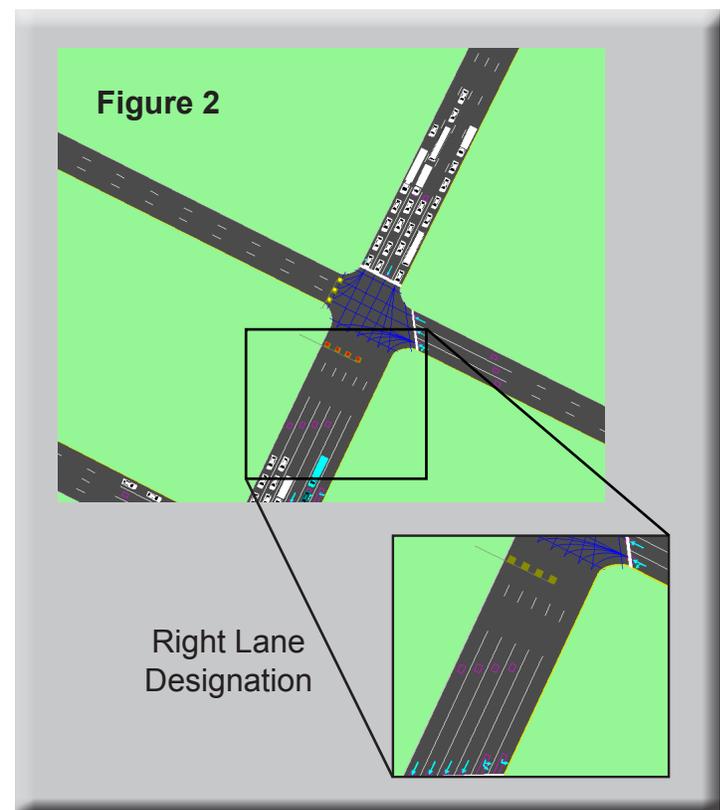
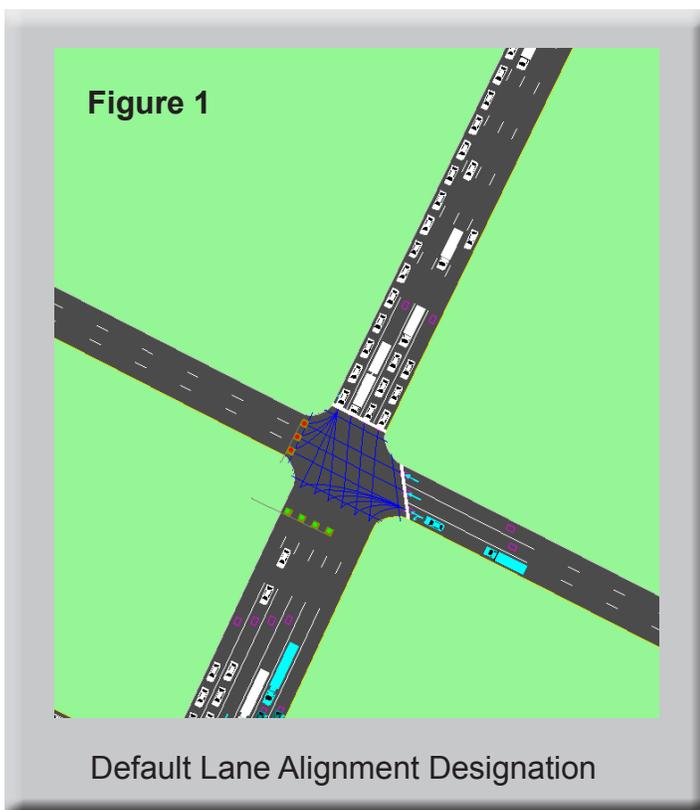


