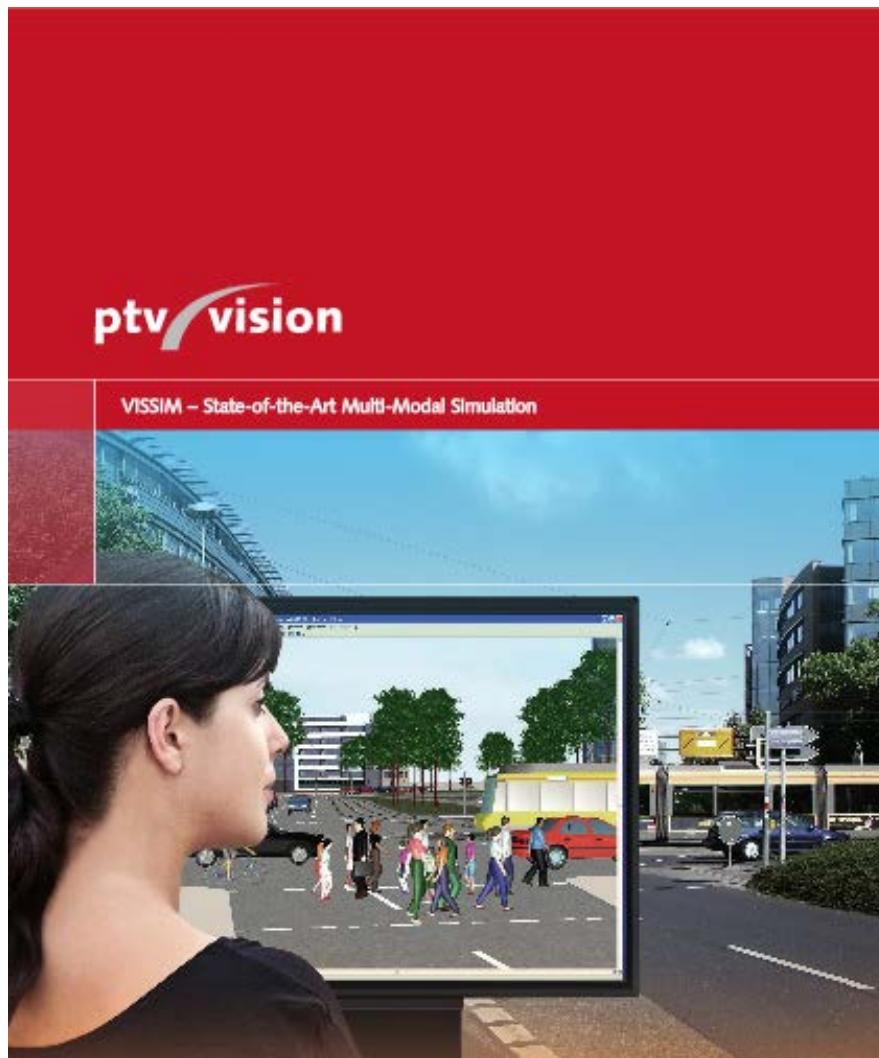


Getting Started: VISSIM



Version 1.1

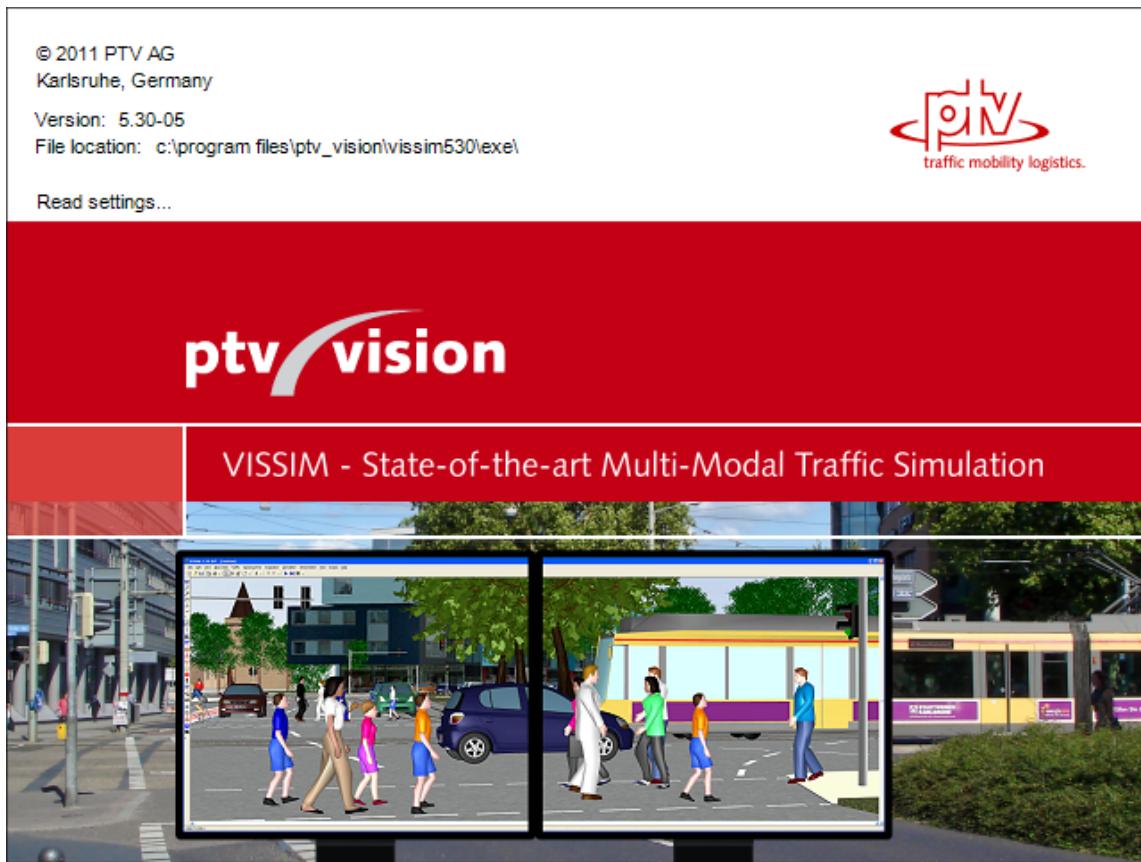
February 5, 2015

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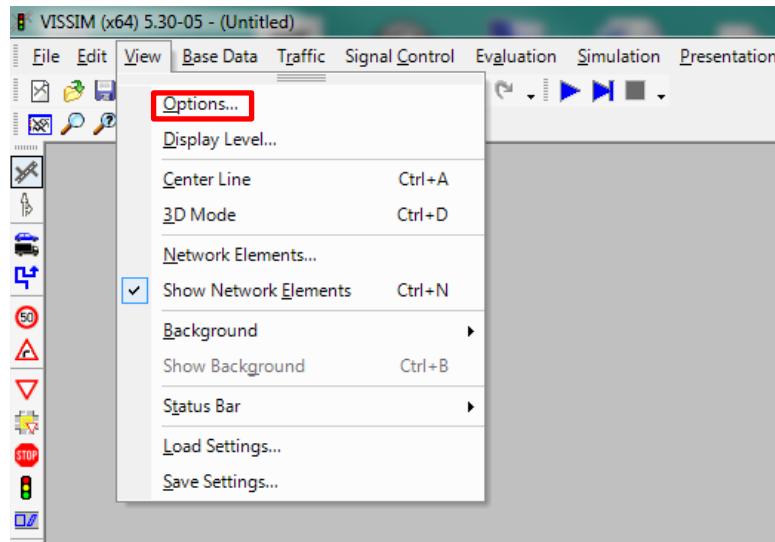
Section 1:

General Settings

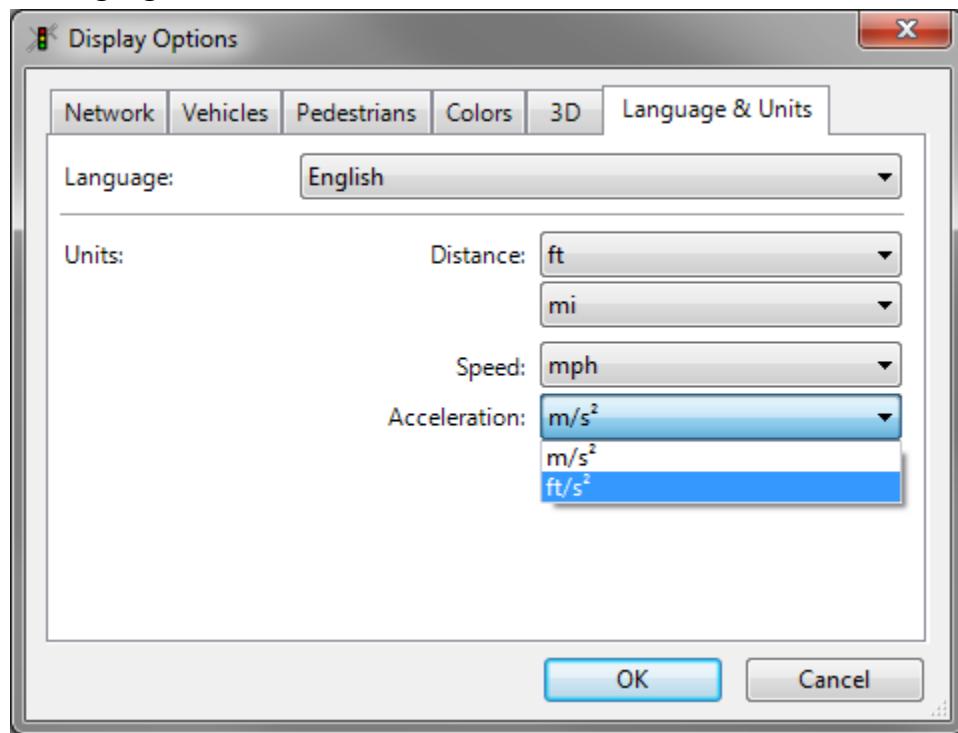


Switch to English units:

1. Go to **View**, then **Options**



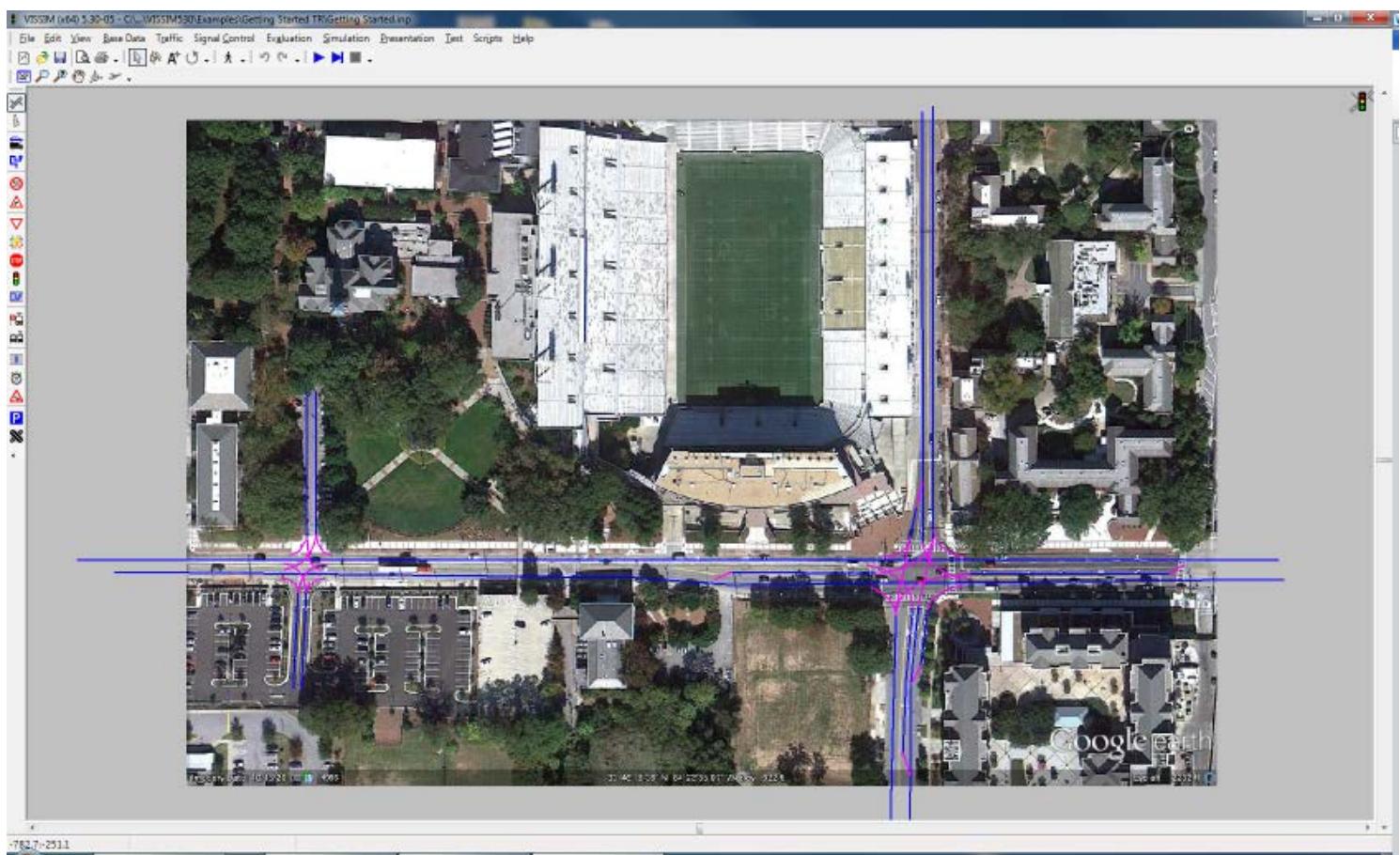
2. Select the **Language & Units** tab



3. Change **Distance**, **Speed** and **Acceleration** to English units.

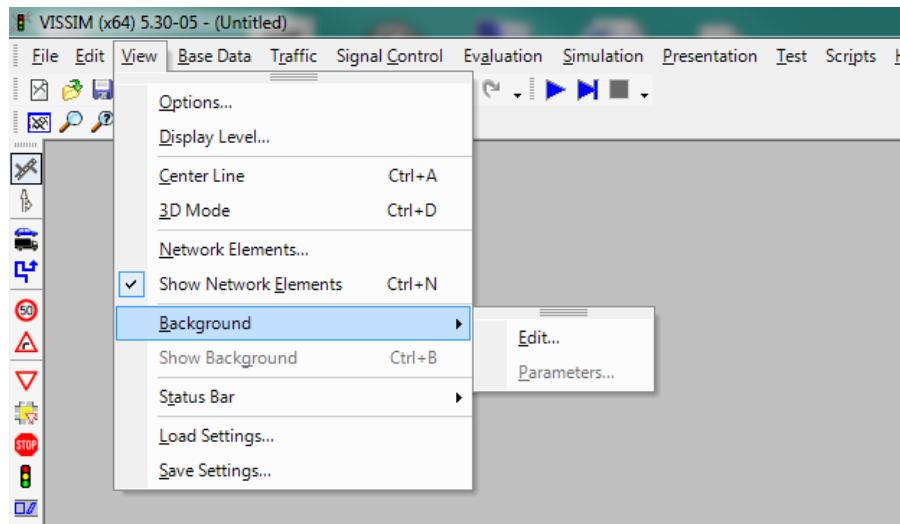
Section 2:

Build a Network



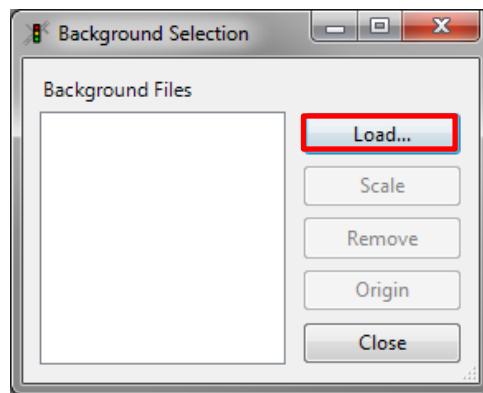
Lesson 1: Add a background image

1. Go to **View > Background > Edit**



2. Click **load** and navigate to image file and select **Open**.

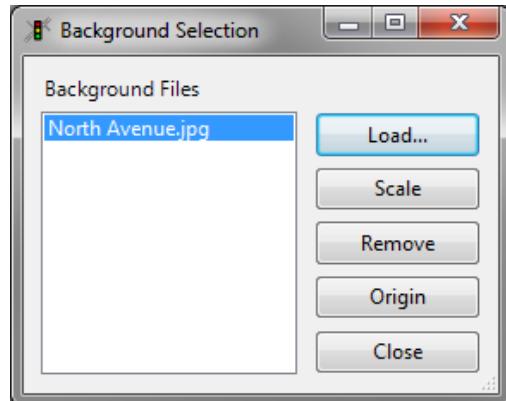
The image used in this example can be found [here](#)



* supported background formats

Supported bitmap formats	Supported vector formats
BMP	DWG ¹⁾
JPG	DXF ¹⁾
PNG	EMF
TGA	WMF
TIF (uncompressed & packbits)	SHP (shape files)

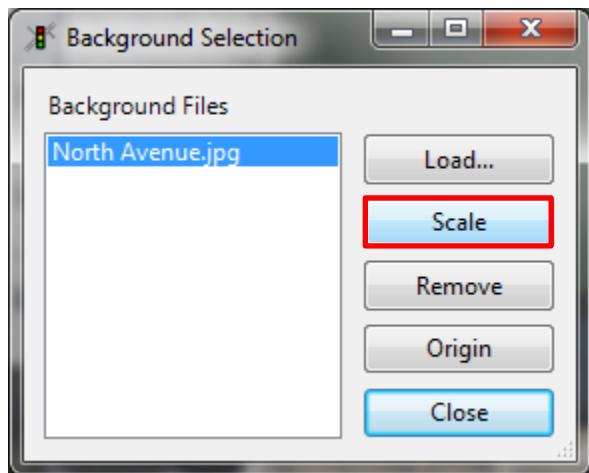
3. The image name displays in the background files list and loads in the bottom right hand corner of the screen



