

**Please make sure you downloaded latest version of the plug-in from our forum <http://forum.rendering.ru> Users are provided with the same installation file for both Workstation and Render node**

### **If you already use CityTraffic version 1.xx**

**CityTraffic 2** is essentially a brand new system based on the artificial intelligence system, which differs radically from the one used in versions 1.xx. Besides, the whole road construction and traffic management algorithms have significantly changed. Hence, we have not been able to provide compatibility; thus, scenes created in versions 1.xx cannot be opened correctly in CityTraffic 2. However, we have retained the possibility to install both CityTraffic 1.xx and CityTraffic 2 on the same version of 3ds Max. This will allow you to continue working on the files created in older versions and to switch to the new version step by step, whenever possible and necessary. The CityTraffic 1.xx license cannot be used for CityTraffic 2, so you will need to request an additional license for CityTraffic 2 from us by mail@rendering.ru. All CityTraffic 1.xx users will get the CityTraffic 2 licenses free of charge.

### **Setup**

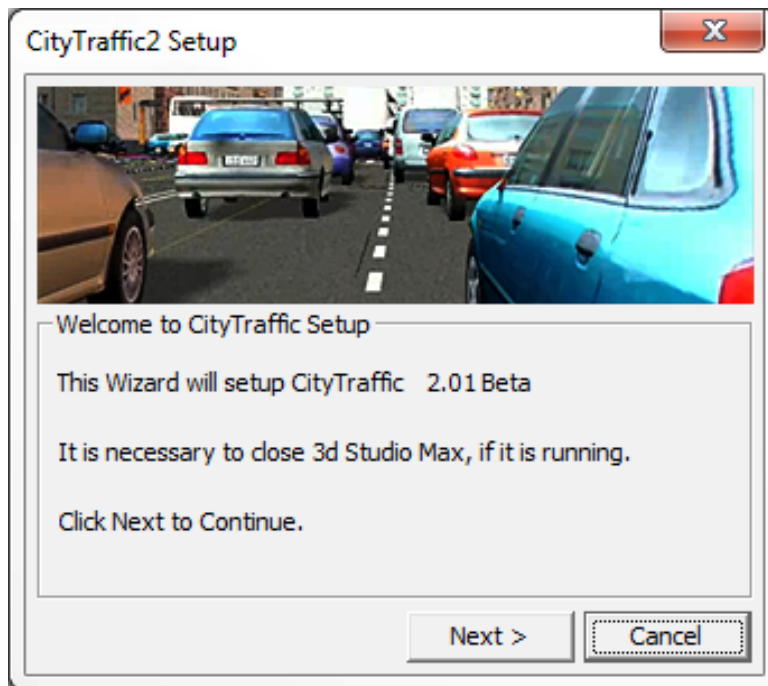
CityTraffic2.exe is a version for workstations and render nodes.  
Supported by 32- and 64-bit 3ds Max (2008, 2009, 2010, 2011, and 2012.)

Workstation can be used only when license is properly installed, and provides access to all CityTraffic 2 options.

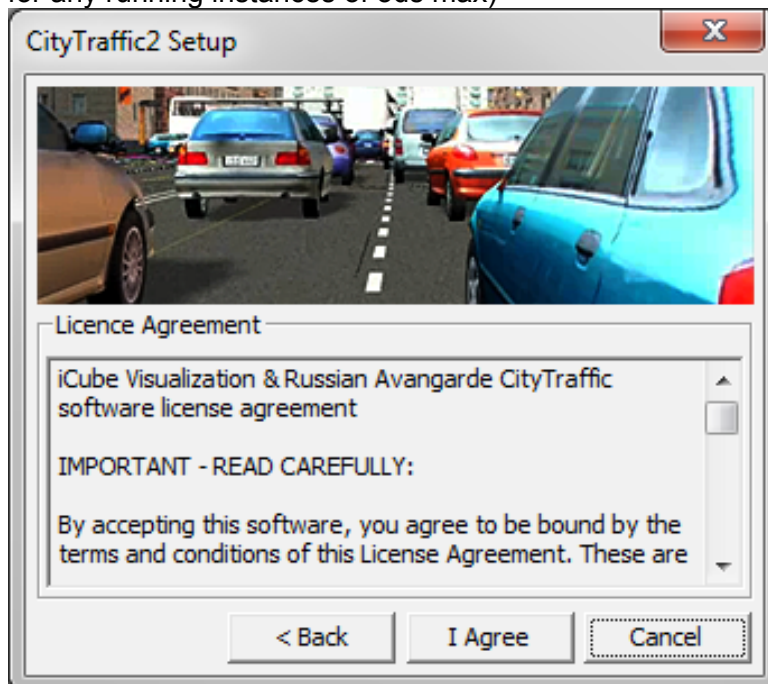
If CityTraffic 2 does not find license file it switches itself to Rendernode mode and only can render files created with CityTraffic 2 Workstation (it is also possible to open and view the file Rendernode but not edit)

Rendering is available both locally and over network.

