

## Plotting Nodes with GNE in Windows

- 1) Push the button on the menu bar on the screen with a black square; this will allow you to plot a node.
- 2) Point to the location where you want the node to be, hit the left mouse button to set the coordinates of the node, adjust it as necessary.
- 3) Hit the right mouse button to plot the node.
- 4) Push the "N" button on the menu bar, point to the node and hit the right mouse button.

**Helpful hint:** If you use nodeplot/open (looks like a bold letter “N” with a box on it); you can plot a node and open it at the same time.

- 5) Enter a type for the node (intersection with or without delay, etc.), give it a name (label) and enter data on the menu under the attributes.

**Helpful hint:** You can reduce the amount of data you need to enter if you go to Tools/Initialize and set the values that don't change before you plot nodes or links.

## Plotting Links with GNE (Windows)

- 1) Push the link plot/link button on the menu bar (looks like a bold letter "L" with a bar on it) with the left mouse button and the "L" button with the right mouse button.
- 2) Point to the first node of a link and click, then the second and click; this should open up the link for data.
- 3) Pick a link type, give it a label and point to attributes and click.
- 4) Enter data for the link. (Point to item, point and click at value, enter data, point and click at OK, point and click at OK.) Note for those links that are east-west use an approach code of 1S3M (east-west, shared lanes, average signal progression, main road), for those that are north-south use 2S3M, for those that are diagonal southwest to northeast use 3S3M, for those that are southeast to northwest use 4S3M. (Or you can just enter 0S3M for all links, use Initialize.) No blanks!
- 5) You can get travel times on the links three ways: a) Enter it directly as travel time A to B and as Free Travel Time; b) Enter the speed on the individual link; or c) Enter nothing and use the default speed as entered under Schema/System Attributes. If you use speeds, the proper scale of the map must be entered in the System Attributes menu.

## **Background Image Method for Plotting Networks**

1. Scan the map you want to use for your network; use a photo or graphics editor to make it somewhat light in color. Save it as a jpg image.
2. In GNE, go to View, Background, JPEG, and give its file name in the background graphics menu (click on Import to browse for the file).
3. Resize the drawing to be the appropriate scale for your network. Push the Link Plot and Open button. Click on two known points to get its coordinates (they appear in the bottom left corner) and determine how your image is scaled for GNE. Then use the Transform, Scale menu to adjust the drawing. For example, if two points were 43 pixels apart and you wanted them to be 100 pixels apart, you would enter  $100/43$  for the X and Y scale factors.
4. Plot your nodes and links using the Plot/Open buttons. Use Tools, Initialize Nodes or Links for each type of link or node. (To make scroll bars appear, use the Transform Scale by half until the whole drawing appears; plot some nodes in each corner and then use Transfer Scale by two to get back to the original size.)

## Things That Can Go Wrong with GNE/QRS

Can't enter any data for links or nodes. You forgot to load QRSEasy.DTA at the beginning, which would define your network as a highway network. Load QRSEasy.DTA and APPEND your network.

Error in Categorical Variable. You didn't properly enter 4 items as the Approach codes. Make sure there are no spaces, use Capital letters, do it using the "work" button to get the proper categories.

Run Time Error with QRS, or Only Partial Results. Someone has grabbed all the memory in the computer for some other use. Go to another computer.

No Trips in the System message when QRS finishes. This is no problem, since you are only finding a minimum path tree. Continue on and look at Result.

Can't find RESULT.DTA. Make sure it is set to YES in the reports dispositions file and that your floppy (A: or B:) is given as the reports directory on the files menu of QRS. Try looking on the hard drive. Use Search under the Tools menu of Explorer.

Undefined link error in QRS. This happens if you plot links on top of other links. Try moving a node and see if there are hidden links or change the color for other link types to white.

No minimum path tree displayed. This can happen if you only have one centroid (add several more) or if your seed tag has multiple pieces of string or is not connected to a centroid.

Illogical minimum path tree. You might have put a centroid where it should be an intersection (trips only begin and end at centroids; they cannot pass through centroids). Change colors to find it.

A message says "Multiple opposing approaches. Node is 8". Make sure you have the direction coded for N-S, E-W, etc in the first digit of the Approach code for your streets, If you use zero too often and the streets are at a bit of an angle, that may be the problem.

To find the node that is "8", go to the labels toolbar and then node labels for intersections with delay and pick serial from the list, the node numbers should show up on the screen. You can also display approach codes to find the guilty node.

## How to calculate travel times in a network and display them on the screen:

(You may want to do this if you have entered speeds on links and wish to see what the travel times are on the links as a display. It is not necessary, but can be convenient.)

1. Go to Tools/Calculate/Link Ranges and enter the following:
  - a) for one-way streets: Range begin at 2, end at 2, Parameter -- enter L56 (“L” for length of link, “5” for map scale, “6” for default speed)
  - b) for two-way streets: Range begin at 1, end at 1, Parameters enter L56, hit OK
2. Go to Tools/Calculate/Relations; enter the following:
  - a) on line 1 (for two-way streets):
$$A3 = 60 * p1 / ((A2 \% p3) * p2); A4 = A3$$
(explained below)
  - b) on line 2 (for one-way streets)
$$A3 = 60 * p1 / ((A2 \% p3) * p2)$$
  - c) Hit Start button.
- 3) To display the results, go to View/Labels/Link labels and do the following:
  - a) for one-way streets, go to First and Select Label: Travel time A to B
  - b) do the same for two-way streets
  - c) under View/Labels/Link labels/Format, set the link label length to 3
- 4) Save your process for future use if you want with Tools/Calculate/Write and give it a name, say, LINKTIME.PGM.

[Explanation: The formula calculates travel time -- Attribute 3 for two-way streets -- as a function of p1 -- parameter 1, which is item L on the systems menu (the distance between link ends), A2 -- the speed on the link and parameter 2 -- the scale of the map in pixels per mile. Basically, the formula is  $\text{time} = 60 * \text{length} / (\text{speed} * \text{map scale})$ . The expression  $A2 \% p3$  means “take the first non-zero item of A2 -- the speed on the link, or p3 -- the systems default speed.” L, P1 and P2 were defined in step 1a, when you entered L56. Whew.]