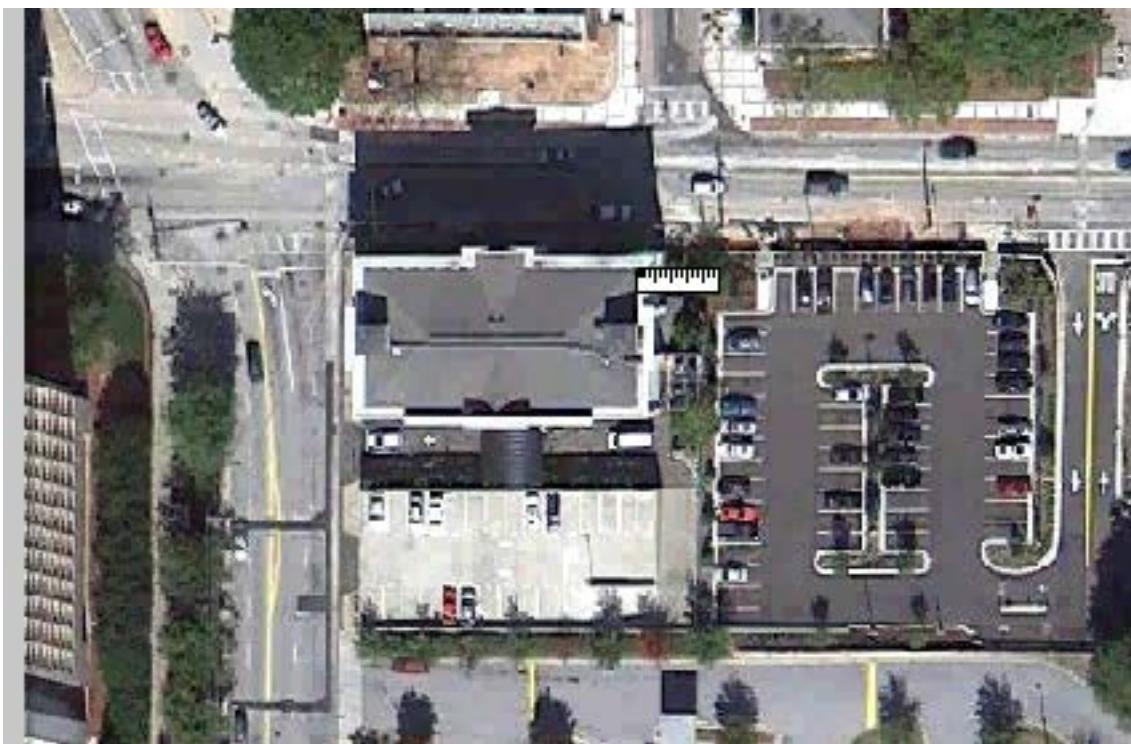
*click the show entire network button to locate image



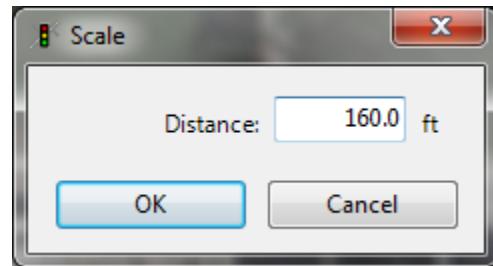
4. Select **Scale** to scale the image.



5. A scale will replace the mouse icon. Click and drag the scale over a known distance (ex across one 12ft lane, a roof top width, parking space, etc...)



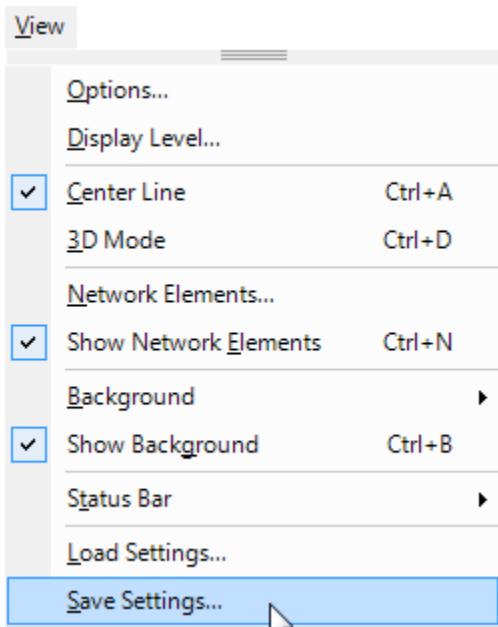
6. Then enter the known distance in the scale window. Click **OK**



7. The image is now scaled. Click the show entire network button.



8. Go to **View > Save Settings**



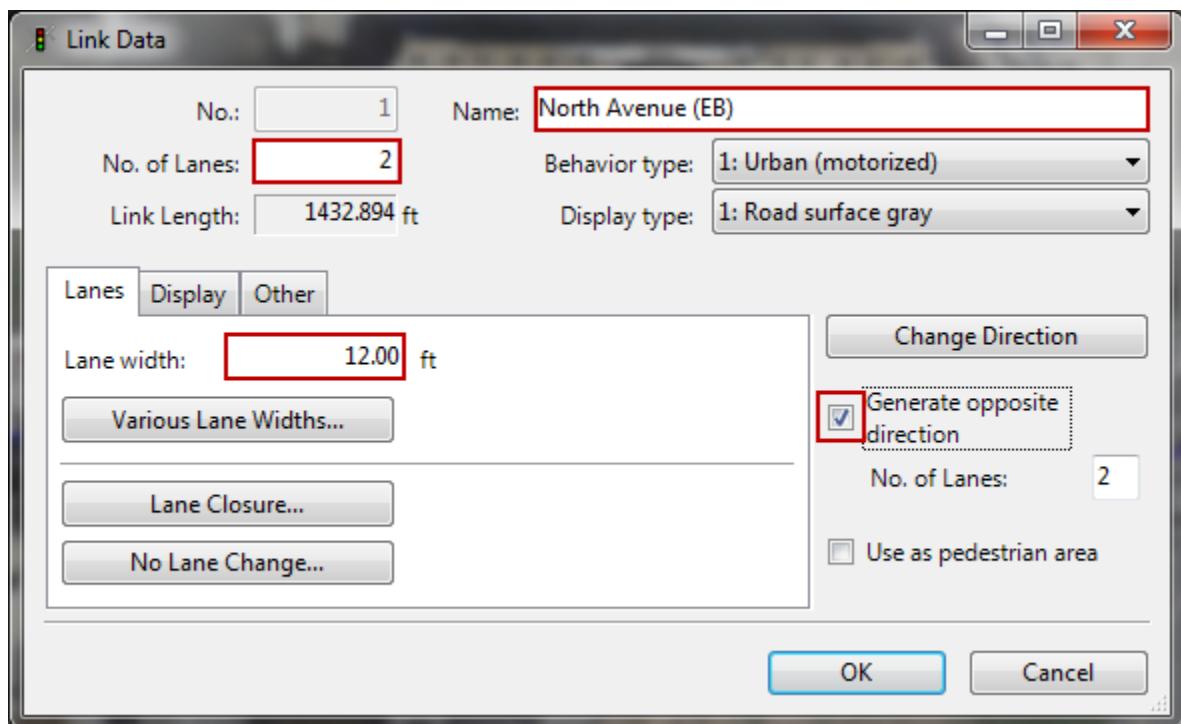
9. Name and save your layout settings

* You must load settings each time you open a new session.

Lesson 2: Draw/Edit links (*links are one way*):

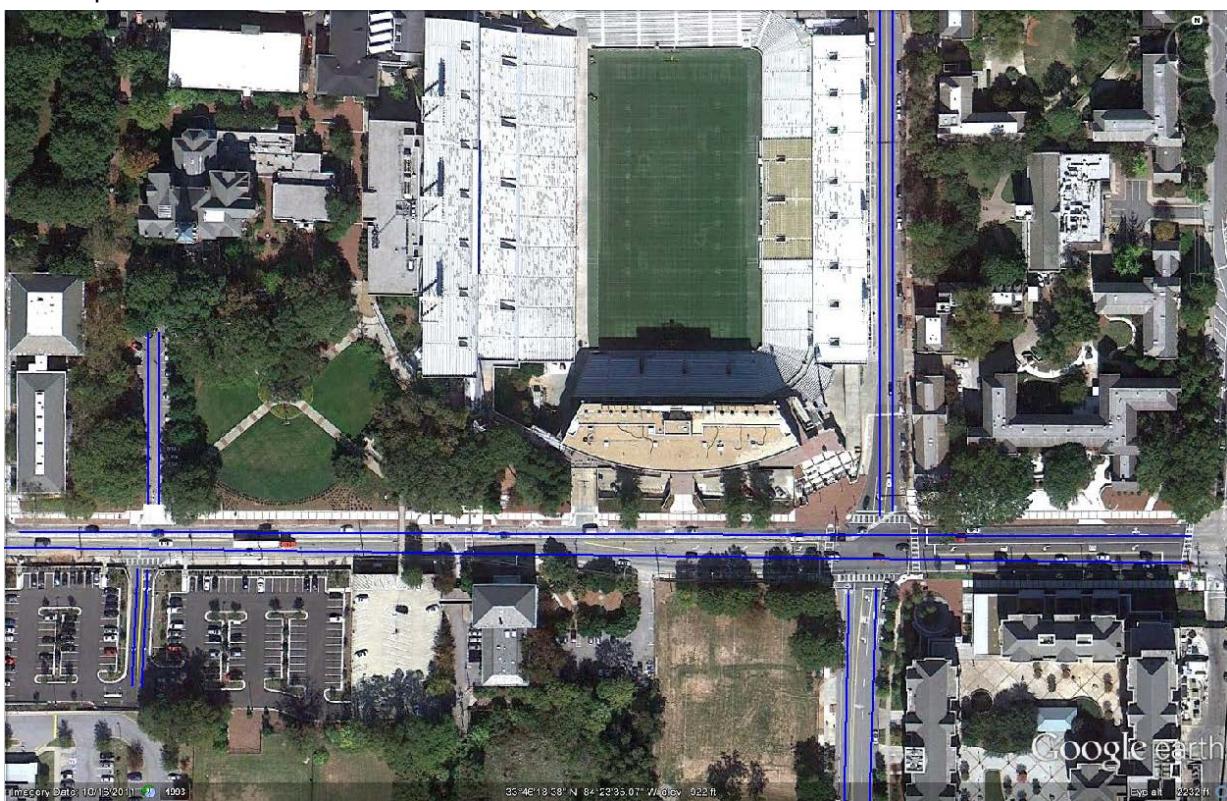


1. Click the **link** button
2. Click and Hold the right mouse button and drag in the direction of travel to create a link.
**draw the link in the center of the direction of travel. If one lane- the middle or the lane, if two lanes-the center line, if three lanes-the middle of the center lane, etc....*
3. Enter the following in the **Link Data** Window
 - a. **Name:** Street Name
 - b. **No. of Lanes :** # of lanes in one direction (thru lanes)
 - c. **Behavior Type:** Urban or Freeway
 - d. **Lane Width:** leave at 12ft (or reduce to 11ft to view line striping on background image)

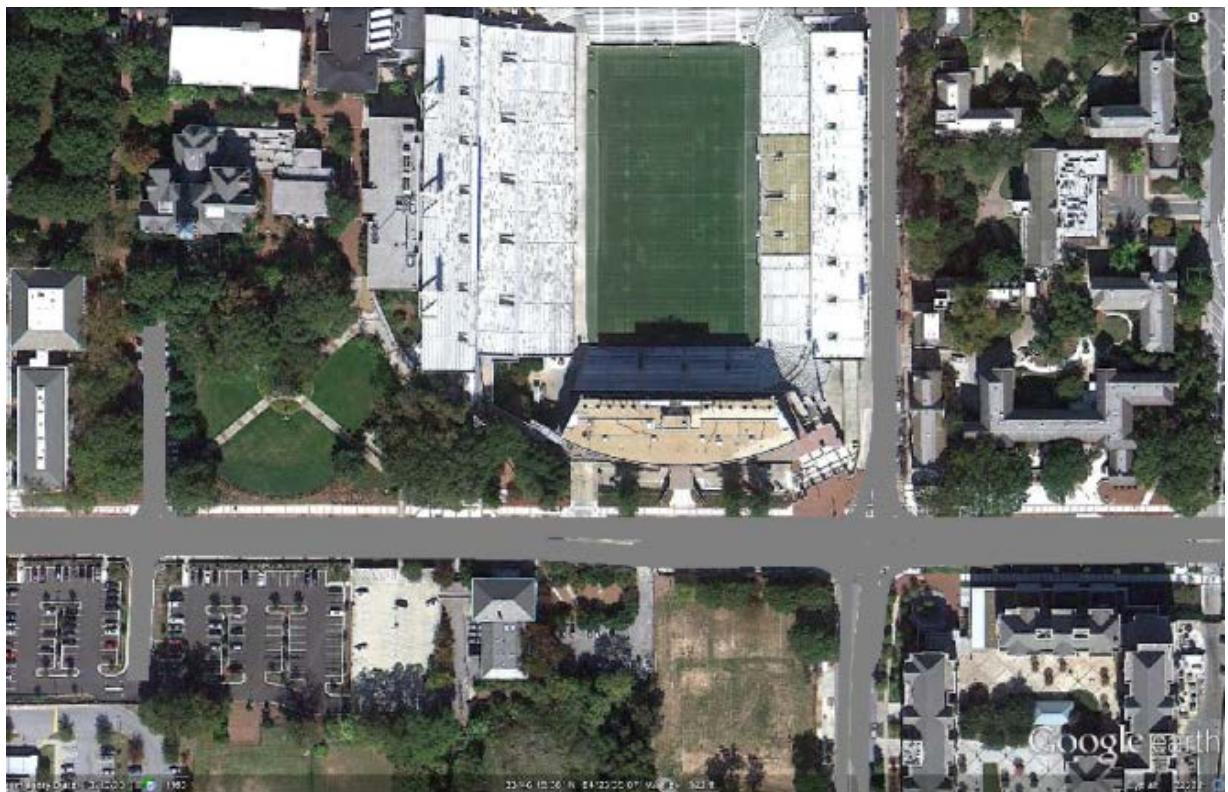


***SHORTCUT** Select “Generate in opposite direction” to create a mirrored link in the opposite direction (i.e. For a two way street) The link may need to be shifted to the exact offset.

4. Repeat to recreate the entire network to be modeled.



*CTRL + A will change the link view from centerline (above) to lane (below)



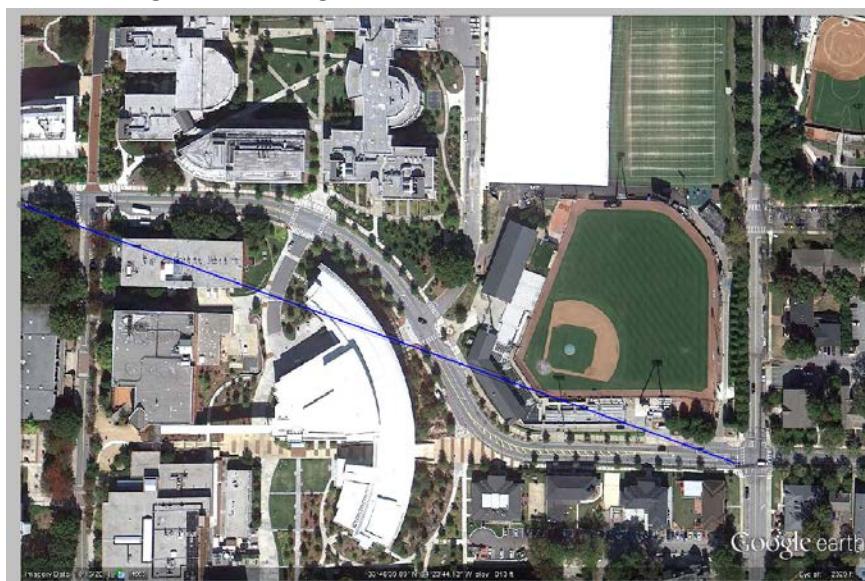
To move a link:

1. Left click a point on the link and drag to desired location.
2. Move as many points as necessary to create the desired alignment
 - a. To create a point - left click to select a link, then right click to add a point
 - b. To delete a point – left click a point and drag it over the nearest point

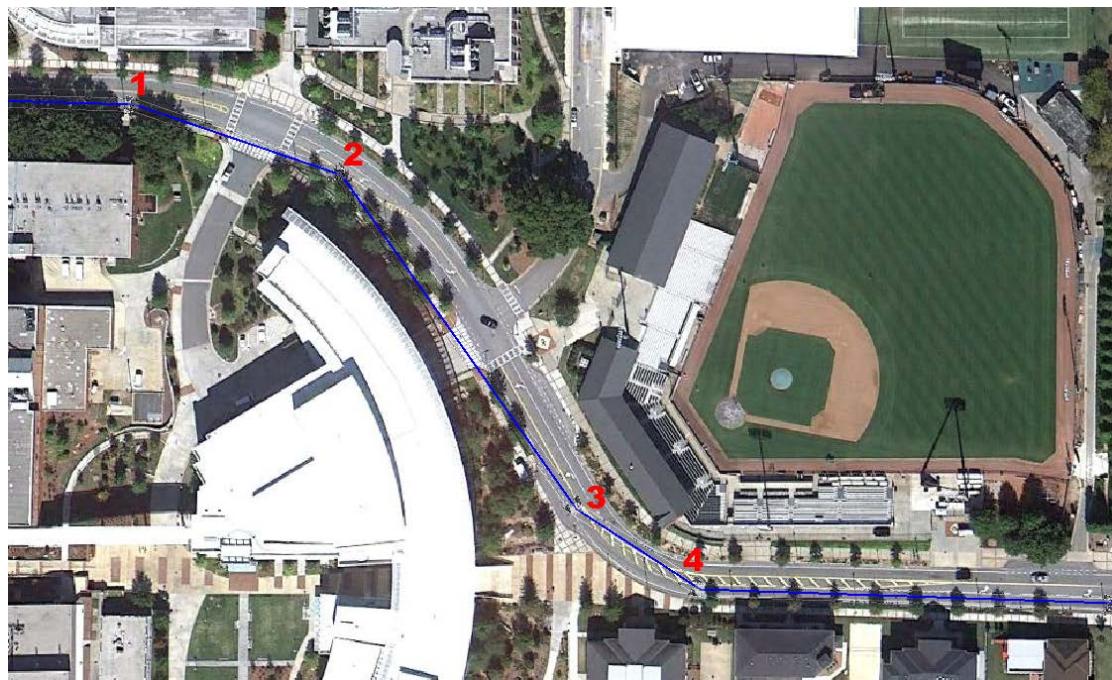
Create a curve:



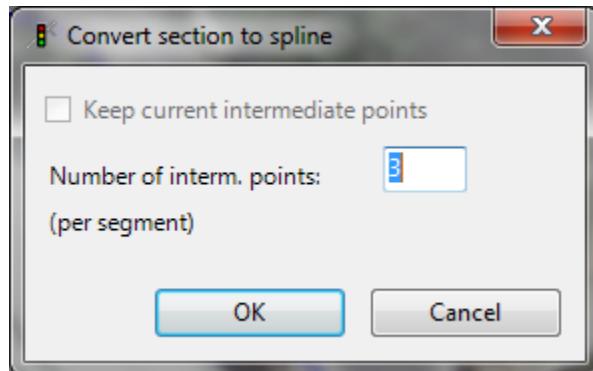
1. Draw a line that closely follows the alignment
 - a. Draw a straight line for begin to end.



