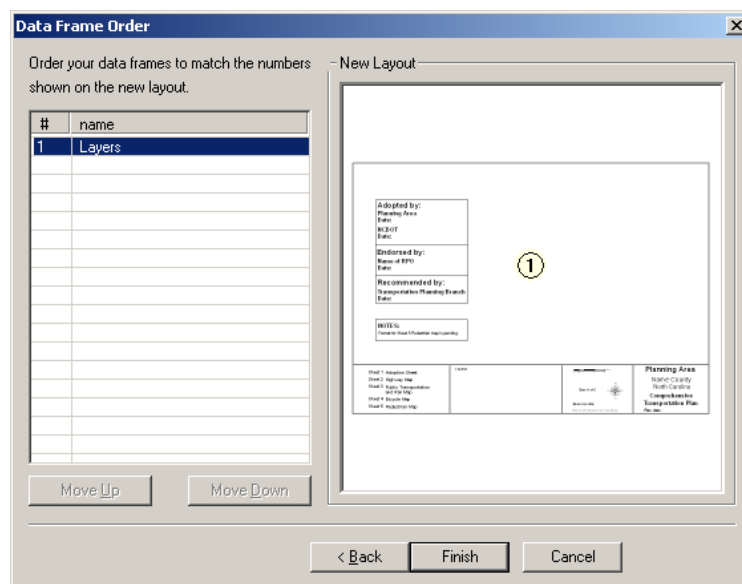
b. Click on **Change Layout** button, , located in the **Layout Toolbar**.



- c. Click on the **Browse** button,  , located in the bottom right hand corner of the above window.
- d. Navigate to “**S:\Shared\TPB Reference\Comprehensive Transportation Plan\CTP Map Templates** and select a ‘Highway Map’ template from the same style as used for the Adoption Sheet, from the following four styles provided:
 1. Landscape_Legend On Bottom
 2. Landscape_Legend On Side
 3. Portrait_Legend On Bottom
 4. Portrait_Legend On Side

NOTE: Once a particular type of template is selected, the remaining maps should also be selected from the same template style.

- e. Click **Open** after selecting the template for your map.



- f. Click on *Finish*.
- g. Save the map using *File-Save*.

5. Use Bookmark for Zoom Extent


In the **Layout View**, recall the bookmark created during the making of Adoption Sheet by selecting **View – Bookmark – Planning Area (Or whatever name you have given your bookmark)**.

6. Adjust Order of Shapefiles in Table Of Contents


- a. Change the order of shapefiles to display data on the map accordingly. For example, the Planning Boundary and County Line should be displayed on top of the roads, rivers, etc.
- b. In the **Table Of Contents**, *Select* and then *drag-and-drop* shapefiles in the correct position.

NOTE: The layer at top in the **Table of Contents**, displays on top in the map.

7. Edit Roads Layer

- a. Open the attribute table of Roads shapefile and using *Options –Add Field* add two new attributes, **CTPType_H** and **Status_H**, both of type Text and Length=50. Make sure the field names are documented in the metadata.
- b. Using *Selection – Select by Attributes*, or using *Select Features* tool, , and selecting by clicking, select the roads that are Freeways.
- c. Open the attribute table and click on *Selected* button at the bottom next to *Show All*. This should only display the records selected in step b.
- d. Highlight and right click on **CTPType_H** column. Select Field Calculator. In the box that comes up, type “**Freeway**”. If you want to edit each record separately while in the *Selected* tab, use *Editor - Start Editing* and once editing is completed, select *Editor- Save Edits - Stop Editing*.

