1. What signalized intersection analysis method is being displayed within the Timing Settings screen?

The results are based on the percentile method. HCM 2000 results can be reviewed by creating a report. If a TWSC or AWSC intersection is selected within the Timing Settings screen, the results displayed are based on the HCM 2000.

2. What are the minimum coding requirements for a signalized intersection?

The response to this question really depends on the type of analysis being conducted. Lane geometry and peak hour traffic volumes are key elements that are required for any analysis. One of the benefits of Synchro is the use of typical default signal timing parameters that can be used for general operational analyses. Users should determine if pedestrian timing is required. If so, the appropriate values for Walk and Flash Don’t Walk should be entered. These values are used during the signal optimization process. For a more detailed operational analysis, the following should be calculated and entered: yellow time and red time. If a detailed signal timing project is the focus, then all of the signal timing parameters should be reviewed and revised as necessary. This also includes the coding of detectors along all approaches of the intersection.

3. Is it OK to have a Min Error displayed because Ped times require a longer Maximum Split?

It is possible, however, the user should confirm with the agency that the lower split value is permitted. In the field, if the pedestrian button is pushed, the appropriate time will be provided. This would cause the intersection to step out of coordination for a few cycles because of the increased splits.
4. **What is the difference between Pedestrian Calls (#/hr) in the Phasing Settings and Conflicting Peds (#/hr) in the Volume Settings?**

   The number of Pedestrian Calls is related to the number of times the pedestrian push button is activated. Pedestrians may cross the roadway in groups, thus leading to a lower number of activations compared to the number of pedestrians. The higher the number of push button activations, the higher the green time associated with the corresponding signal phase. The number of Conflicting Peds is used to adjust the saturation flow rate of the various lane groups that correspond to the pedestrian flow.

5. **Why is the 95th Percentile queue length sometimes lower than the 50th Percentile?**

   If the intersection is significantly over-saturated, the calculated value of the 95th percentile queue could be lower than the 50th percentile. Often times, a footnote will be displayed, indicating that the results should be reviewed for further clarification. The 5th Edition of Synchro Snippets includes an overview of queuing for both Synchro and SimTraffic. Previous editions of Synchro Snippets can be found on the Resources page of our website.

### HCM 2010

1. **Why isn’t the HCM 2010 RTOR volume calculated?**

   Since the RTOR is such an important parameter within the HCM 2010 methodology, it was decided that the user should input the value.

2. **Why can’t I analyze a non-NEMA phasing intersection in HCM 2010?**

   The HCM 2010 method within Synchro mimics the methods included within the Highway Capacity Manual and computational engine. Since NEMA phasing is a limitation of the method, the limitations also exist within Synchro’s implementation of the HCM 2010. Providing additional flexibility is something that our developers are working on.

3. **Why are HCM 2010 results so different than Synchro?**

   Here are a few of the most common reason for the differences:
   - **How are right turn lanes being coded?** The HCM 2010 method assumes zero delay if they are not controlled by the signal. Synchro includes right turn delay even if the rights are coded as channelized with yield control.
   - **Are RTOR’s entered within the HCM 2010 screen?** Be sure to enter the number of RTOR vehicles within the HCM 2010 screen. If the number is high, significant differences in delay can occur.
   - **Are the intersections experiencing starvation or spillback?** The HCM 2010 methods do not account for either of these types of congestion. The percentile delay method accounts for delay attributed to starvation and spillback. Depending on the level of congestion, the differences in delay can be rather high. One should consider reviewing the input to determine if the HCM 2010 methods are applicable.
4. **What is the volume distribution algorithm mentioned in this Warning message?**

Intersections that include approach geometrics with an exclusive left/right turn lane and a shared left/right turn/through lane are not fully supported by the HCM 2010. To overcome this limitation, Trafficware has developed a method to estimate volumes (using equivalency factors) by lane group categories that are HCM 2010 compliant. For additional information, refer to the *Working White Paper on the Implementation of the 2010 HCM*.

**SimTraffic**

1. **Why are SimTraffic results so different than Synchro?**

   This question is very common. The simple answer is due to Synchro being considered a macroscopic model, while SimTraffic is a microscopic model. Synchro is based on deterministic equations (HCM methods) developed for predicting traffic flow. These equations are based on field studies but do not cover all the possibilities and thus have some limitations. SimTraffic, however, is based on a series of algorithms related to lane changing and car following logic. Each vehicle is tracked every 0.1 of a second throughout the network. The key difference between the software's is SimTraffic's ability to include all impacts of vehicles upon each other rather than simply using an equation to estimate a particular element relate to traffic flow.

2. **Why don't vehicles enter a blocked intersection?**

   By default, vehicles within SimTraffic will not enter a blocked intersection. Users can allow vehicles to *Enter Blocked Intersection* by adjusting this parameter within the *Simulation Settings* screen. Be careful when selecting *One* or *Two* vehicle(s) because the blocking could cause other issues that may need to be addressed.

3. **Why don't the vehicles have balanced lane usage in SimTraffic?**

   Typically this is due to the default parameters within SimTraffic. Users can adjust the *Lane Alignment* parameter within the *Simulation Settings* screen to improve lane choice. If no changes are observed, users can adjust the mandatory/positioning distances within the *Simulation Settings* along the approaches of the intersections where required. If this issue persists at several intersections within a model, adjustments to the mandatory/positioning distances should be made within the *Drivers Parameters* within SimTraffic. The 3rd Edition of Synchro Snippets included an overview of the mandatory/positioning distance parameters.

4. **How do I code a lane drop?**

   Coding a lane drop within Synchro is very simple. The effect of the lane drop will only be observed within SimTraffic. Here are the steps:
   
   1. Once you have coded your intersection, it is recommended to display the Node Numbers. From the Floating Palette, select the *Nodes* button and then select the middle icon (*Show Node Numbers*) within the top row.
2. Next, from the Mapping button of the floating palette, select the first icon (Add Link) within the top row. Draw a link across the link that you desire to create the lane drop. Be sure to draw beyond any turn pockets that are coded. This will create a new intersection where the two links cross each other.

3. Select each of the new links that were created and delete them. Be sure to select the portion of the link that does not include the new node. Once completed, only the node should be displayed along the original link.

4. Now double click the portion of the link where the lane drop will be located (2-7)

5. Within the Lane Settings screen, select the appropriate number of lanes that should be coded along the link.

6. The appropriate geometry should now be displayed on the Map Screen. Adjustments to the mandatory and positioning distances may be required during calibration.
Warrants

1. Why do I need to select the Major Street

Designating the Major Street is critical within Warrants. Depending on which specific warrant is being analyzed, the volume along both approaches of the Major Street is added together, while only the highest volume along the minor street is used. This can make a significant difference as to whether a specific warrant will be met or not.

2. How many hours of traffic volumes should I use?

The answer to this question depends on the actual warrant being analyzed. Here is a summary of the number of hours for each of the warrants.

- 8 Hours – Warrants 1, 7, 8
- 4 Hours – Warrants 2, 8
- 1 Hour – Warrants 3, 4, 5, 6, 9