- b. Right click to add four additional points (one before and after each curve)



2. Left click and hold on a point to the right of Point 1 (be careful not to select the point itself), drag along the link and release just before Point 2. This box will appear.



3. Enter the number of points desired (the higher the number of points the smoother the curve)

4. The curve is created



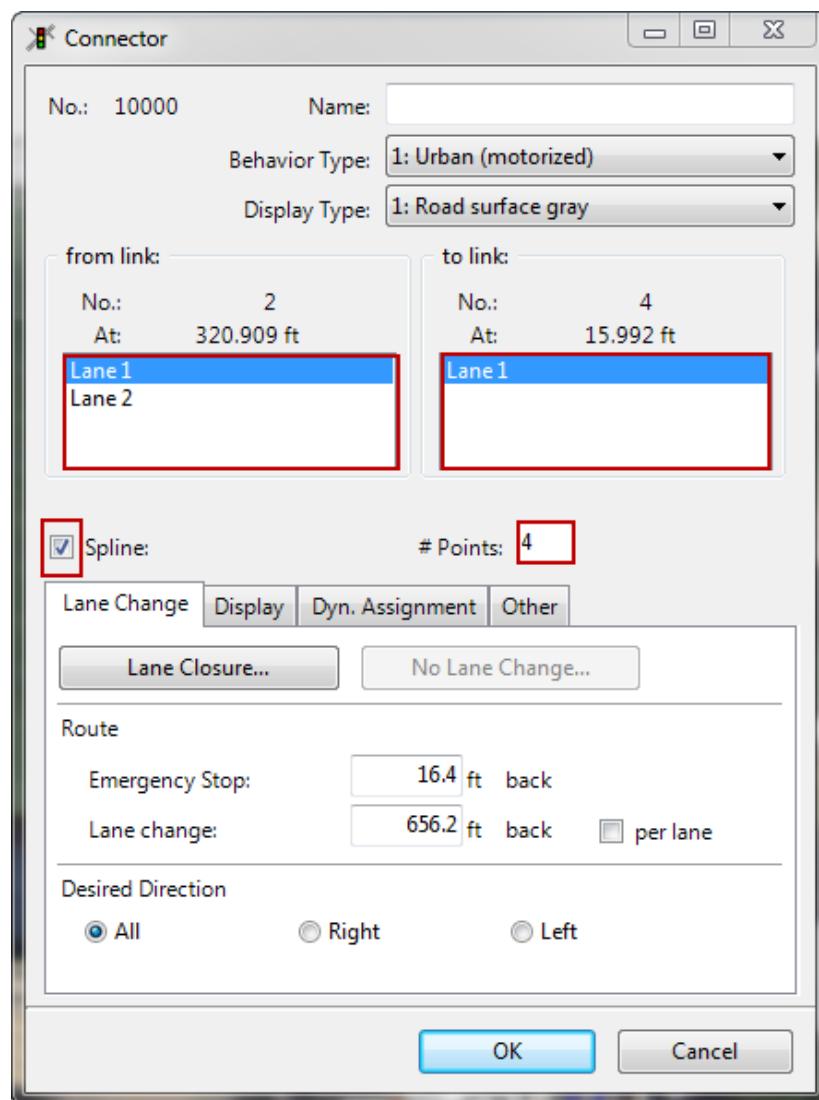
5. Select individual points to smooth out the curve if need. Or repeat the process from step 1.

Lesson 3: Draw connectors

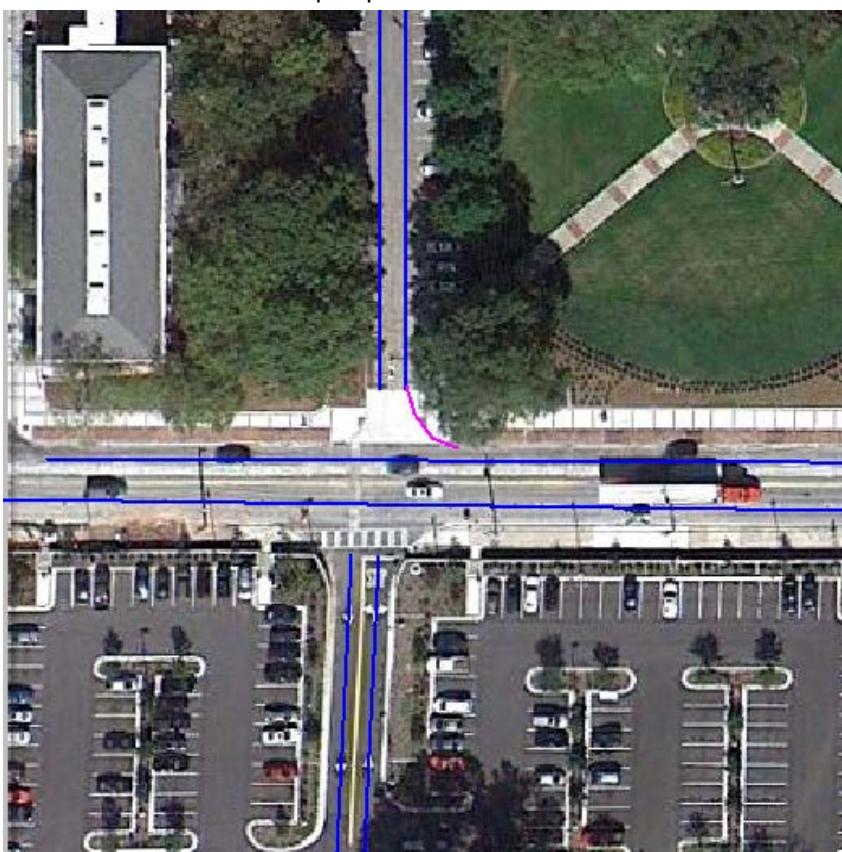
(connectors are used for turn movements)



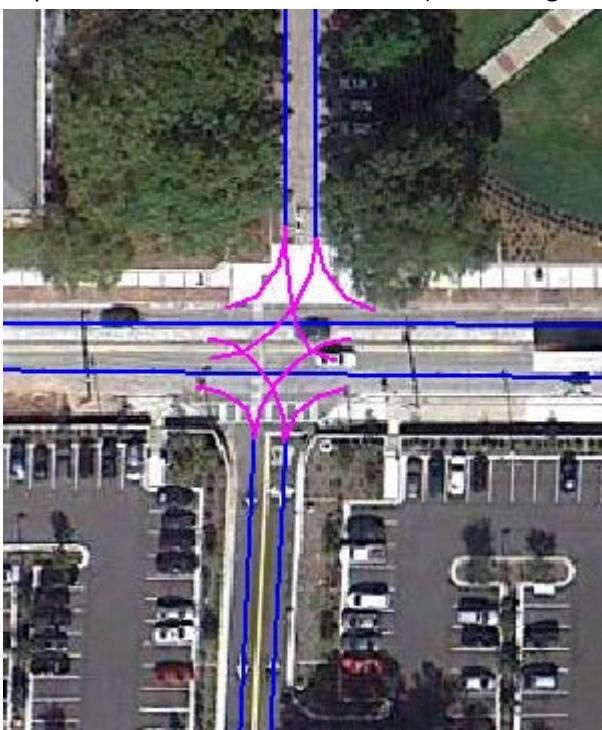
1. Click the **link** button
2. Right click on the westbound link ahead of the intersection and drag to the North leg for a right turn. This dialogue box will open.
 - a. Select the **from** and **to link** lane (lane 1 is the outside lane)
Typically right turns come from lane 1 and left turns from lane 2
 - b. Make sure **Spline** is checked and enter the number of points (2-4 for right turns, 4-6 left turns)
 - c. Click **OK**



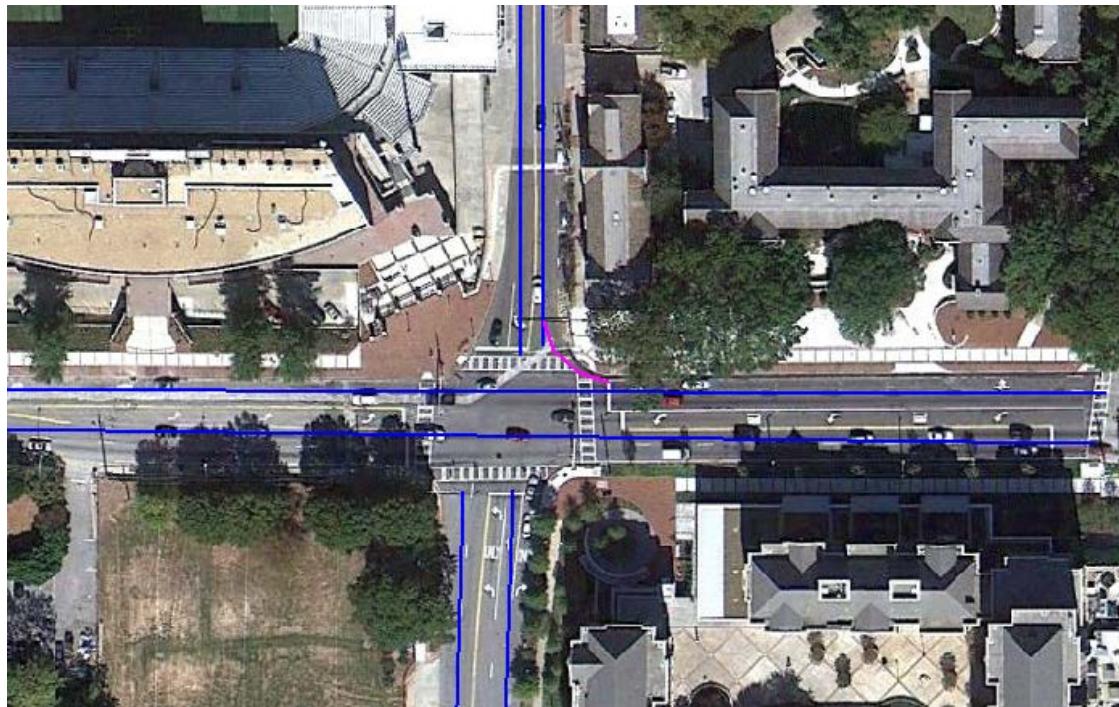
3. The connector will show up in pink.



4. Repeat for all the turn movements (left and right turn in and left and right turns out)

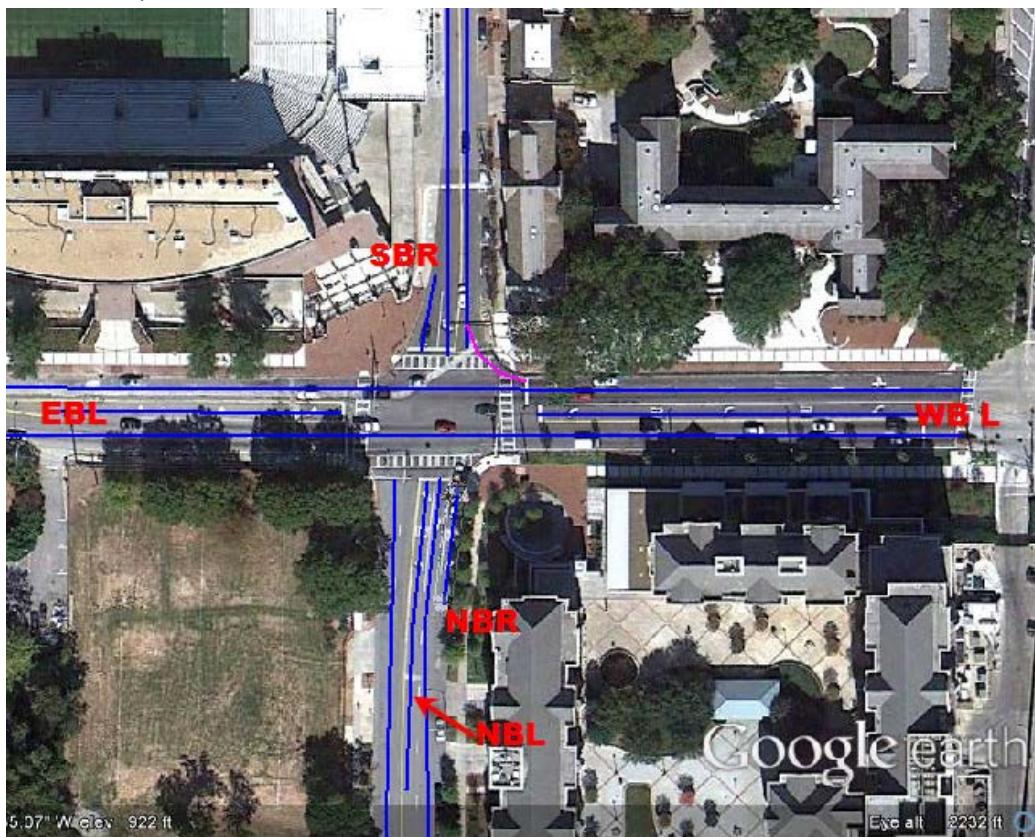


Add turn lanes

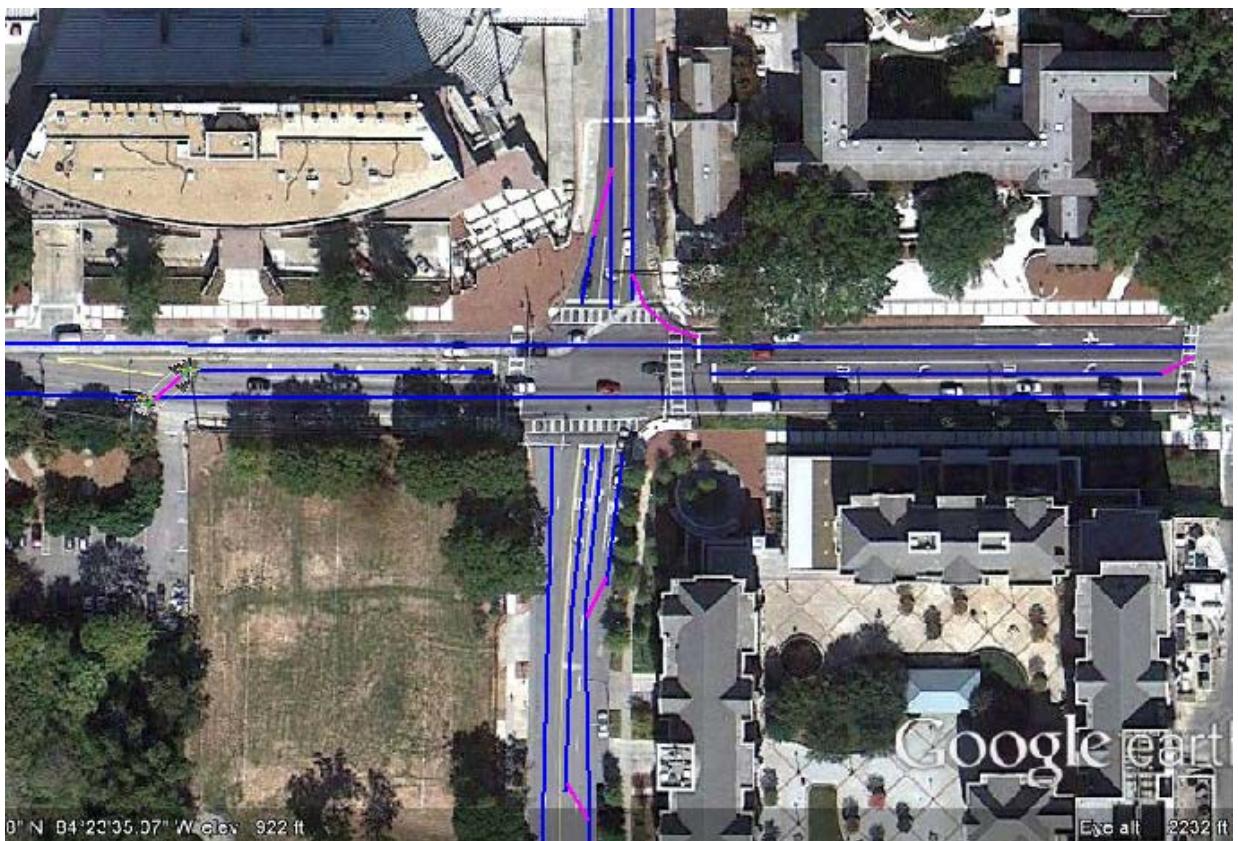


Turn lanes are needed for the WB left turn, SB right turn, EB Left turn and NB left and right turns.