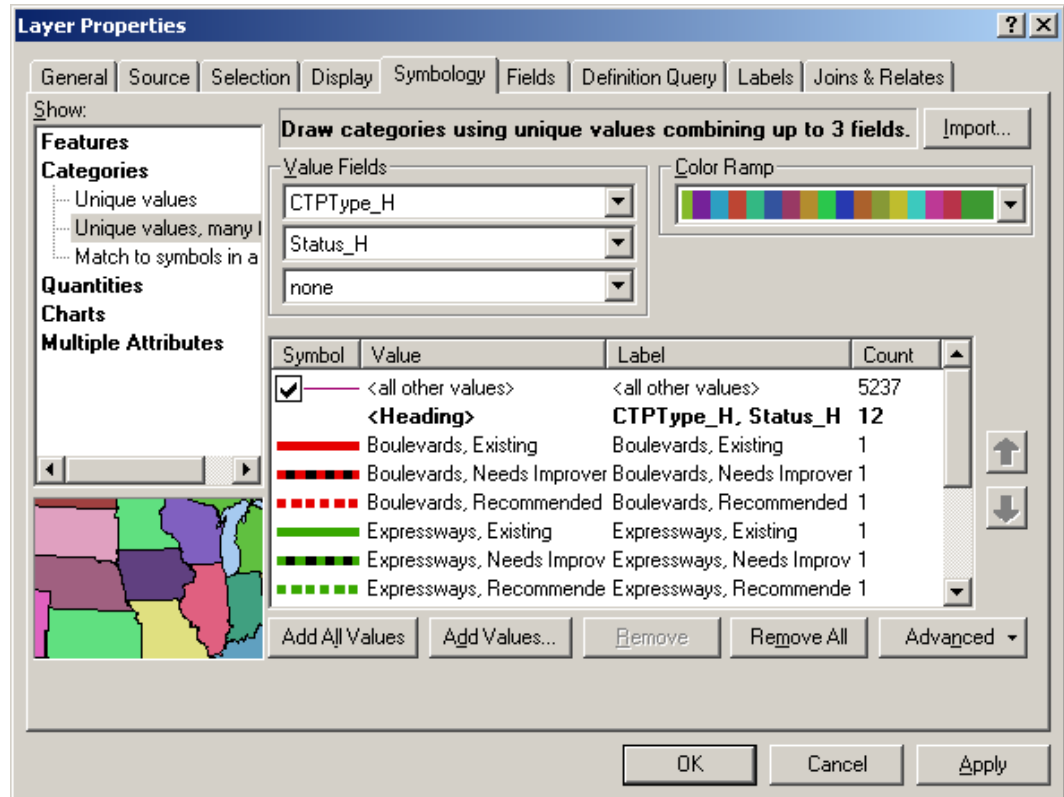
NOTE: Since it is a Text field, this will not work unless you type in the data with quotations in the field calculator box.

- e. In the attribute table, go to *All* tab and select *Options - Clear Selection*.
- f. Using *Selection – Select by Attributes*, or using *Select Features* tool, , and selecting by clicking, select the Freeways that are ‘Existing’.
- g. Open the attribute table and click on *Selected* button at the bottom next to *Show All*. This should only display the records selected in step f.

NOTE: In these selected records, the CTPType_H should already show as “Freeway”



- h. Highlight and right click on **Status_H** column. Select Field Calculator. In the box that comes up, type “**Existing**”
- i. Repeat steps *f to j* for Freeways - ‘Needs Improvement’ and Freeways – ‘Recommended’.
- j. Similarly, repeat **Steps b through i** to fill in
 - Expressways – Existing, Needs Improvement and Recommended

- Boulevards - Existing, Needs Improvement and Recommended
 - Other Major Thoroughfares - Existing, Needs Improvement and Recommended
 - Minor Thoroughfares - Existing, Needs Improvement and Recommended
- k. To match the symbols of the roads to the Legend, right click on Roads and select **Properties - Symbology - Categories - Unique values, many fields**.
 - l. Select **CTPType_H** and **Status_H** under the Value Fields and click on **Add All Values**.
 - m. To change the symbol of each value, double click on the symbol for each and select the appropriate symbol from the most current **CTP Standard Style** file for symbols as explained in Step 3 above.



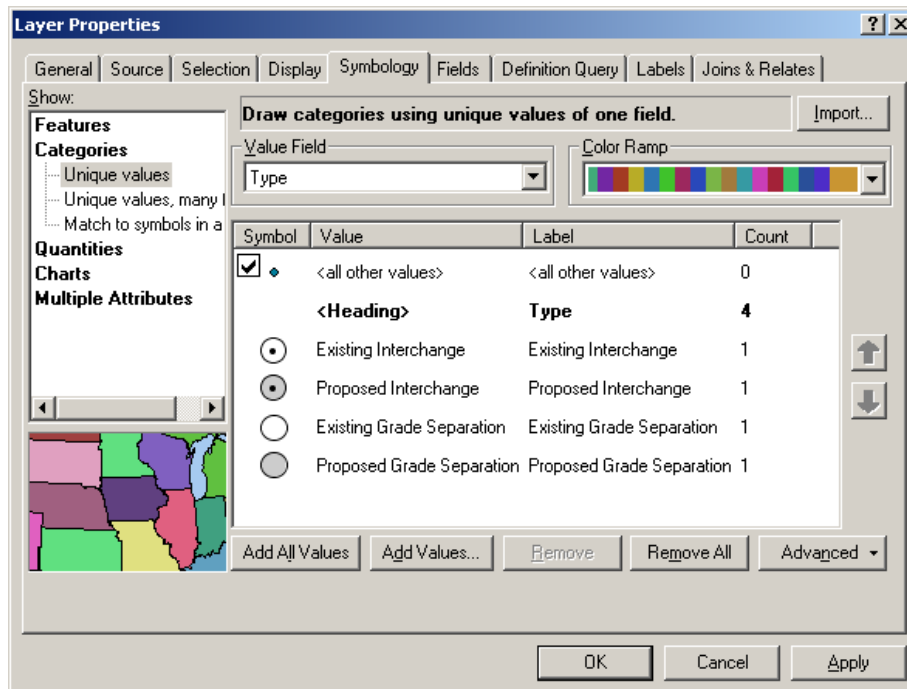
8. Add Interchange/Grade Separation layer

Add the layer if you have one, else follow instructions below to create a new layer.