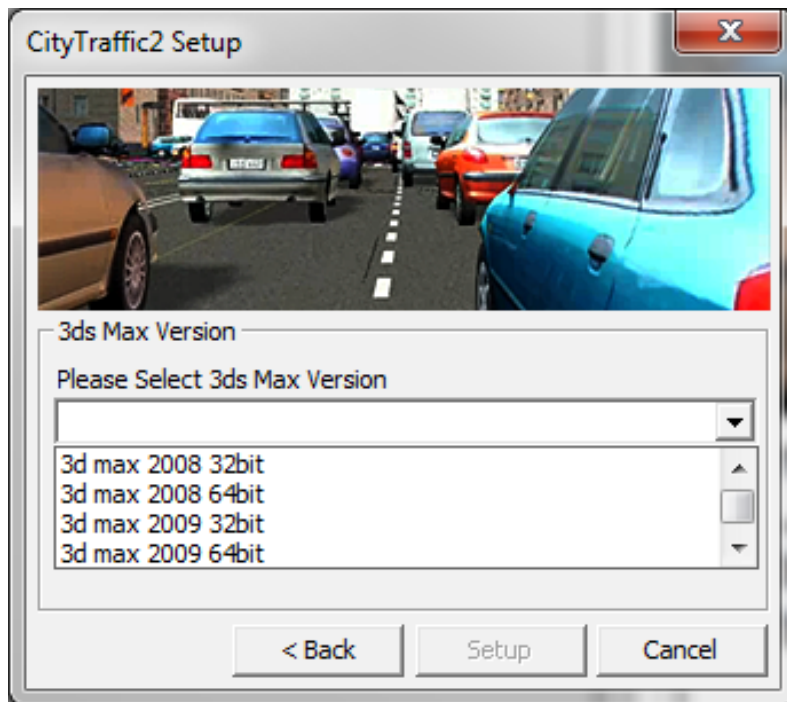
To install the program you need to run the CityTraffic2.exe with the administrator rights. (In windows 7 right click "install as administrator")



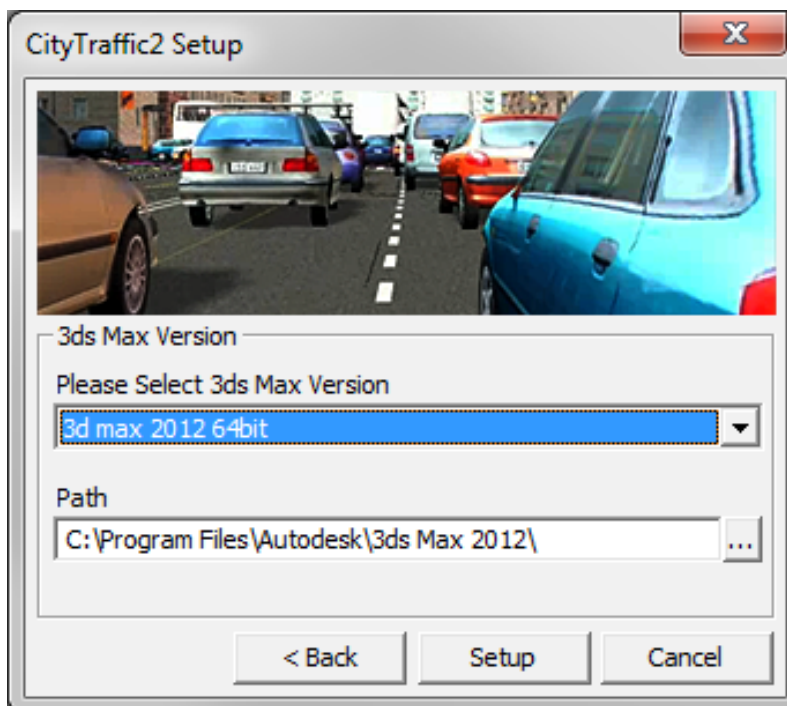
Don't forget to quit 3ds max before you start the installation. (Please check Task Manager too for any running instances of 3ds max)



Read carefully the license agreement. If you accept it tick "I accept" and then press setup button; if not, press "Cancel" button.



Select 3ds Max version you use.

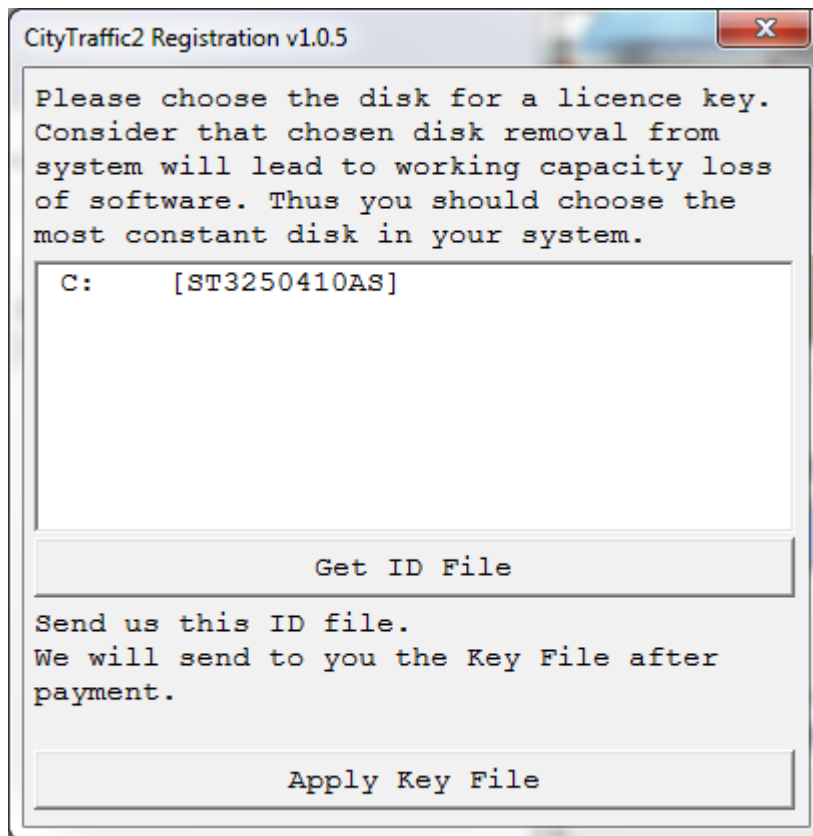


The setup program will automatically find the location of 3ds Max. Make sure the path to 3ds Max is accurate. When necessary, correct it in the 'Path' field. Then click 'Setup'.