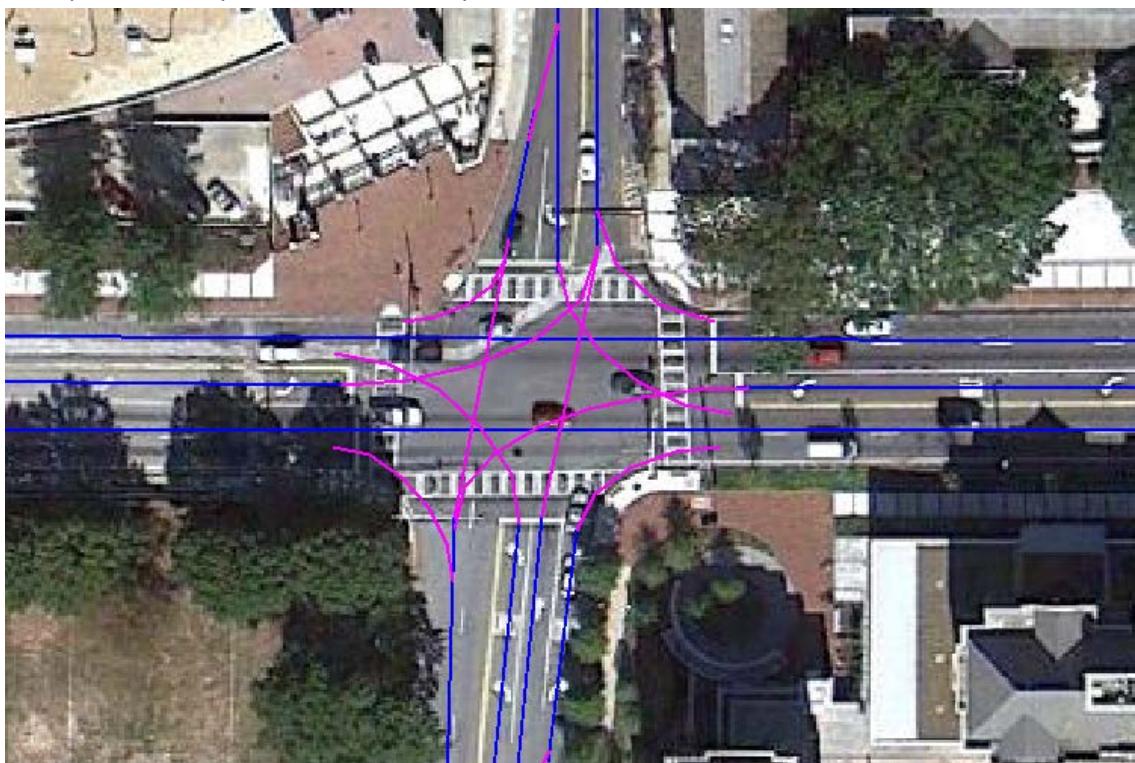
1. Create a separate link for the turn lanes.



2. Connect the turn lanes with connectors



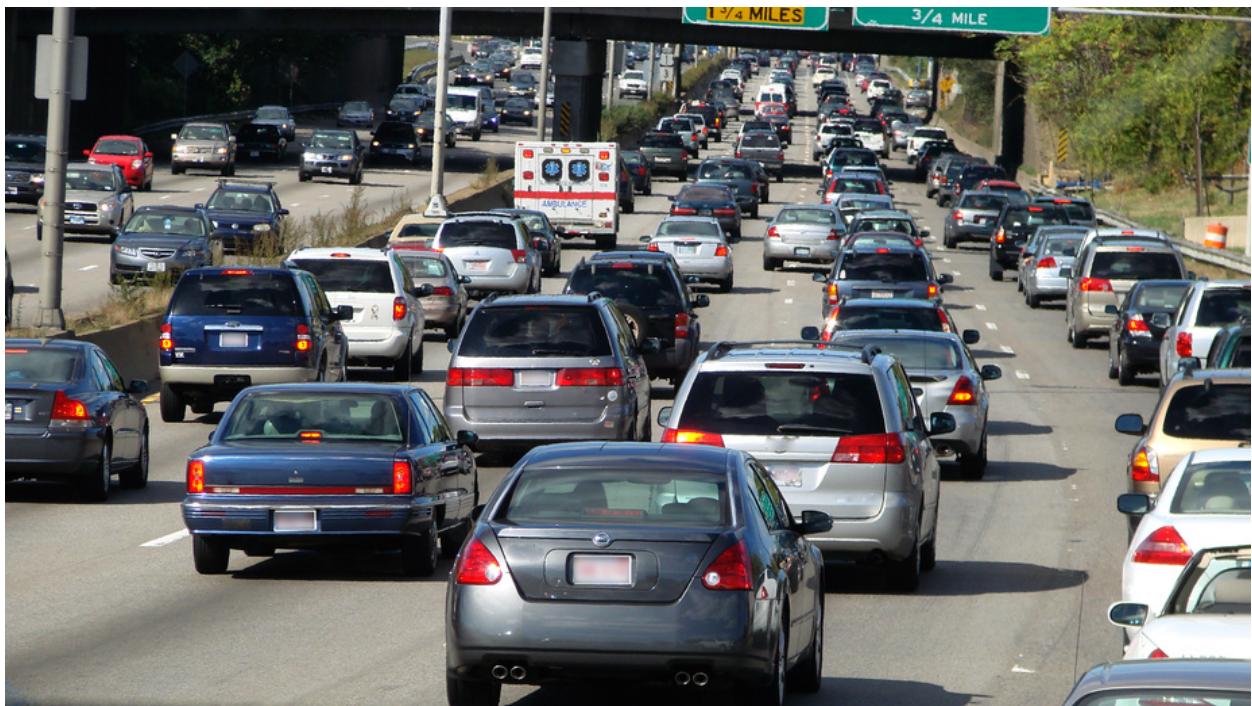
3. Now you can add your connectors for your turn movements for the intersection



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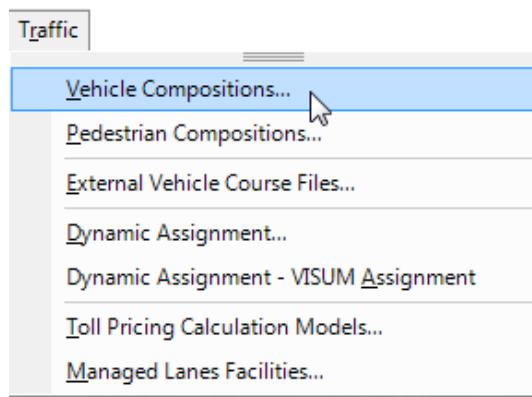
Section 3:

Add Vehicles

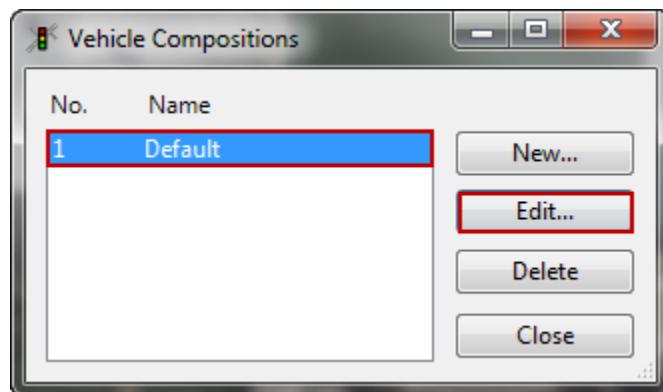


Lesson 1: Enter Vehicle Composition (% Heavy Vehicles and desired speed)

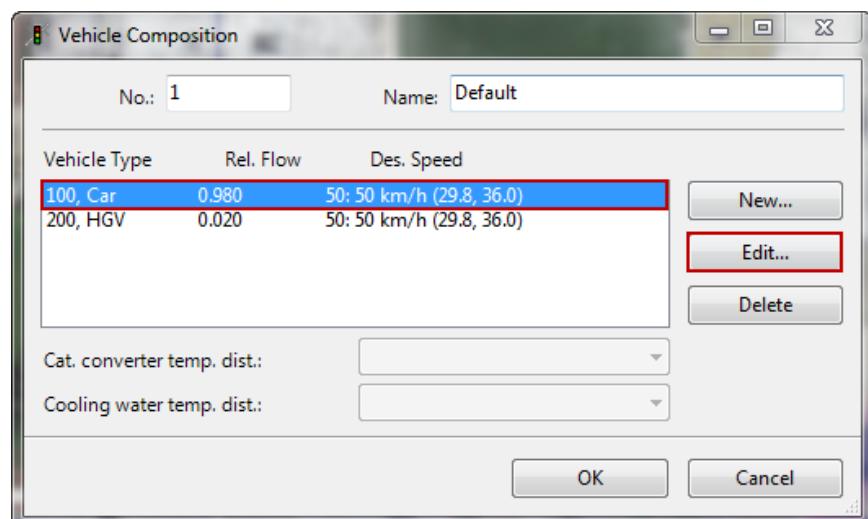
1. Go to **Traffic>Vehicle compositions**



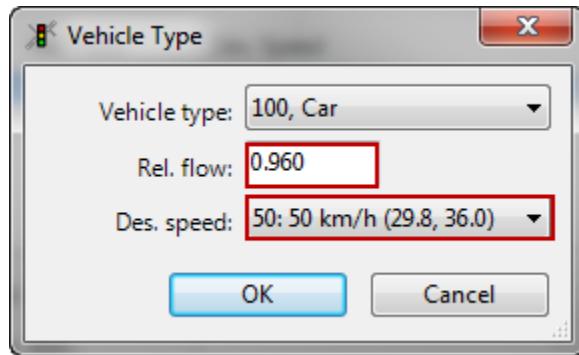
2. Select the **Edit** button



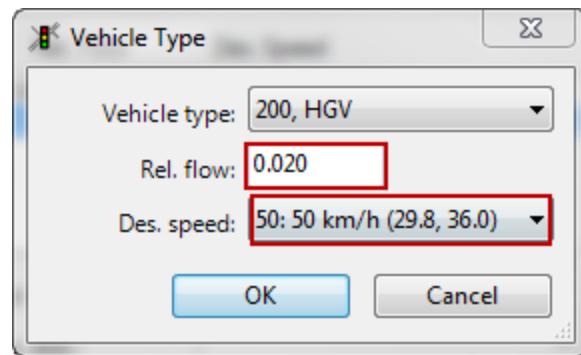
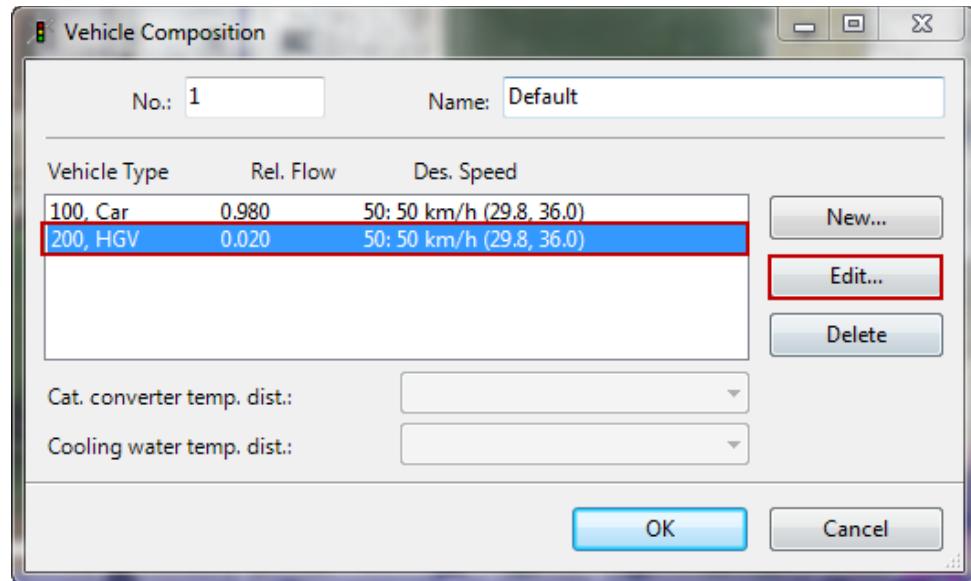
3. Select **100, Car** then **Edit**



4. Change the **Rel. flow** (relative flow) to 0.960. Change the **desired speed** (mph range in parenthesis) Click **OK**



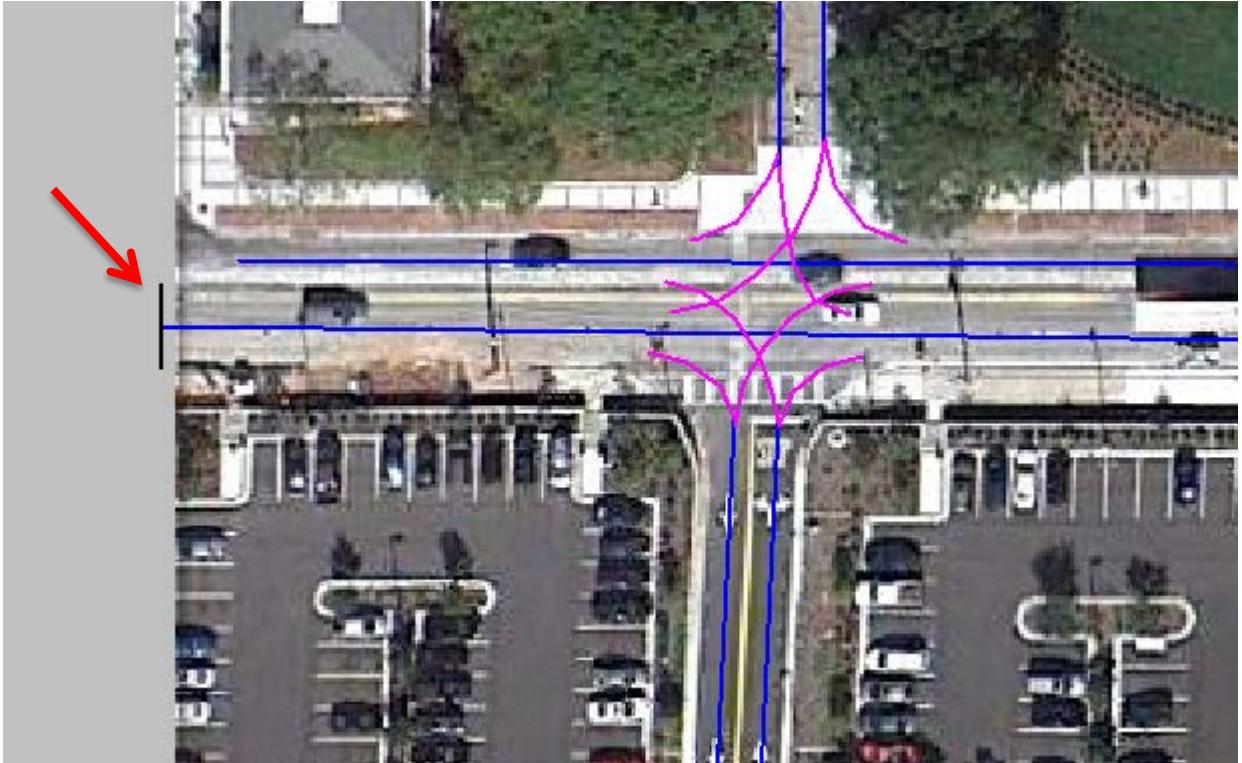
5. Repeat for **HGV**. Change **Rel. flow** to 0.040. Check **desired speed**.



Lesson 2: Enter Entry Volumes

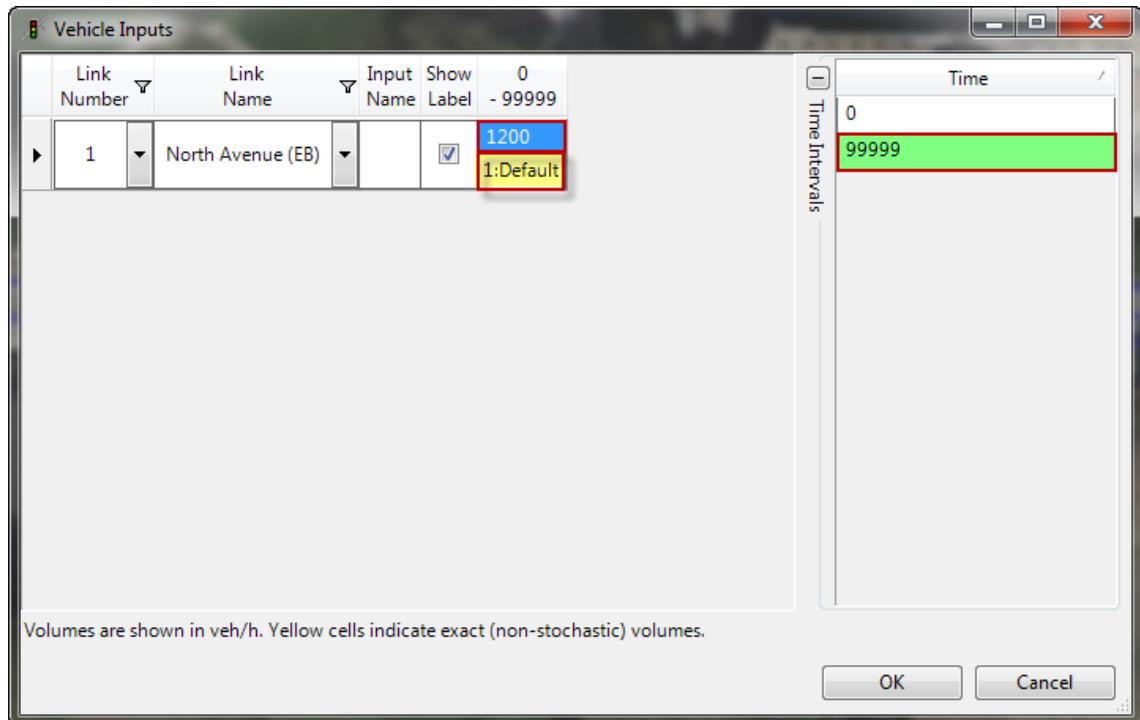


1. Select the **Vehicle Inputs** icon
2. Left click to select a link near the entry point and the right click to place the entry point (*a black line will appear*)