- a. Using ArcCatalog, , create a new point shapefile.
- b. Open ArcCatalog, browse to the project folder location, right click and select **New - Shapefile**. Give a name (Ex: ProjectName _Interchanges_ Grade Separations) and select the feature type to be **Point**.
- c. Using Add Data, , add the new shapefile to the Highway Map.
- d. Open the attribute table. Go to **Options - Add Field** and add a new field, **Type**, of type Text and Length=50.
- e. Using the **Editor** Toolbar, **Start Editing** the shapefile to add new features. Make sure the **Target** references to the correct shapefile during this task.



- f. Using the *Sketch* tool, create new features for interchanges and grade separations, existing as well as proposed, needed on the map.
- g. For each feature, fill in the information under **Type** in the attribute table. It should be one of the following:
 - Existing Interchange
 - Proposed Interchange
 - Existing Grade Separation
 - Proposed Grade Separation
- h. Select **Editor – Save Edits – Stop Editing** once the required features have been created.
- i. Right click on the shapefile and go to **Properties – Symbology – Categories – Unique Values**. Under **Value Field**, select **Type**. Click on **Add All Values**.
- j. To change the symbol of each value, double click on the symbol for each and select the appropriate symbol from the most current **CTP Standard Style** file for symbols as explained in Step 3 above.



9. Update Map Data

- a. In the **Layout View**, using the **Layout Toolbar** zoom button, , locate and zoom on the “Planning Area” text on the map.
- b. Select the text box, right click and go to **Properties - Text** tab and type in the correct information for each of the following data, located on the map in the Legend box:
 - Planning Area – Change to your area name (Ex: Norwood)
 - Plan Date – Provide appropriate date (Ex: June 20, 2008)
 - Base Map Date - Provide appropriate date (Ex: August 4, 2006)

- c. TIP projects should not be shown on the CTP maps. The report may include a figure for TIP projects, but the TIP projects will not have a TIP project number on the CTP maps.
- d. For county plans that have donut areas (urban areas that have individual CTPs or thoroughfare plans) there should not be a date for the plans referenced. It should be shown as “ See UrbanName CTP” or “ See UrbanName Thoroughfare Plan”.
- e. Make sure the north arrow is pointing in the correct direction with respect to your area/map.
- f. **Insert - Text** and type “DRAFT” and move the text around the legend area of the map. After a plan has been adopted locally, it will be changed from “DRAFT” to “RECOMMENDED” prior to being sent to the Board of Transportation.
- g. In addition, the map should be labeled as "Working Copy" instead of "Comprehensive Transportation Plan" until the CTP roadway classifications are applied. This should reduce the likelihood that a working map would be confused with a draft plan.




10. Insert Photo or Logo (optional)

Using the Standard Toolbar on top, select Insert - Picture and you can then insert a GIF photo or logo that is suitable for your area. The picture is not required, but if used, it must be a GIF. If it is not a GIF, the map will become too large of a file to be placed on the internet once it is completed. The logo should be of the area and not the TPB logo. If there is a problem inserting the logo, click on the file name and hit the delete button. Now try inserting the picture again.

11. Labels

- a. Perform labeling while in **Data View**. Do not label items in the Layout View because the labels will not adjust with zoom in the map. Labeling can be done in a variety of ways, but the labels must match the standard list below.
- b. The road layer should have symbol colors that match the Highway Map legend (i.e. green, blue, red, and black) with black fonts for the labels. The Interstates, US, NC and SR routes should have the appropriate symbols for their labels.

Following is a list of required layers to be labeled with the color and labeling convention.

Layer	Color(Highway Map)	Color(Other Maps)	Style
Rivers and Streams	Sodalite blue	Sodalite blue	Name in italics
Water Bodies	Sodalite blue	Sodalite blue	Name, but space the letters to take up the space
Interstates	Blue/Red	40% Gray	
US	Black	40% Gray	
NC	Black	40% Gray	
SR	Black	50% Gray	Name (SR #) i.e. Elm St. (SR 1111)
Roads	Black	50% Gray	Name
Municipality	Black	50% Gray	Name, but space the letters to take up the space
County	Black	50% Gray	Name, but space the letters to take up the space

- c. Please view the warnings and precaution section of this procedure to view labeling warnings before labeling the map.