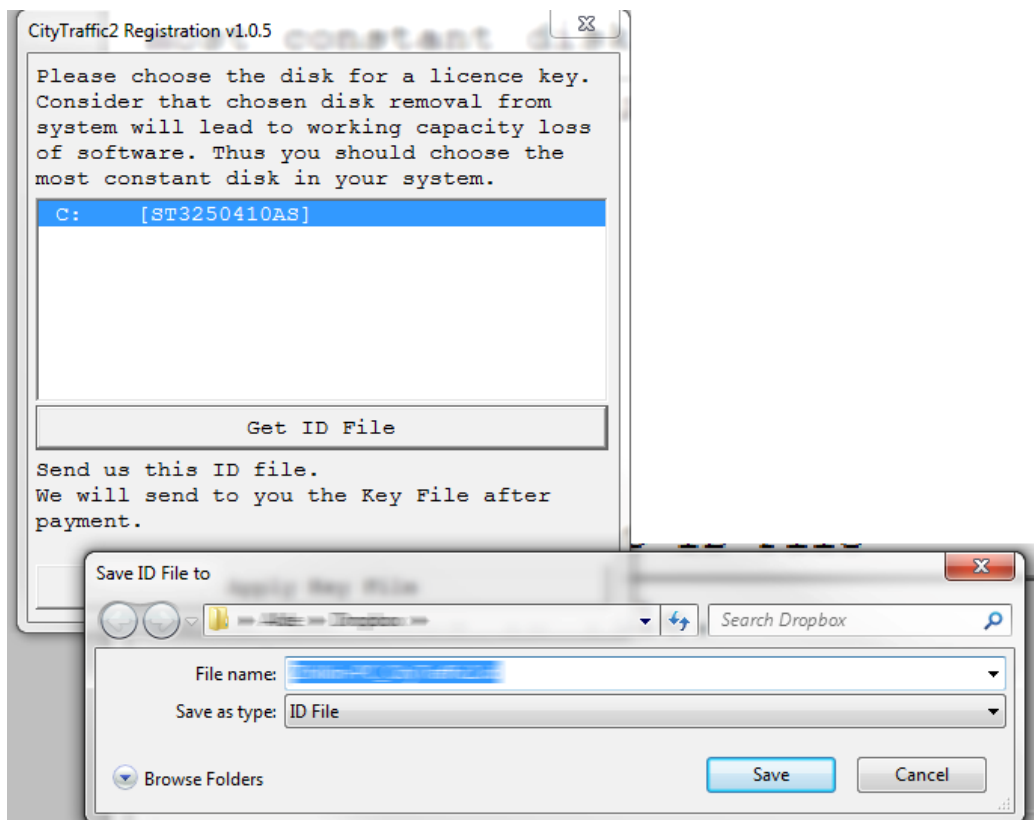
### Registration

Launch the CityTraffic2Registration32x.exe or the CityTraffic2Registration64x.exe utility (for 32- or 64-bit system, respectively.)

Please make sure you always use the registration utility which is supplied with the particular version of CityTraffic 2



Choose a hard disk for to be linked with the CityTraffic license key (linking to a USB, a Flash or a network drive is not supported ) Click 'Get Your ID File' and save the \*.id file to your hard disk under any name.



Send this file to [mail@rendering.ru](mailto:mail@rendering.ru) (or your reseller). Please attach copy of you receipt or order number to avoid any delays in communication.

In the nearest time (usually within 24 hours) you will get an email from us (or your reseller) with \*.key license file attached. Save this file on your hard disk. Start again CityTraffic2RegistrationXXx.exe utility and press the «Apply Key File» button.

In the dialogue box select the \*.key file you received from us. With this registration procedure is over.

In case of license malfunction and errors (which can be caused by disk formatting, reinstallation of the operating system or components replacement) you are free to address the developer at any time. Please make sure you download latest version from our forum and generate new \*.ID file. Send it to mail@rendering.ru to get your updated \*.Key file

However, we reserve the right not to issue a new license in case of total replacement of a PC if the registration request is submitted more often than once in half a year.

**ATTENTION!** Please always try to email from the same email address you used when you purchased the plug-in. If we can't find your e-mail address from which you sent the ID file in our database and there is no explanation and receipt or order number in you email, your request may not be processed!

Please always attach you receipt or order number to avoid any delays in communication.

### **Uninstall**

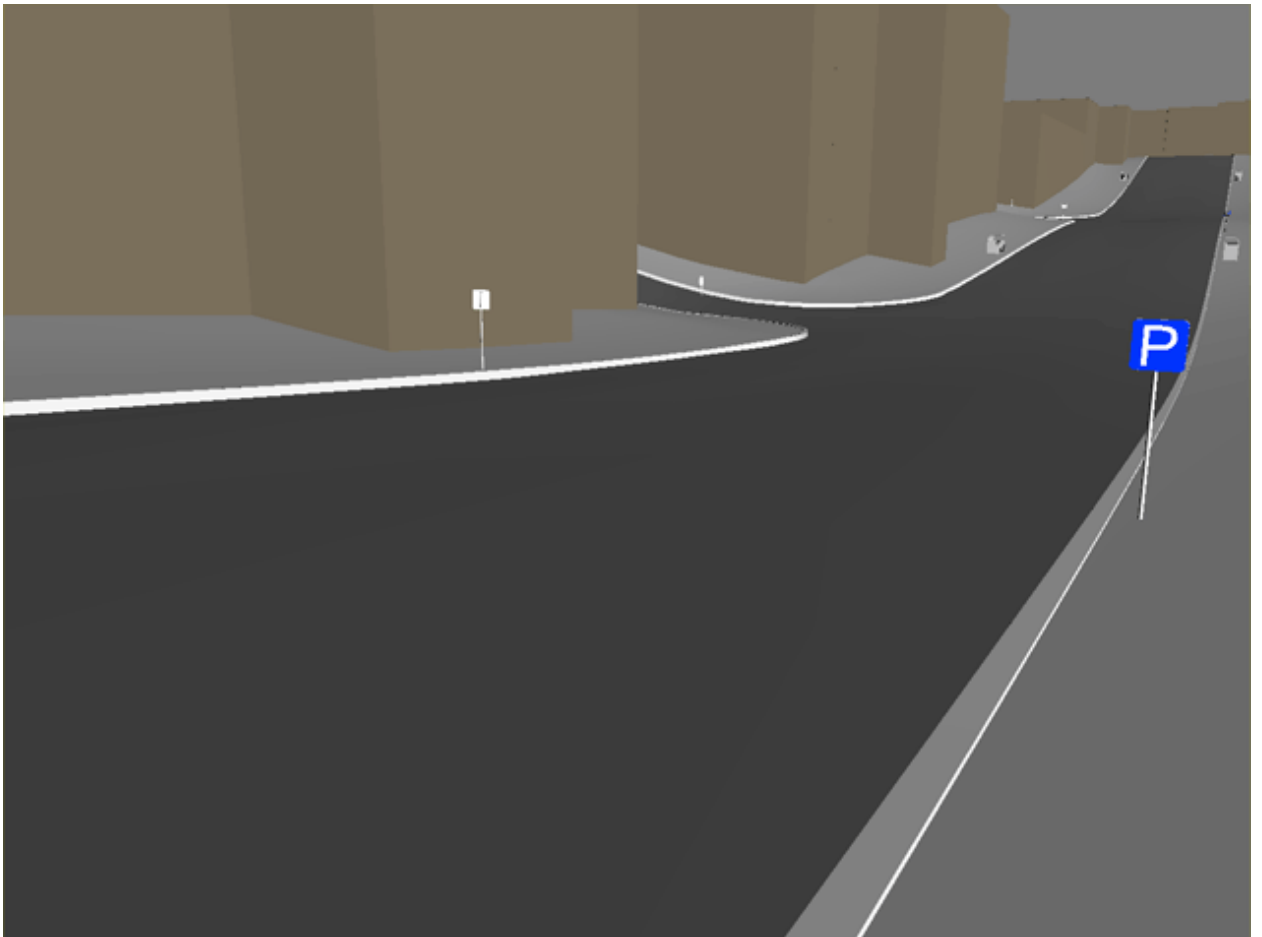
To uninstall CityTraffic simply remove the CityTraffic2.dlo file from the Plugins folder of your 3ds Max.