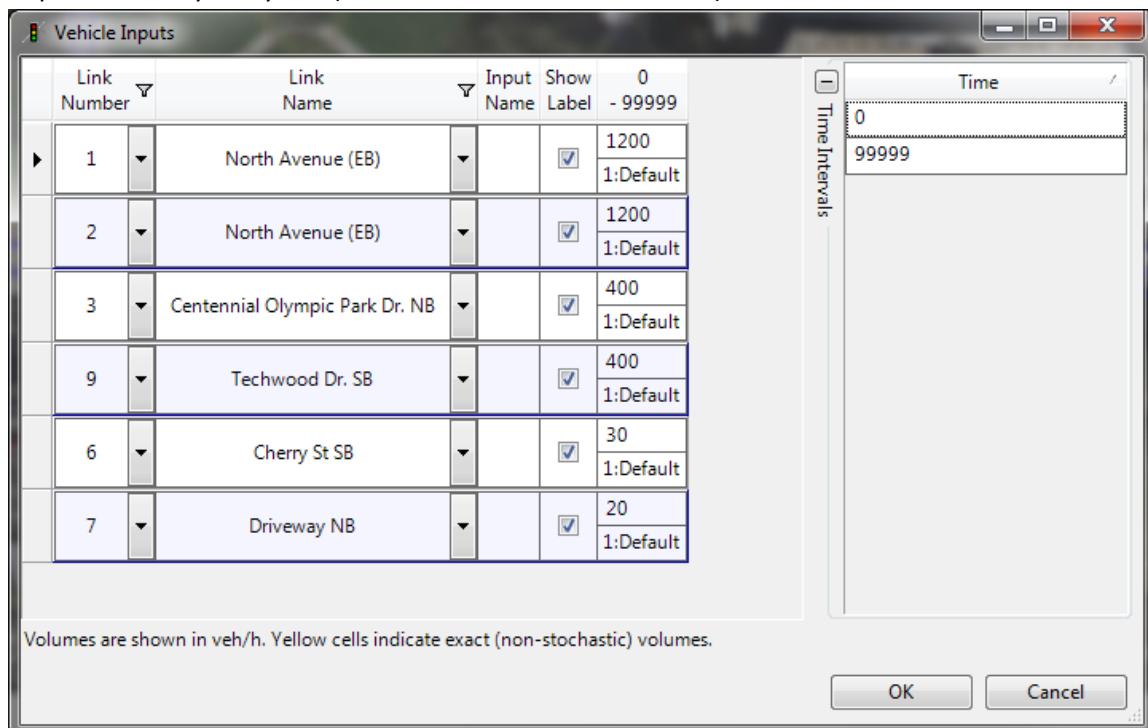


3. **Vehicle Inputs** window

- Enter the **Traffic Volume** (in the blue box)
- Select the **Vehicle Composition** (in the yellow box)
- Enter the 99999 as the end of the time period (in the green box)

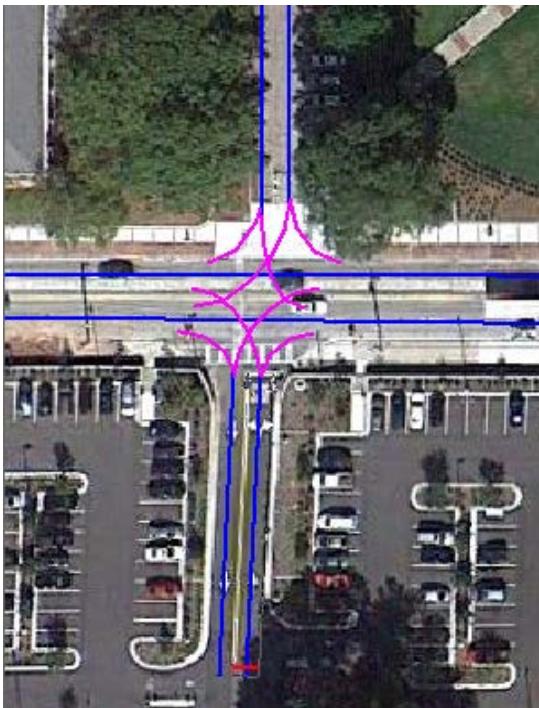


4. Repeat for every entry link (1 each for each end of the road)

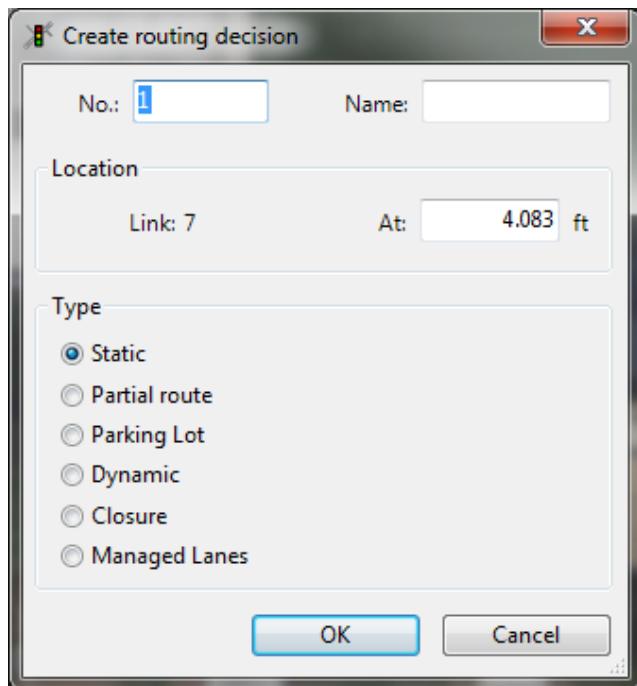


Lesson 3: Enter Route Decisions (turn movements)

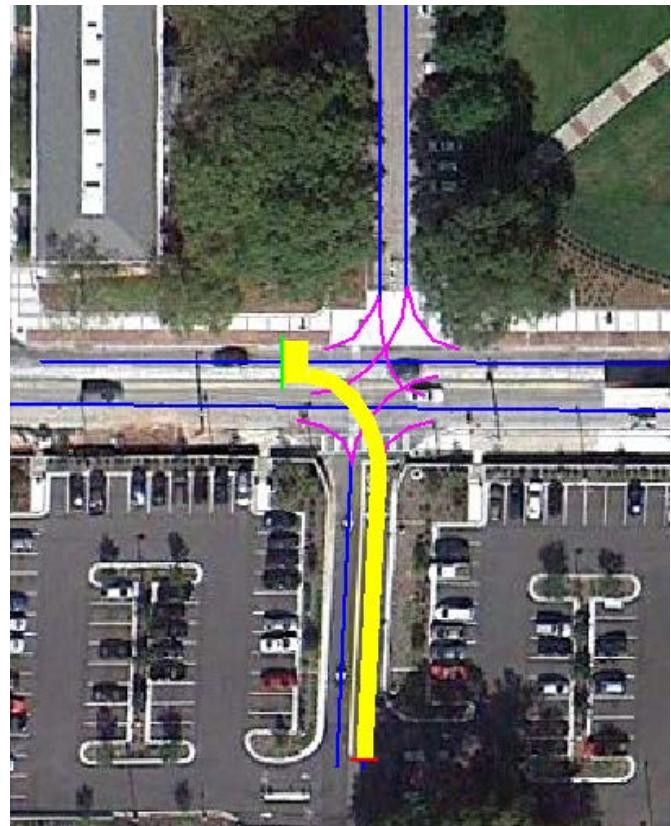
1. Select the **Routes** Button 
2. Left click on the desired link. Right click to place the beginning of the route. (*appears as red line*)



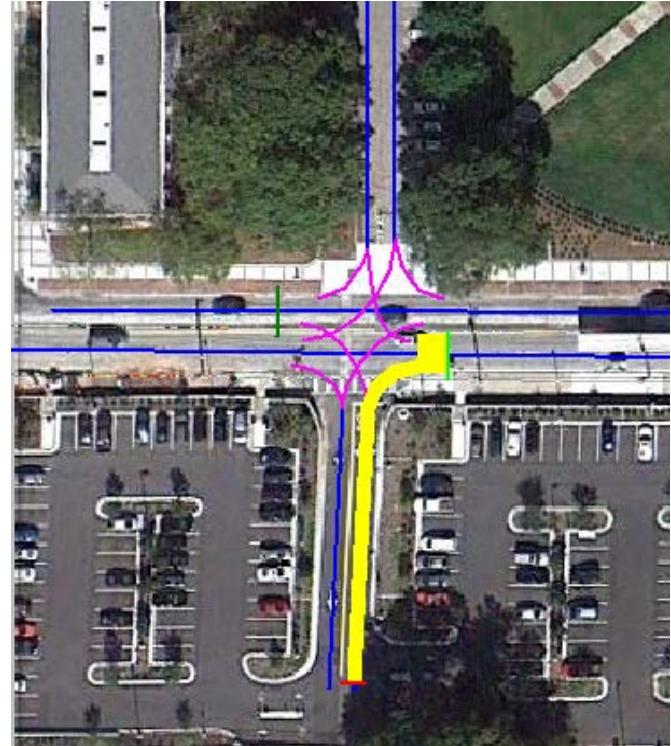
3. Click **ok**



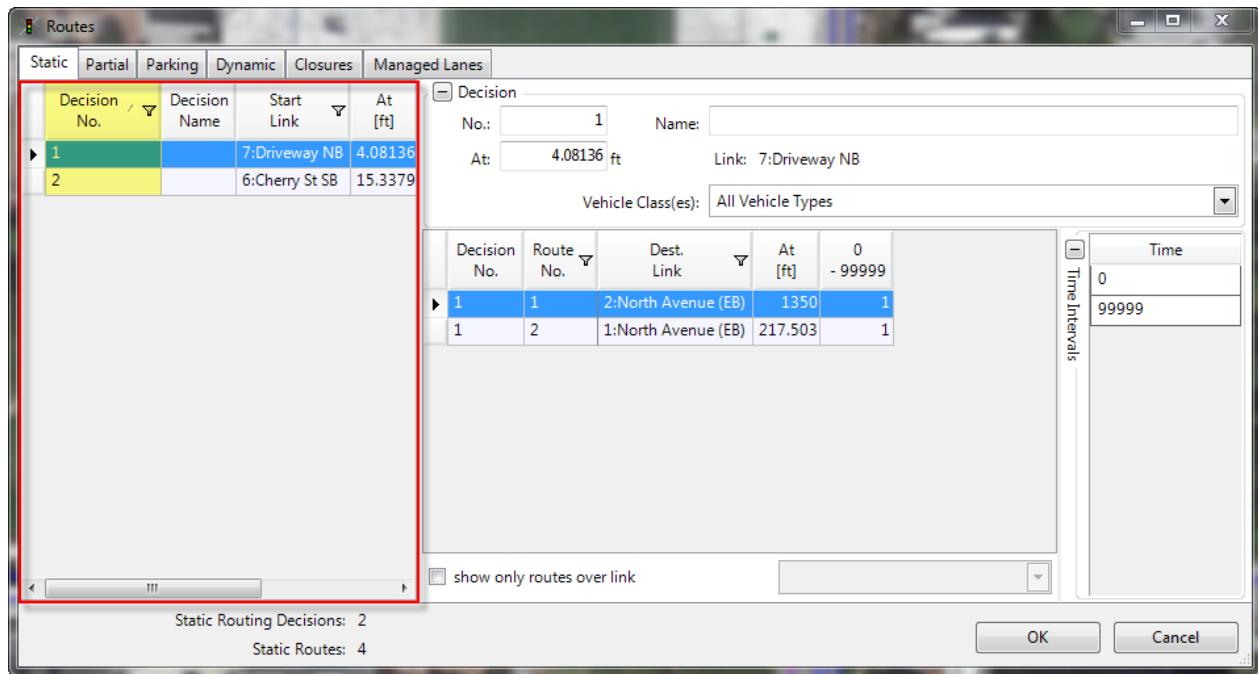
4. Start with the left turn movement. Left click (at the point you want to drive to make the decision) to select the upstream link for the left turn movement and right click on the link. A yellow highlighted route is shown



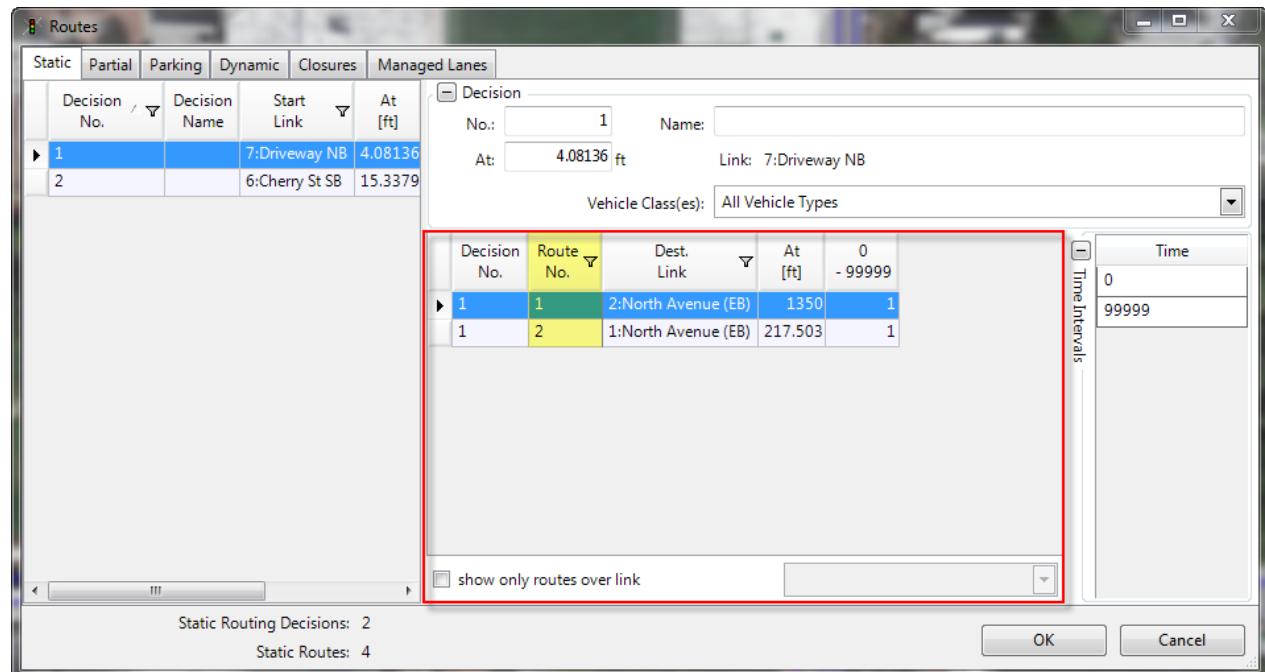
5. Repeat for the right turn movement (as well as any other movements)



6. Right click off of the link to bring up the Routes menu.
7. Select the **Decision No.** you wish to edit in the left window. Each decision start point (the red line) is assigned a **Decision No.** (*notice the associate route path highlight on the screen*)



8. Notice in the middle window that each **Decision No.** has a multiple Route Numbers. Each Route No. represents a turn movement. Enter the turn volume for each movement (Route No.) in the last column (**0-99999**). You can also enter turn percentages instead of turn volumes.

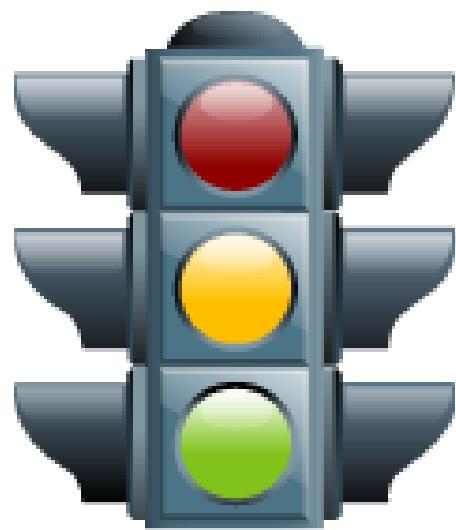


9. Repeat this for every approach at each intersection.

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Section 4:

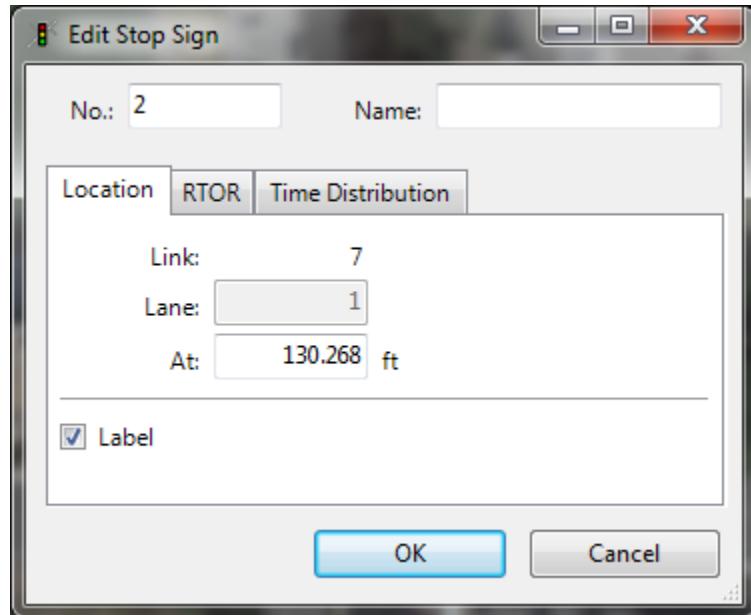
Add Controls



Lesson 1: Add Stop Control

Place stop sign

1. Select the **Stop Sign** Button 
2. Left click the link you wish to add a stop control to select
3. Right click on the link (at the stop bar location) to place the stop sign.