# Synchro Snippets

July 2013 | Volume 4 | Calibration Guide



The third edition of Synchro Snippets focused on adjusting the mandatory and positioning distances within SimTraffic. One might ask, “When would it be appropriate to adjust these parameters versus another parameter within SimTraffic?” Depending on the circumstances, adjusting multiple parameters may provide similar results; however, one may be more suitable than the other. For example, consider the southbound traffic flow through the intersection below. Figure 1 shows traffic queued within the right-most lane. You might think of adjusting the **mandatory/positioning distances** to improve lane usage. However, upon closer review, you will notice that the left-most lane is aligned with an exclusive left-turn lane at the downstream node, thus forcing vehicles to turn left. Since vehicles within SimTraffic know their intended routes upon entering the network, they tend to (by default) select lanes that will minimize lane changing as they approach an intersection, thus limiting their exposure to last minute maneuvers. Adjusting the **Lane Alignment** parameter, in this particular instance, would be a more appropriate method of improving lane usage, as shown in Figure 2.



It is generally recommended to adjust parameters that do not specifically affect core driver-related algorithms if other parameters (lane alignment, turning speed, etc.) are available to achieve the same results. Within SimTraffic, there are a few calibration parameters that, when adjusted, will have an effect on multiple traffic flow related behaviors. In order to help assist users with the selection of the most appropriate parameters to adjust, Table 1 was developed.

Table 1 includes a few of the most common traffic flow issues related to calibration. Parameters at both the *local link* and *global network* levels are listed in order of adjustment preference. As you review the simulation and/or results based on the default parameters, attempt to determine the most basic reason that could cause traffic to behave in the manner which it did. For example, let's consider *queuing seems too short/long*. Confirming that gap acceptance or low peak hour factors is not the cause allows you to focus more on determining the key reason that queues do not match field observations rather than just simply adjusting the headway factor because you know that will definitely have an impact. In some cases, a combination of two or three parameters may need to be adjusted to reflect field conditions.

Table 1 - Tips for Calibrating SimTraffic

Common Traffic Flow Issues	SimTraffic Calibration Parameters								
	Link-Based Parameters (Synchro Simulation Settings)				Global Parameters - Model (SimTraffic Drivers and Internal Settings)				
	Lane Alignment	Mand. & Pos. Distances	Turning Speed	Headway Factor	Speed Factor (%) Alignment	Headway @ 1, 20, 50, & 8-mph	Gap Accpt.	Mand. & Pos. Dist Adj (%)	PHF Adjust & AntiPHF Adjust
Vehicles too slow when making a left or right turn			1						
Queuing seems too short/long (assuming no upstream bottlenecks)	1						2		3
Travel time seems too low/high					1				
Lanes not utilized properly - unbalanced queues		1						2	
Volume simulated too low			1	2		3			

Figure 3 includes a screen shot of a heavily congested arterial that required adjustments to three parameters to reflect real-world conditions. Proper calibration of the existing micro-simulation model will enable you to effectively analyze future scenarios with confidence.

For additional details, consider registering for the Calibrating Synchro & SimTraffic Webinar focuses on this subject using real-world cast studies.

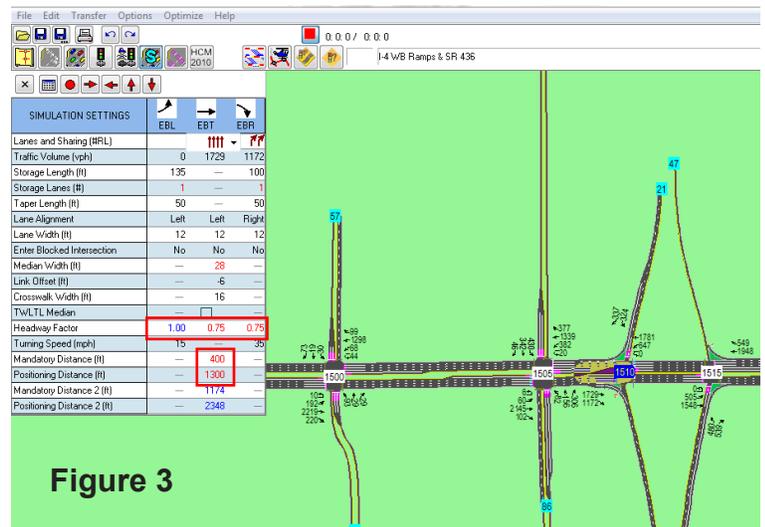


Figure 3