### **Setup for network and distributed rendering**

For network rendering, you need to install CityTraffic2.exe on all computers in your render farm. The setup procedure is similar to the workstation version apart from the Registration section. The render node version does not require registration. You can simply place copies of the CityTraffic2.dlo file to the Plugins folder on your render nodes.

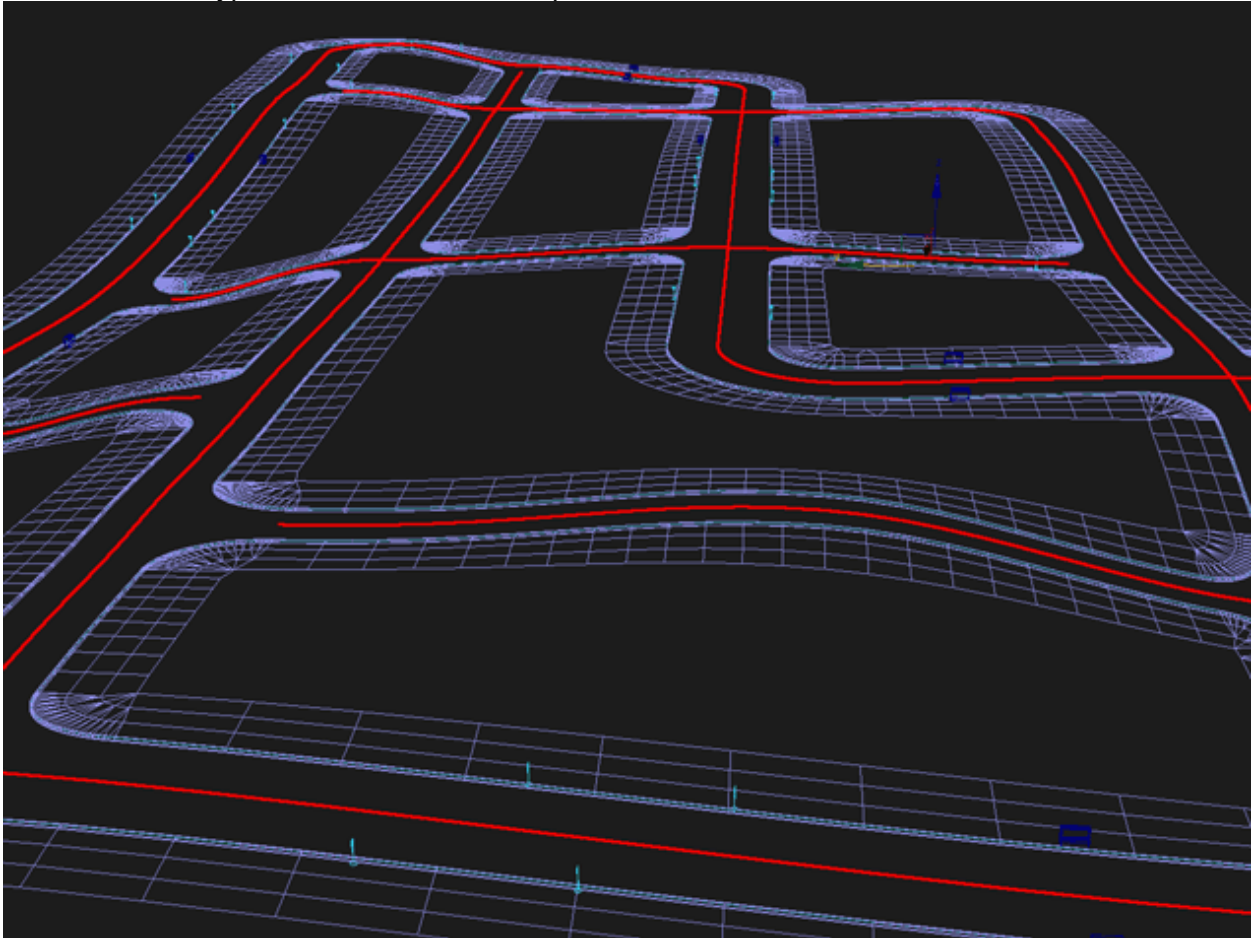
### **CityTraffic 2**

CityTraffic is designed to fill roads with traffic.