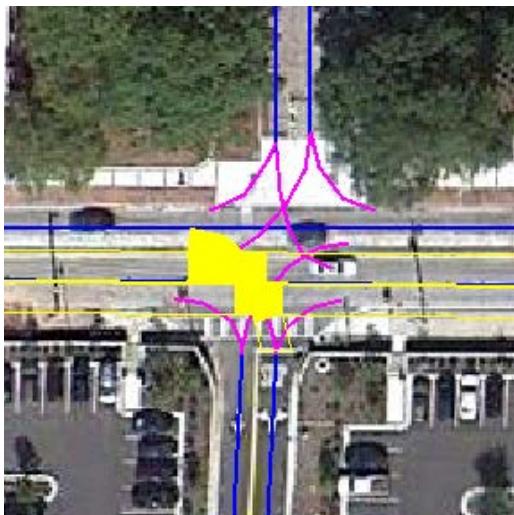


4. Click **OK**

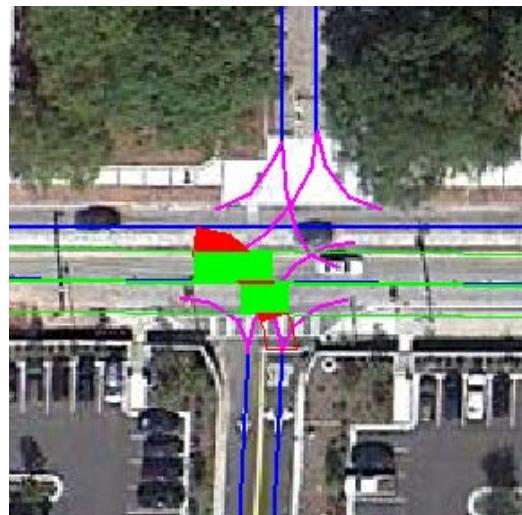
Set conflict areas:



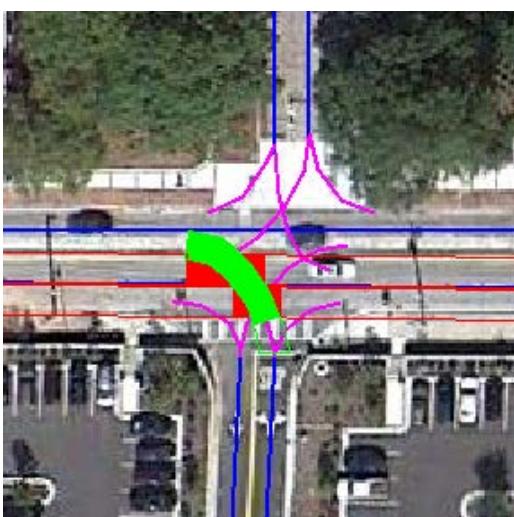
1. Select **Conflict Area** Button
2. Click on a conflict area. Let say the left turn from the parking lot onto North Ave.
3. The conflicting movements are now highlighted in all yellow. Right click on the area to rotate through the priority options. The movement highlighted in green has the ROW while the movement in red has to yield/giveaway to the green movement.



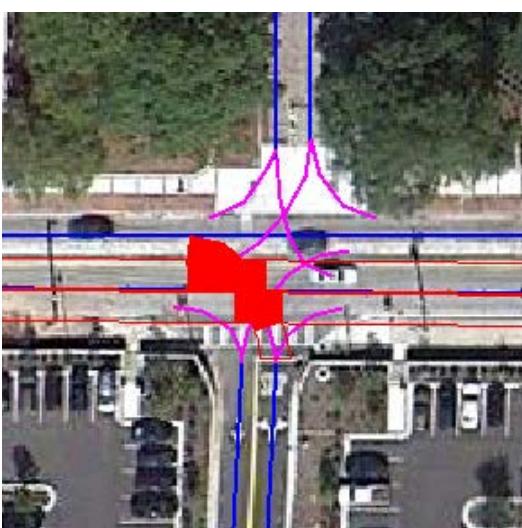
a. All movements yield



b. Left turners yield to thru movement



c. Thru movement yields to left turner



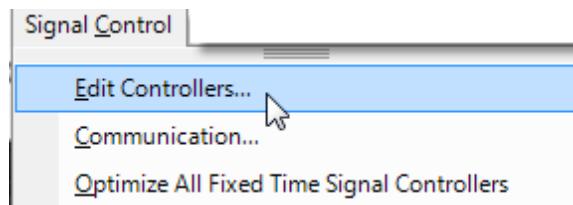
d. All movements yield

4. Select (b.) to reflect the stop control on the minor road.
5. Repeat for all conflicting movements (NBR & EBT, WBL & EBT, SBL & WBT, SBR & WBT, EBL & WBT)

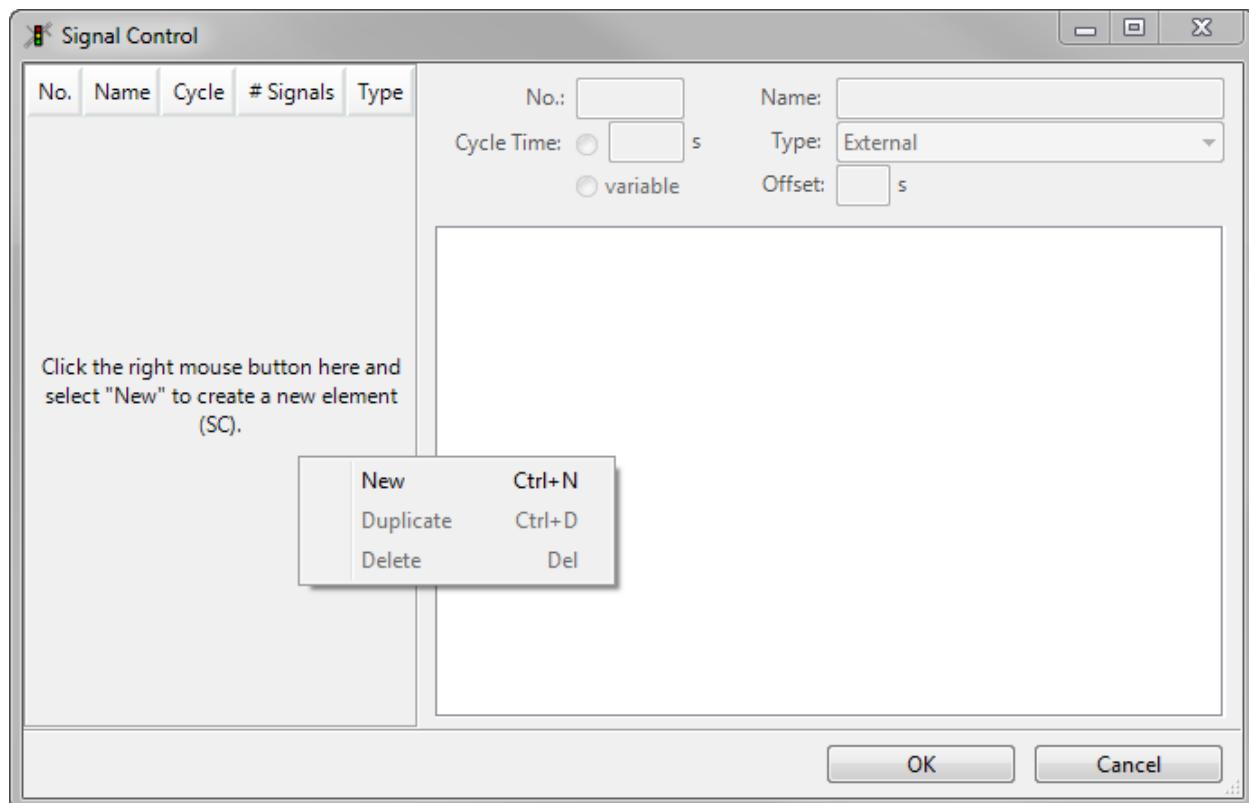
Lesson 2: Add Signal Control

Edit Controllers

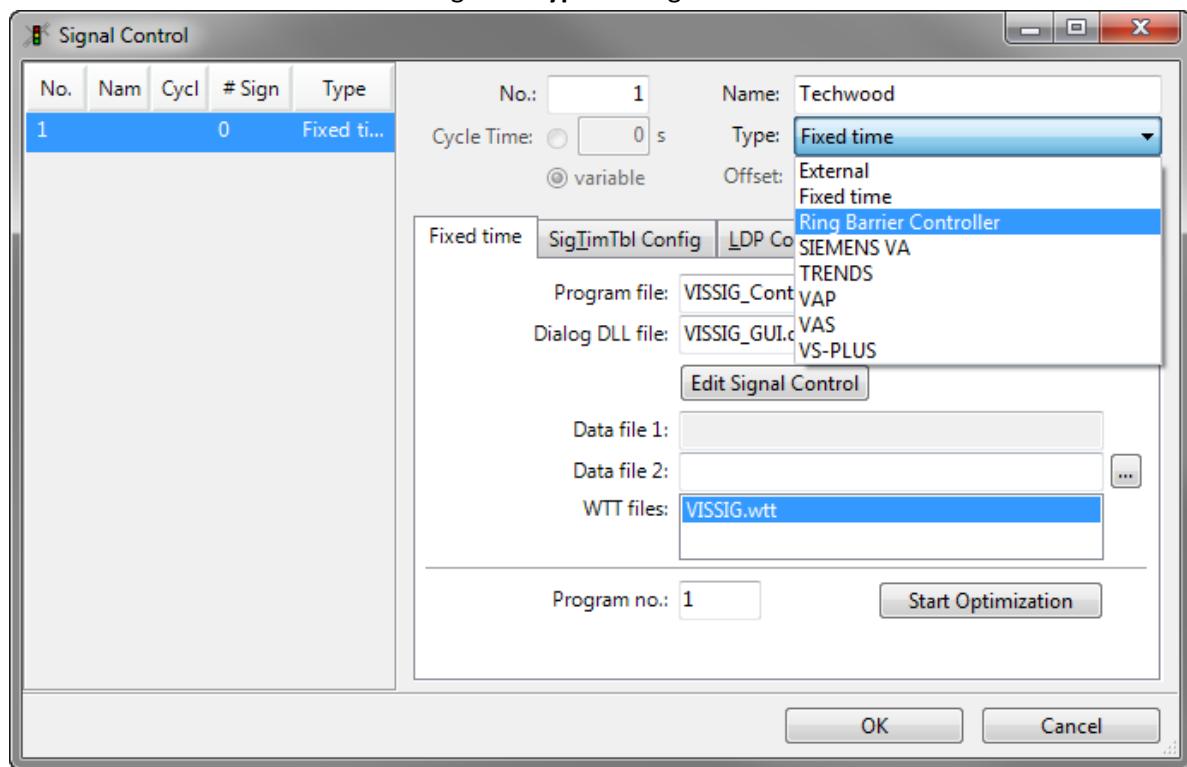
1. Click **Signal Control** on the Menu Bar and Select **Edit Controllers** from the drop down menu



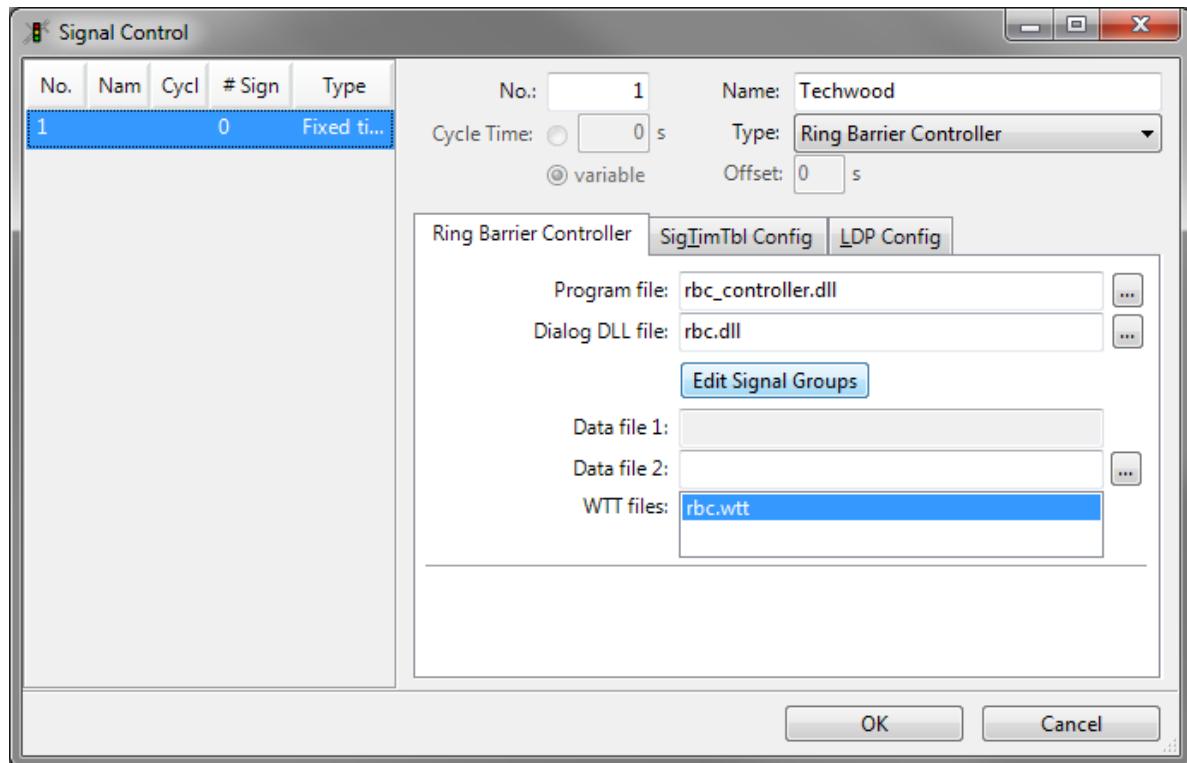
2. Right click in the box on the right and select **New** to create a new element



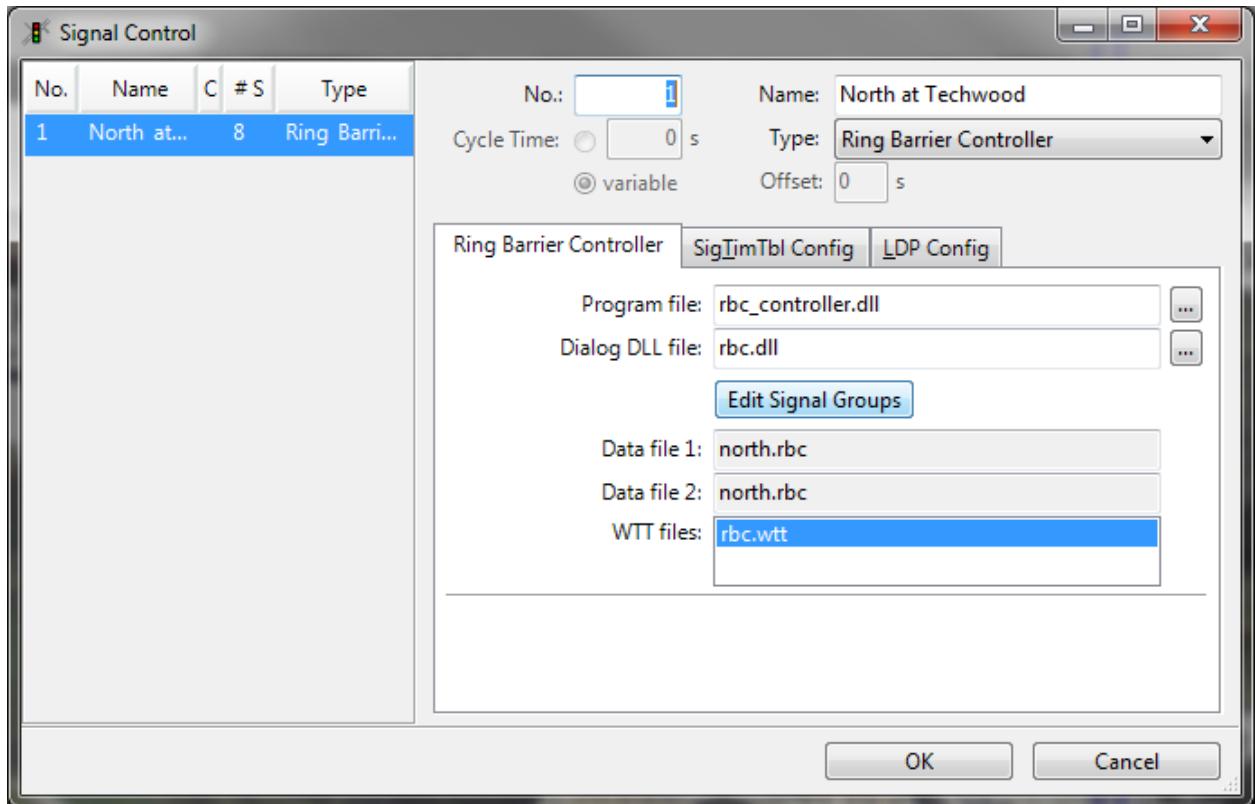
3. Give the Controller a **Name** and change the **Type** to Ring Barrier Control



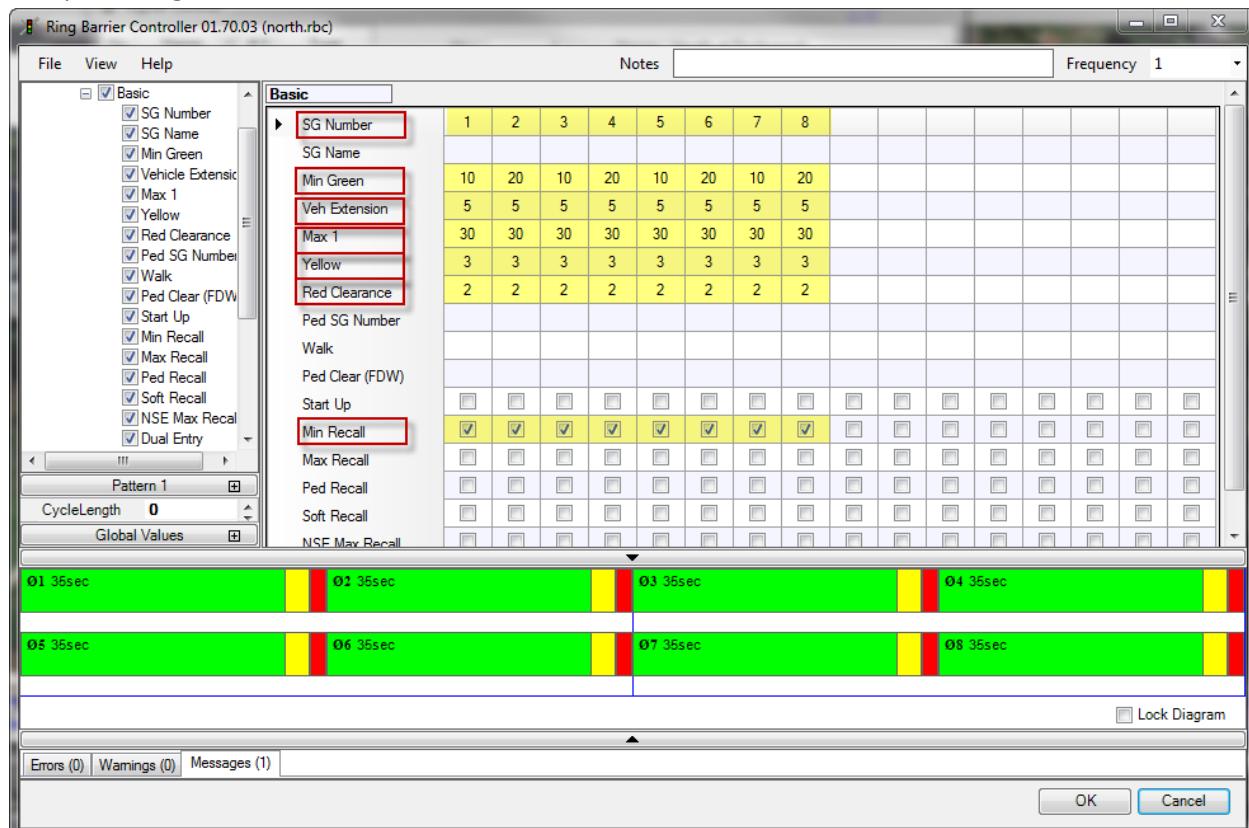
4. Go to the **Ring Barrier Controller** tab and click button (next to Data file 2). Name the Signal Group



5. Select Edit Signal Groups



6. Complete Ring Barrier Controller Window



- SG Number**= the signal group number is used to create signal heads. (i.e. you will need a SG number for every signal phase)
 - Minimum of 4 maximum of 8 (for a standard 4 legged intersection)
- Min Green**= the minimum green time that the signal group will serve before changing to yellow. In the absence of any extension, the signal group will serve this minimum green time before it is eligible to terminate. This value is also used during offset seeking as a minimum value that the controller can display for the signal group. If this value is set artificially too high, the controller will take longer to get back into coordination and could possibly prevent the controller from getting back into coordination (if you set the min green equal to max green).
- Veh Extension** = The allowed time between successful vehicle extensions before a signal group will gap out. If the signal group Time To Reduce parameter is non-zero, this allowed gap between vehicles will be reduced according to volume/density timing defined for the signal group. Volume/density timing parameters are described in Base Timing, Advanced.
- Max 1**= the maximum time that the signal group will be allowed to extend before it will max-out. A max-out will make a signal group eligible to terminate, even though it may not have gapped-out. Normally, the maximum green timer will not begin counting until an opposing call to the signal group is present. An exception to this rule is when the signal group is a flagged as a [Max Recall](#) signal group, in which case the maximum green timer will

begin counting as soon as the signal group changes to green. Max 1 is the default maximum green time for each signal group.

- e. **Yellow** = The time a signal group will time a yellow interval before advancing to red. This time cannot be abbreviated by any operation.

$$y = \frac{1.0 + \frac{1.47 * V}{(20 + 64.4g)}}{V} \quad \text{where } V \text{ is the approach speed (mph)}$$

- f. **Red clearance** = The time a signal group will time red before a conflicting signal group will be allowed to begin timing

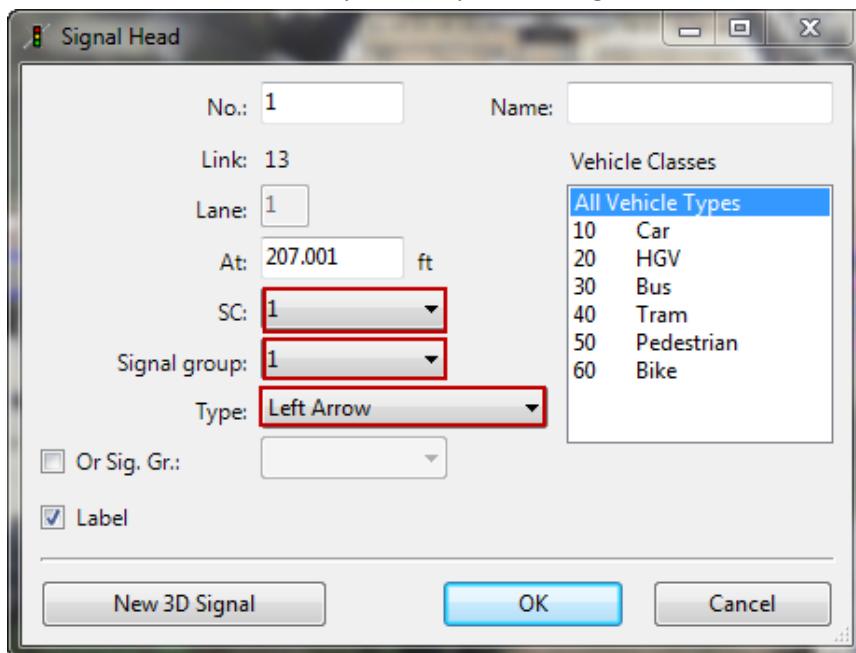
$$R = \frac{W + 20}{1.47 * V} \quad \text{where } W = \text{width of the stop line to far side no-conflict point (ft)} \text{ and } V = \text{speed of vehicle, mph}$$

- g. **Min Recall** = Signal groups flagged for this option will receive an automatic vehicle call when they are not green.

Place Signal Heads



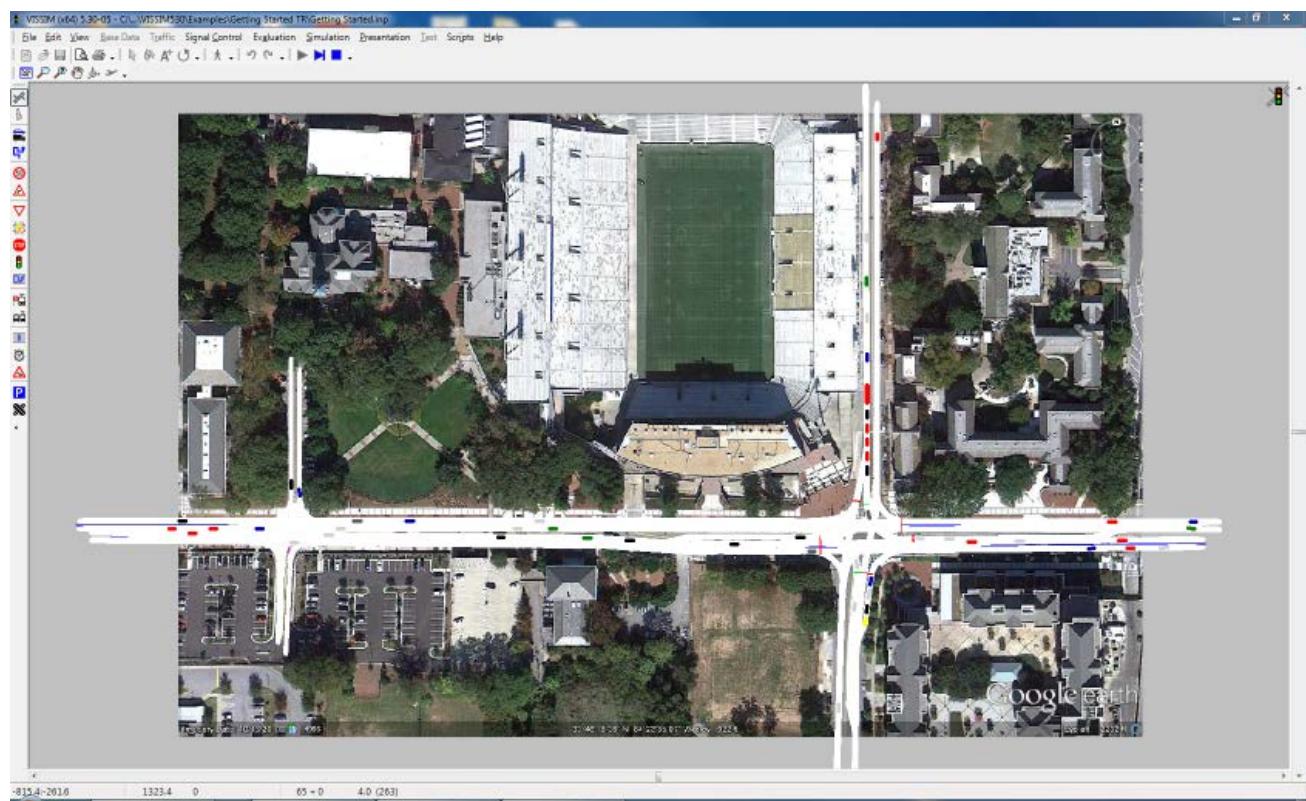
1. Select the **Signal Heads** Button
2. Left click to select the link you wish to add a signal head
3. Right click on the link (at the stop line) to place the signal head.



- a. **SC** (Signal Controller) = match to the controller number you set previously
- b. **Signal Group** = match to the signal group (or phase) from the Ring Barrier Control Window
- c. **Type** = left arrow, right arrow, circular (ball)
4. Repeat for all lanes

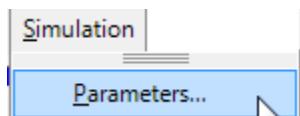
Section 4:

Run Simulation

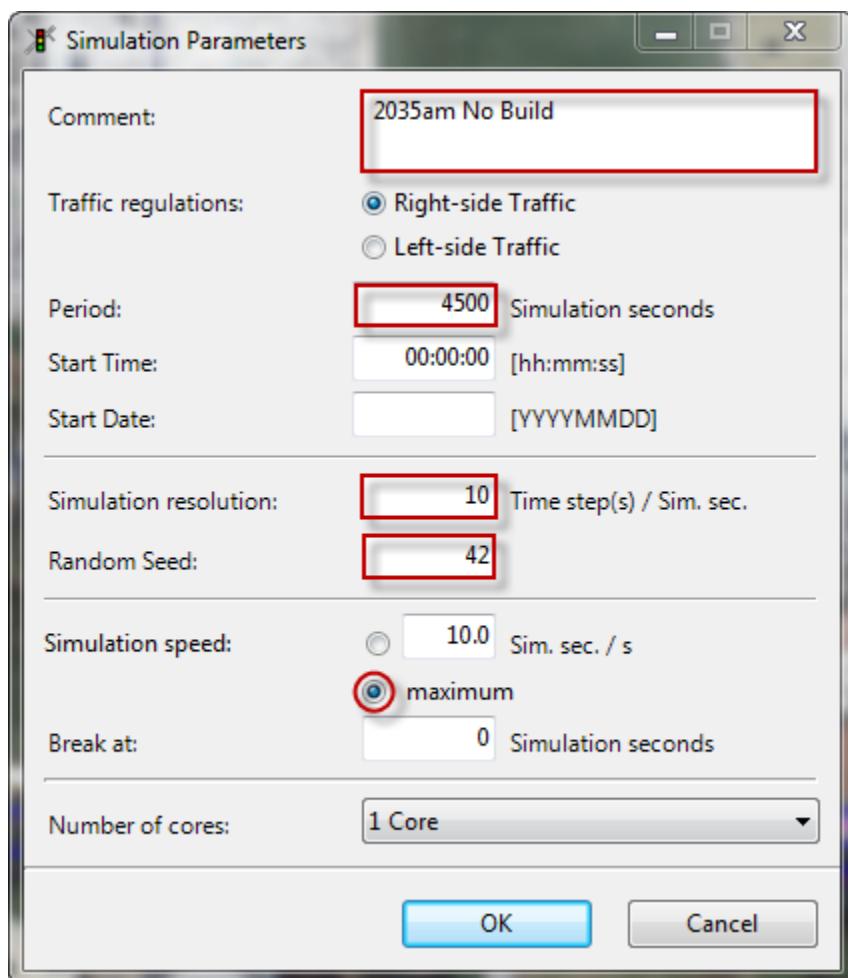


Lesson 1: Set Simulation Parameters

1. Select **Simulation** from the menu bar and go to **Parameters**



2. Set parameters



- a. **Comment** = The comment line is stored in the input file and included in both printouts of the network and in output files.
 - Enter a description.
- b. **Period** = The period of time to be simulated. Including initialization period.
 - Use a minimum of 4500s (15 minutes to fill up the system then 1 hr of simulation)
- c. **Simulation resolution** = The number of times the vehicle's position will be calculated within one simulated second (range 1 to 10). The higher the value the smoother the simulation
 - Use a value between 5- 10

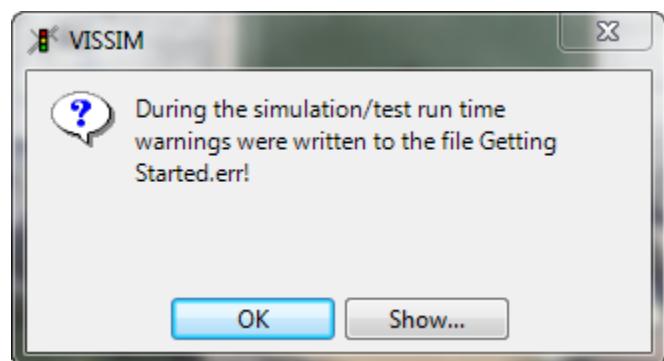
- d. **Random Seed** = Simulation runs with identical input files and random seeds generate identical results. For meaningful results it is recommended to determine the arithmetic mean based on the results of multiple simulation runs with different random seed settings.
 - Use a different number to produce 3-5 runs per alternative
- e. **Simulation Speed** = The number of simulation seconds to a real time second.
 - maximum

Run the Simulation:

1. Click **Play** 
2. The simulation will run

Warnings

If there are any warnings in the simulation the following window will appear

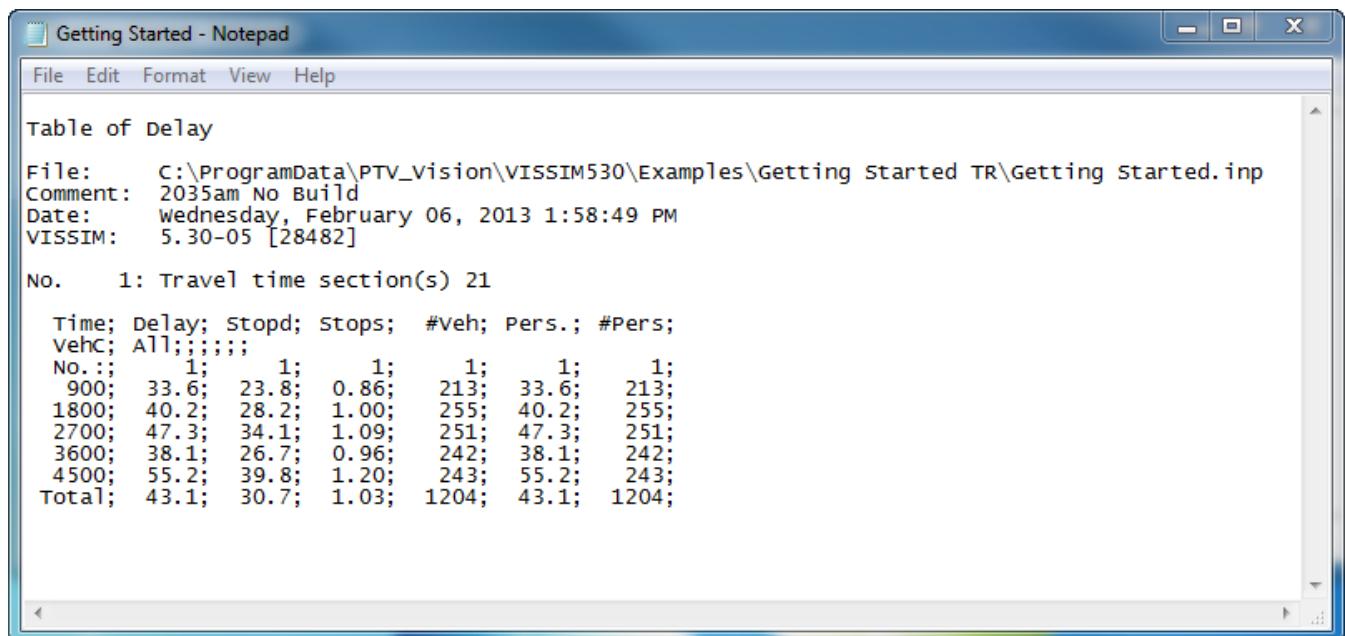


Select Show to view the warnings

Page intentionally left blank

Section 5:

Output Data



Getting Started - Notepad

File Edit Format View Help

Table of Delay

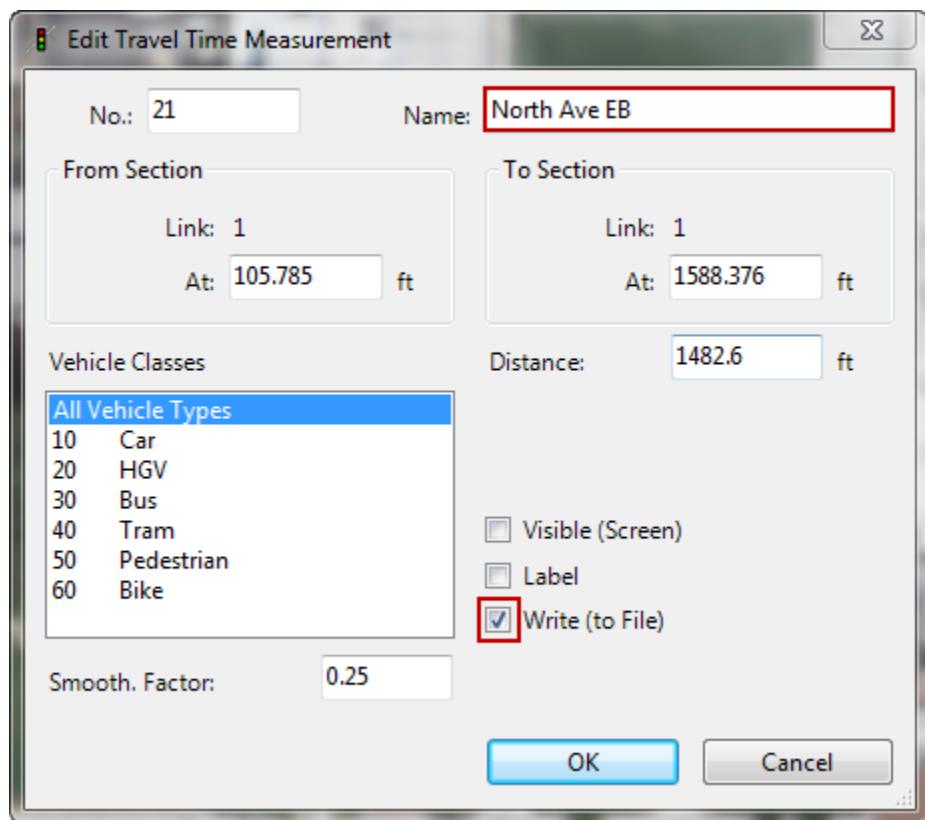
File: C:\ProgramData\PTV_Vision\VISSIM530\Examples\Getting Started TR\Getting Started.inp
Comment: 2035am No Build
Date: Wednesday, February 06, 2013 1:58:49 PM
VISSIM: 5.30-05 [28482]