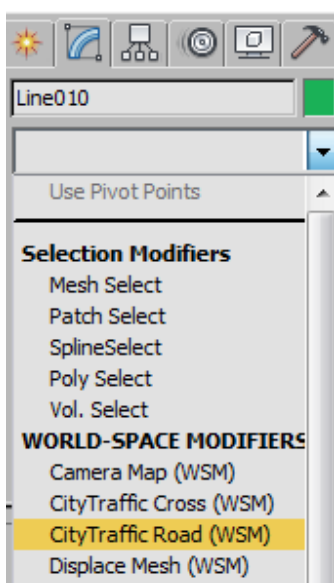


**CityTraffic 2** is an automatic vehicles management system. Therefore, bringing the animation generated by the system to the forefront is not recommended.

1) In the middle of each road draw a spline conforming to the terrain. Conforming does not have to be precise; **however, the gap between the spline and the ground surface should not exceed the wheel radius of your vehicles.** If roads vary in terms of width or number of lanes, then each road type should have its own spline.



2) Assign a **CityTraffic Road(WSM)** modifier to splines.



**CityTraffic Road(WSM)** modifier has the following parameters:

The image shows a software dialog box titled "Road Param". It contains several input fields and checkboxes. The "Shift" field is set to "0.0cm". The "Strip Width" field is set to "420.0cm". The "Forward Strip" field is set to "2". The "Backward Strip" field is set to "2". The "Reverse Traffic" checkbox is unchecked. The "MaxSpeed (Km/h)" field is set to "100.0". Under the "Enable for:" section, the checkboxes for "Car", "Bus", and "Truck" are all checked.

**Shift** – shift of road centerlines against basic spline

**Strip Width** – lane width

**Forward Strip** – number of forward lanes

**Backward Strip** – number of backward lanes

**Reverse Traffic** – reverse the direction of traffic

**MaxSpeed** – speed limit for the road

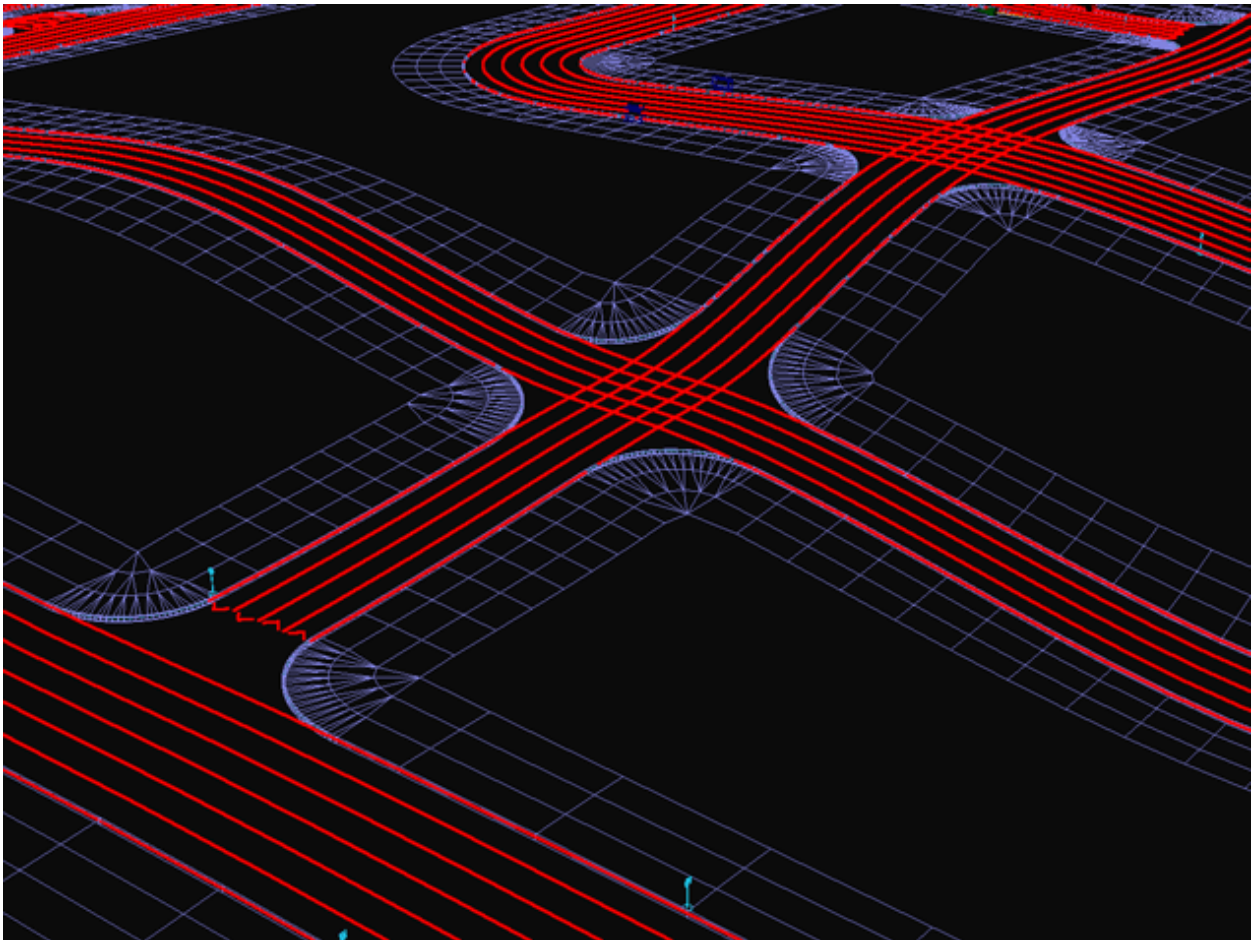
**Enable for** – types of vehicles allowed on the road

If you need to create a road with lanes different in width or speed limit or reserved only for public transport, you can copy a spline, assign a **CityTraffic Road(WSM)** modifier with different parameters to the copy, and arrange the lanes in order by changing the **Shift** value. In this case, differently modified adjacent lanes should slightly overlap edgewise. This will allow vehicles to change lanes correctly.

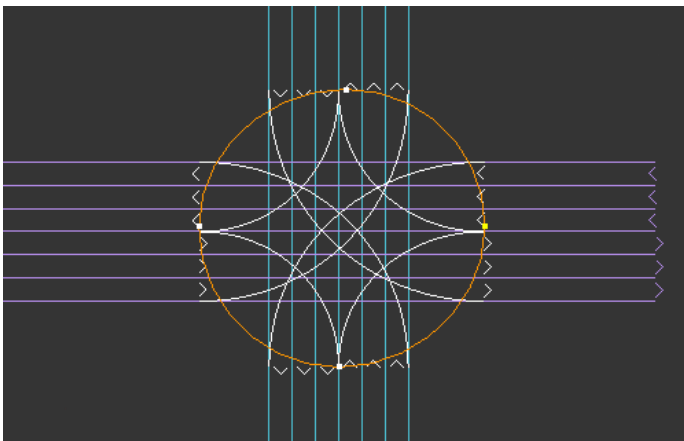
Such a simple road modeling system by no means imply limited capability.

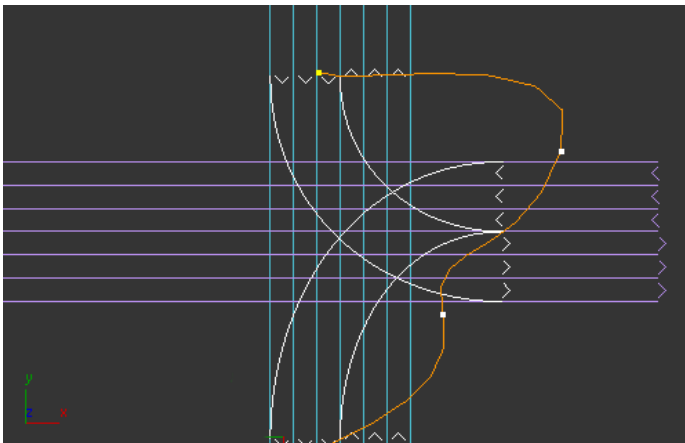
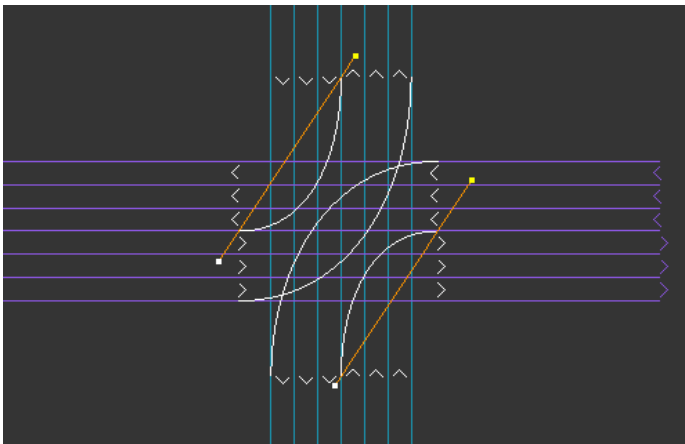
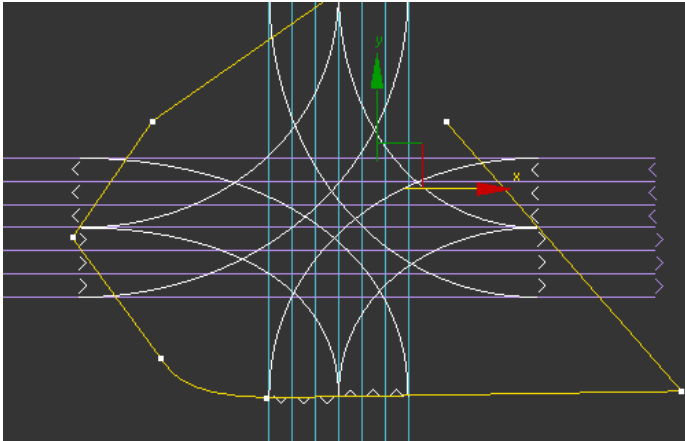
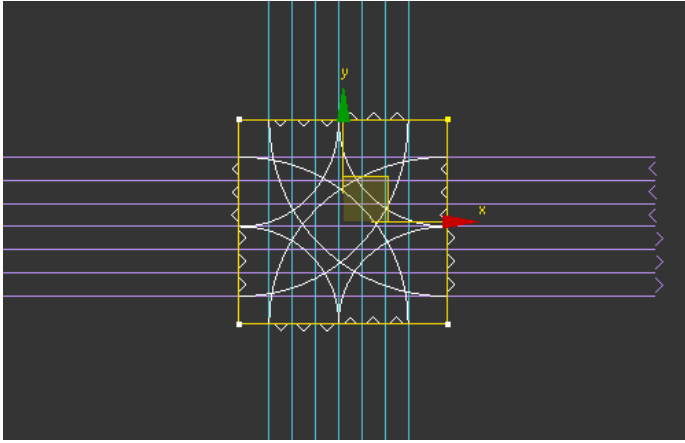
You can combine any part of the road from several splines with different **CityTraffic Road(WSM)** modifiers. This will let you reduce or expand roads, create pullouts and parking bays, and so on. In order to make road narrowings and expansions look correct, you need to add extra elements to the relevant area. See below for an example.