No. 1: Travel time section(s) 21

Time; Vehc;	Delay;	stopd;	Stops;	#Veh;	Pers.;	#Pers;
No. ::; All;;;;;	1;	1;	1;	1;	1;	1;
900;	33.6;	23.8;	0.86;	213;	33.6;	213;
1800;	40.2;	28.2;	1.00;	255;	40.2;	255;
2700;	47.3;	34.1;	1.09;	251;	47.3;	251;
3600;	38.1;	26.7;	0.96;	242;	38.1;	242;
4500;	55.2;	39.8;	1.20;	243;	55.2;	243;
Total;	43.1;	30.7;	1.03;	1204;	43.1;	1204;

Lesson 1: Collect Travel Time and Delay Output Data

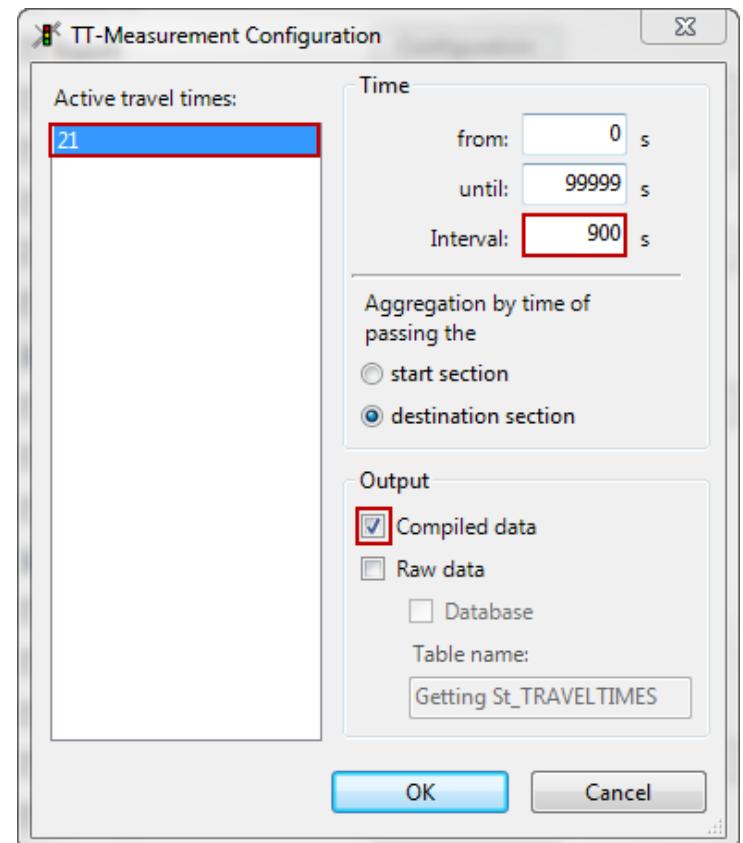
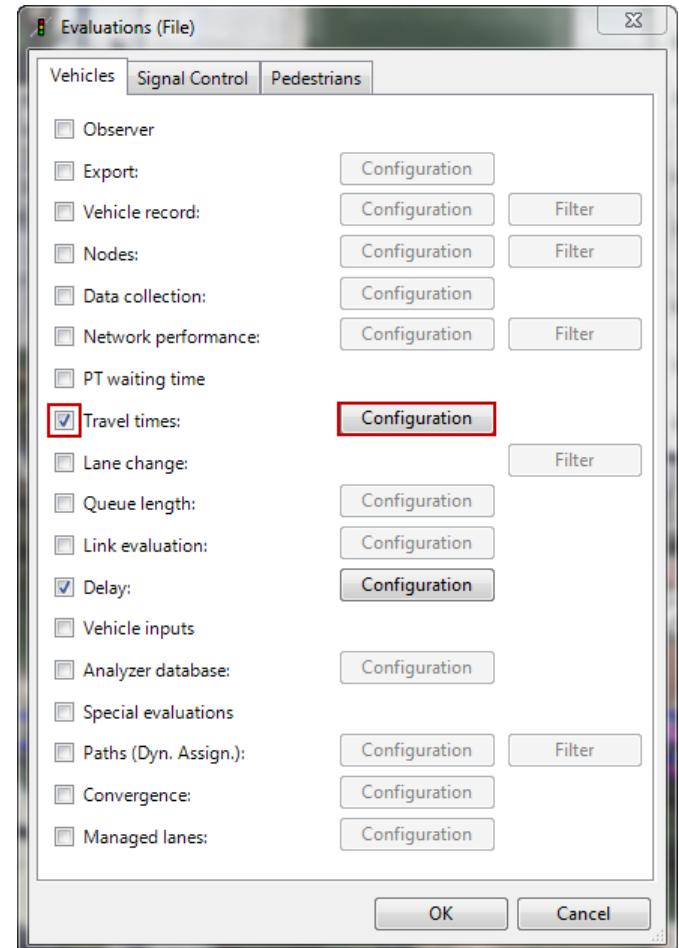
1. Decide where to analyze the travel time
2. Select **Travel Time Sections** Icon 
3. Left click on the starting link of the travel time section to select
4. Right click at the exact start point to place start line
5. Right click at the exact end point to place travel time end line
6. Complete the **Travel Time Measurement** window



- a. Add a name for this roadway section
 - b. Select only the **Write (to file)** box
7. Click OK

Lesson 2: Configure Travel Time Measurement

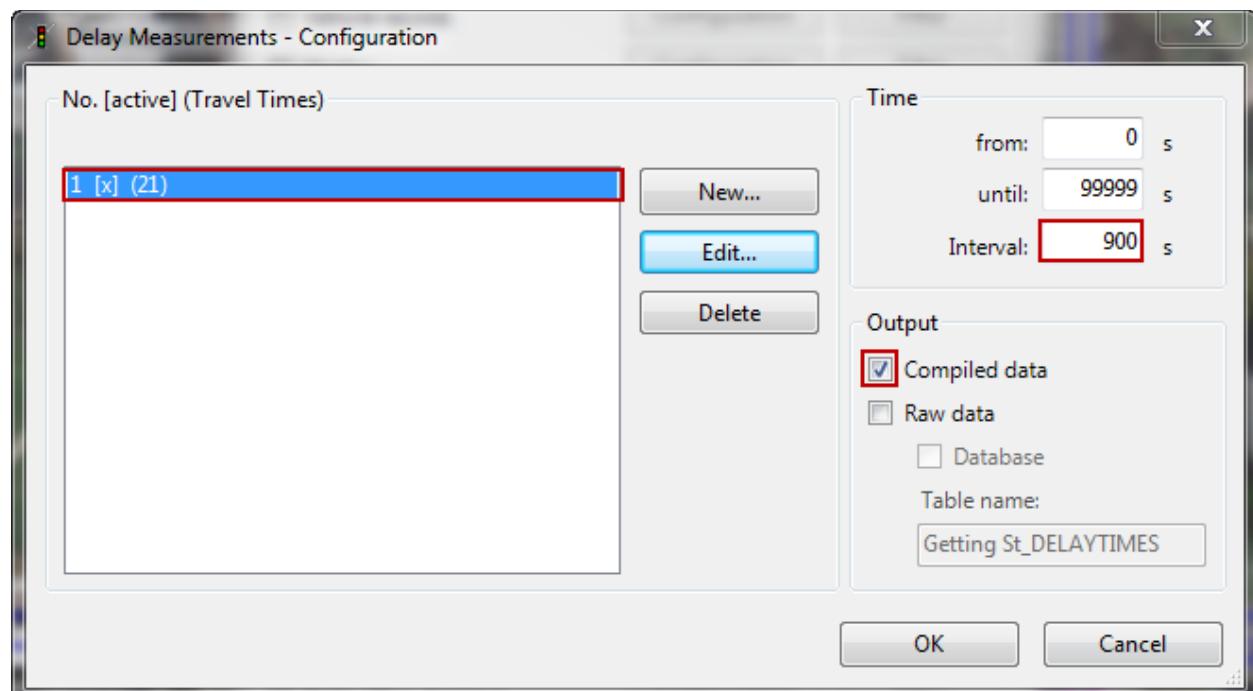
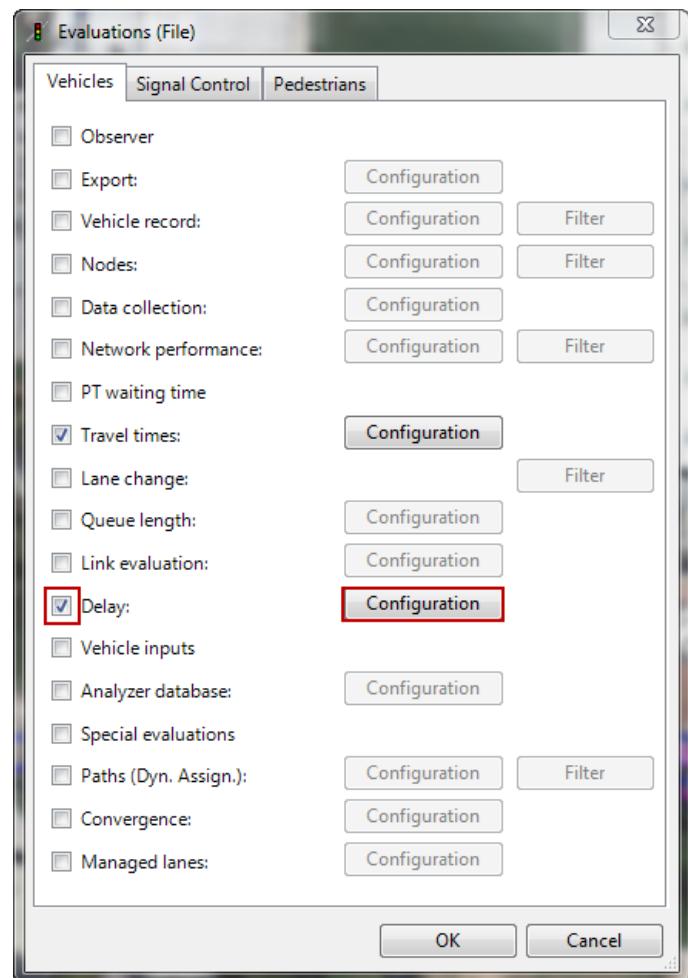
1. Select **Evaluation> File** from the main menu
2. In the vehicles tab check the box for **Travel Times**
3. Click the **configuration** button
 - a. **Active travel times** - Select the travel time sections (set in previous lesson)
 - b. **Time** – select the time frame and interval to collect the data
 - c. **Output** – select compiled data
4. Click **OK**



Lesson 2: Configure Delay Measurement

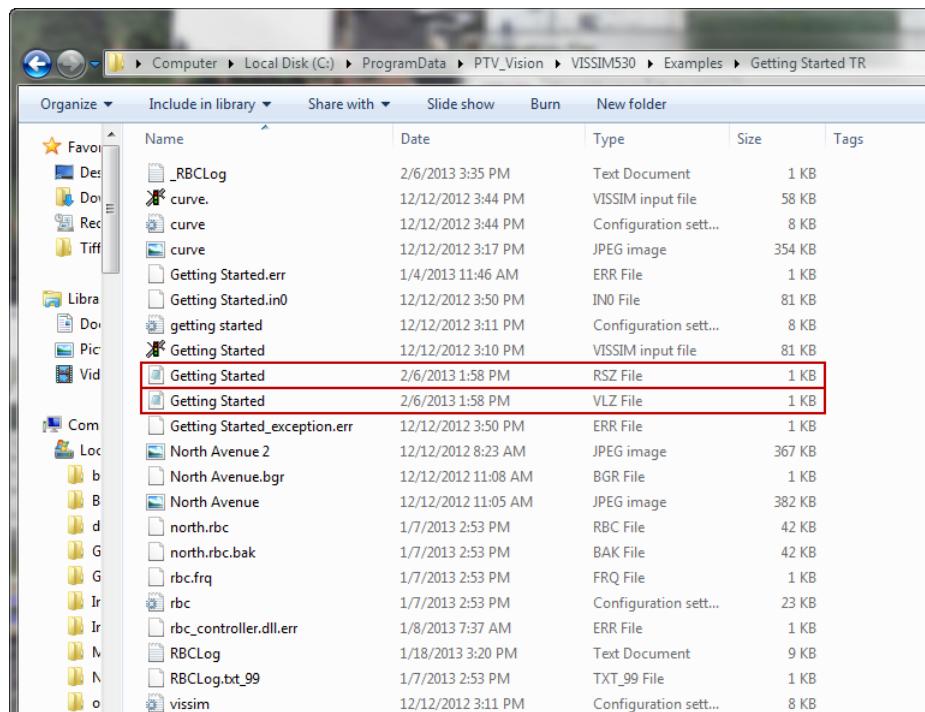
1. Select **Evaluation> File** from the main menu
2. In the vehicles tab check the box for **Delay**
3. Click the **configuration** button
4. Complete the Delay Measurements window
 - a. **No. active travel times** - Select the travel time sections
 - b. **Time** – select the time frame and interval to collect the data
 - c. **Output** – select compiled data
5. Click **OK**

* *Delay is the average total delay per vehicle in seconds and is measured as the difference in the real travel time and the theoretical travel time*



Lesson 4: View Travel Time and Delay Output Files

1. Go to the project folder. Notice two files. One with a .RSZ extension and one with a .VLZ extension



2. Open the .RSZ file to view the Travel Time Output

```
Getting Started - Notepad
File Edit Format View Help

Table of Travel Times
File: C:\ProgramData\PTV_Vision\VISSIM530\Examples\Getting Started TR\Getting Started.inp
Comment: 2035am No Build
Date: Wednesday, February 06, 2013 1:58:49 PM
VISSIM: 5.30-05 [28482]

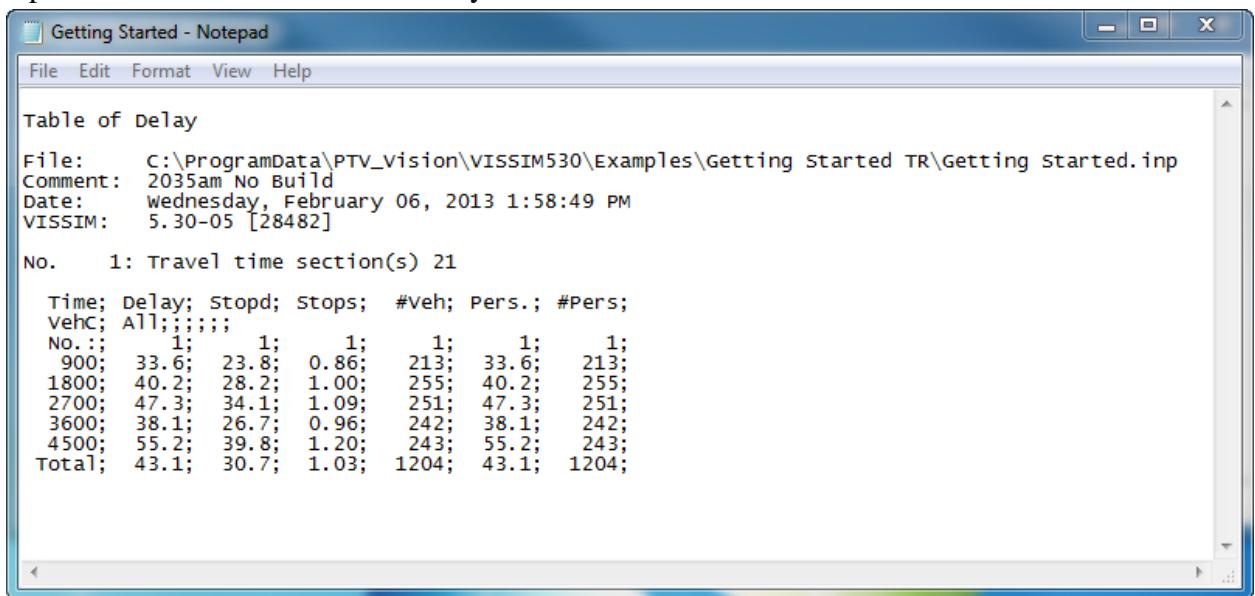
No. 21: from link      1 at 105.8 ft to link      1 at 1588.4 ft, Distance 1482.6 ft

Time; Trav; #veh;
Vehc; All;;
No.;; 21; 21;
900; 64.8; 213;
1800; 71.4; 255;
2700; 78.4; 251;
3600; 69.0; 242;
4500; 86.3; 243;
```

- a. Travel time= average time it takes to travel (in seconds) along the travel section
- b. # vehicles = number of vehicles that pass the

**data provided for each 900s interval*

3. Open the .VLZ file to view the Delay



The screenshot shows a Windows Notepad window titled "Getting Started - Notepad". The window displays a table of delay data. The table has a header row with columns for Time, Delay, Stopd, Stops, #Veh, and #Pers. Below the header, there are several data rows. The first data row shows values for the 900s interval: Time 900, Delay 33.6, Stopd 23.8, Stops 1, #Veh 0.86, and #Pers 213. Subsequent rows show data for 1800, 2700, 3600, and 4500 intervals. A final "Total" row sums up the values for all intervals.

Time	Delay	Stopd	Stops	#Veh	#Pers
900	33.6	23.8	1	0.86	213
1800	40.2	28.2	1	1.00	255
2700	47.3	34.1	1	1.09	251
3600	38.1	26.7	1	0.96	242
4500	55.2	39.8	1	1.20	243
Total	43.1	30.7	1	1.03	1204

- a. Delay: Average total delay per vehicle (in seconds). The total delay is computed for every vehicle completing the travel time section by subtracting the theoretical (ideal) travel time from the real travel time. The theoretical travel time is the time that would be reached if there were no other vehicles and no signal controls or other stops in the network (reduced speed areas are taken into account).
- b. Stopd: Average standstill time per vehicle (in seconds), not including passenger stop times at PT stops or in parking lots.
- c. Stops: Average number of stops per vehicle, not including stops at PT stops or in parking lots.
- d. #Veh: Vehicle throughput
- e. Pers: Average total delay per person (in seconds), not including passenger stop times at PT stops.
- f. #Pers: Person throughput

*data provided for each 900s interval