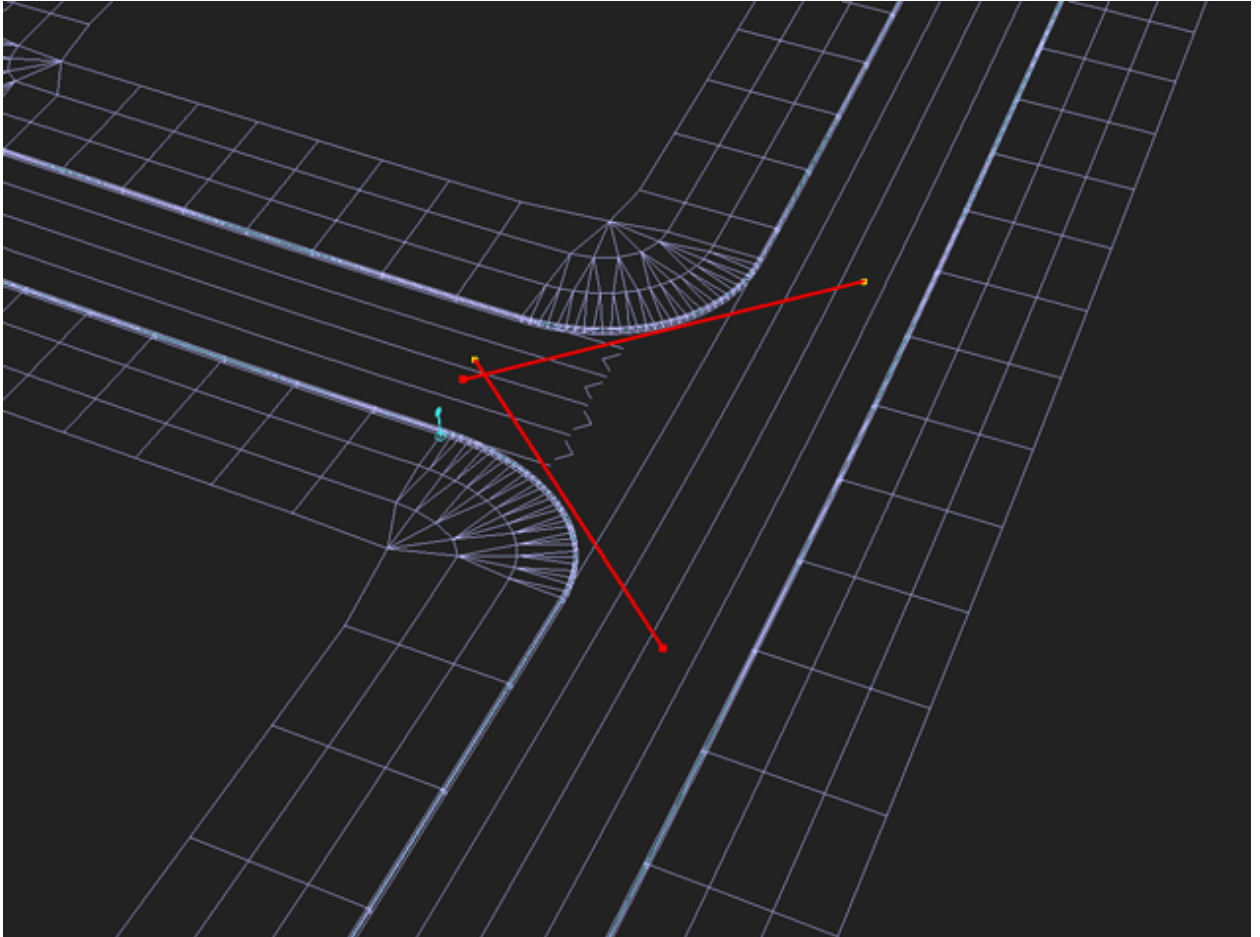




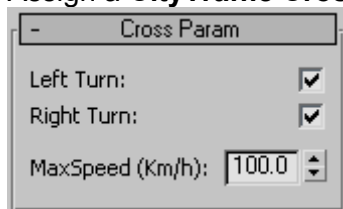
**3)** To arrange road intersection, draw splines crossing the central lines of the roads to be intersected. While the shape of the splines does not matter, the intersecting points of the splines and the central lines are important.







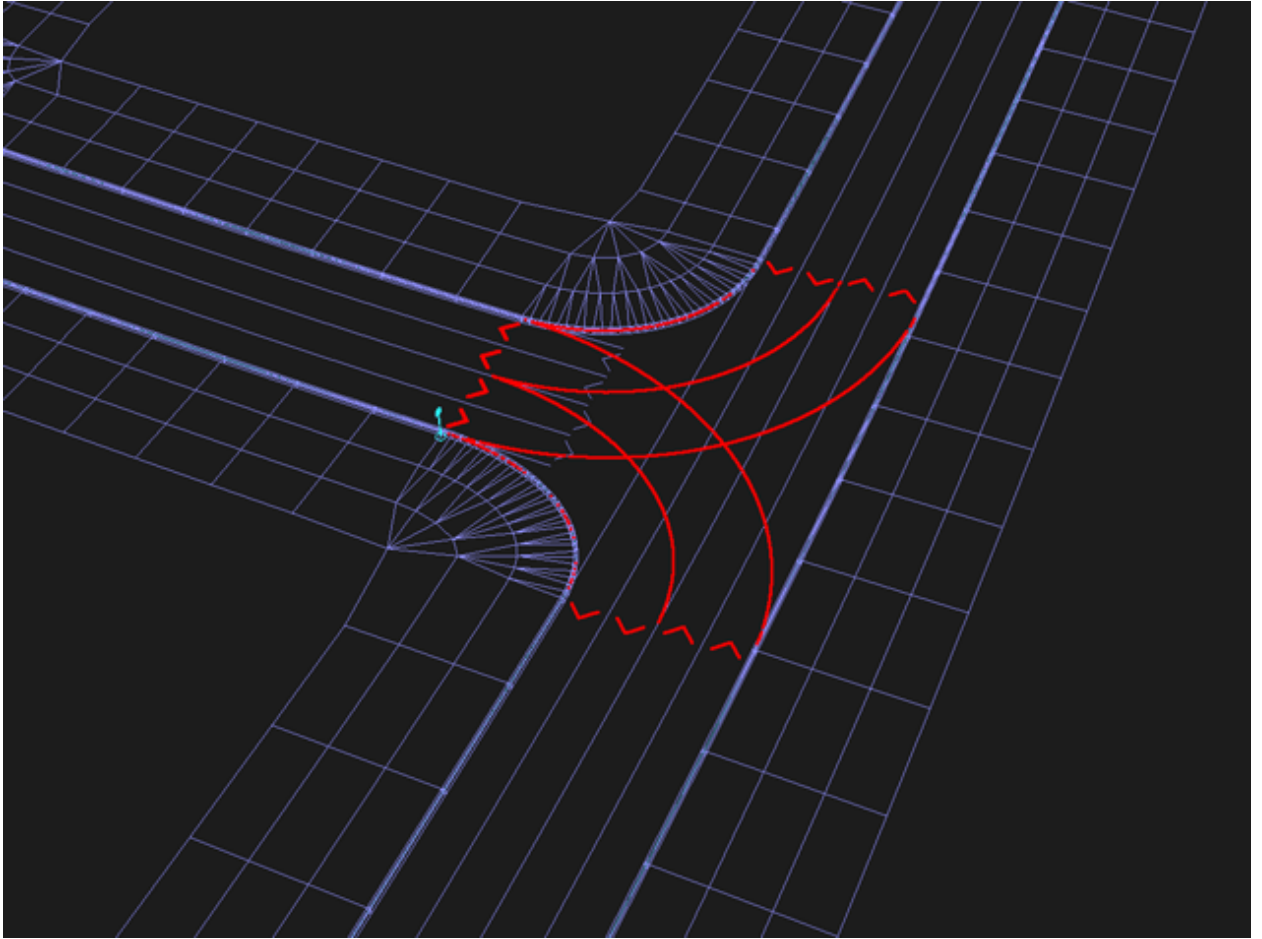
Assign a **CityTraffic Cross (WSM)** modifier to the spline.



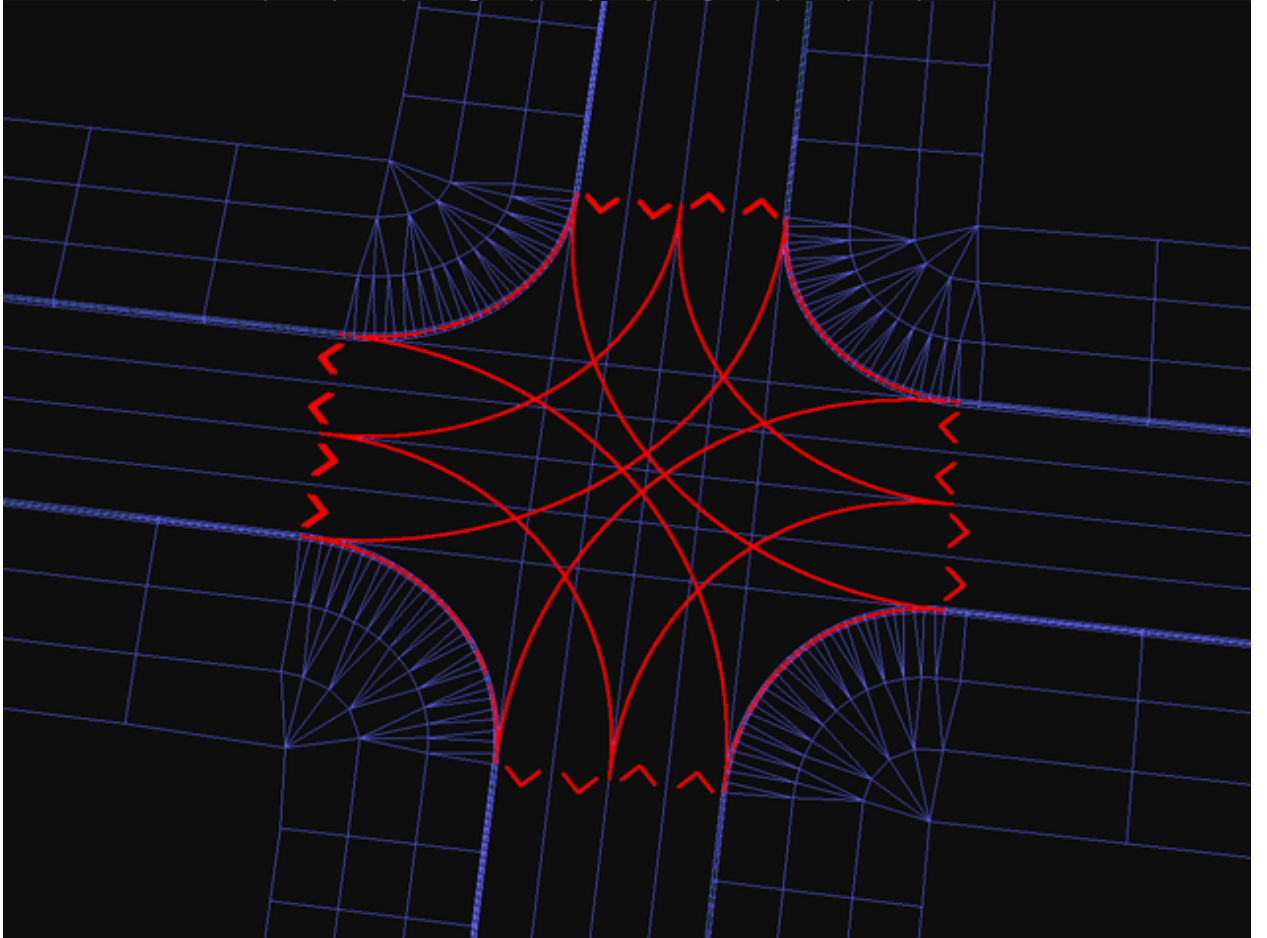
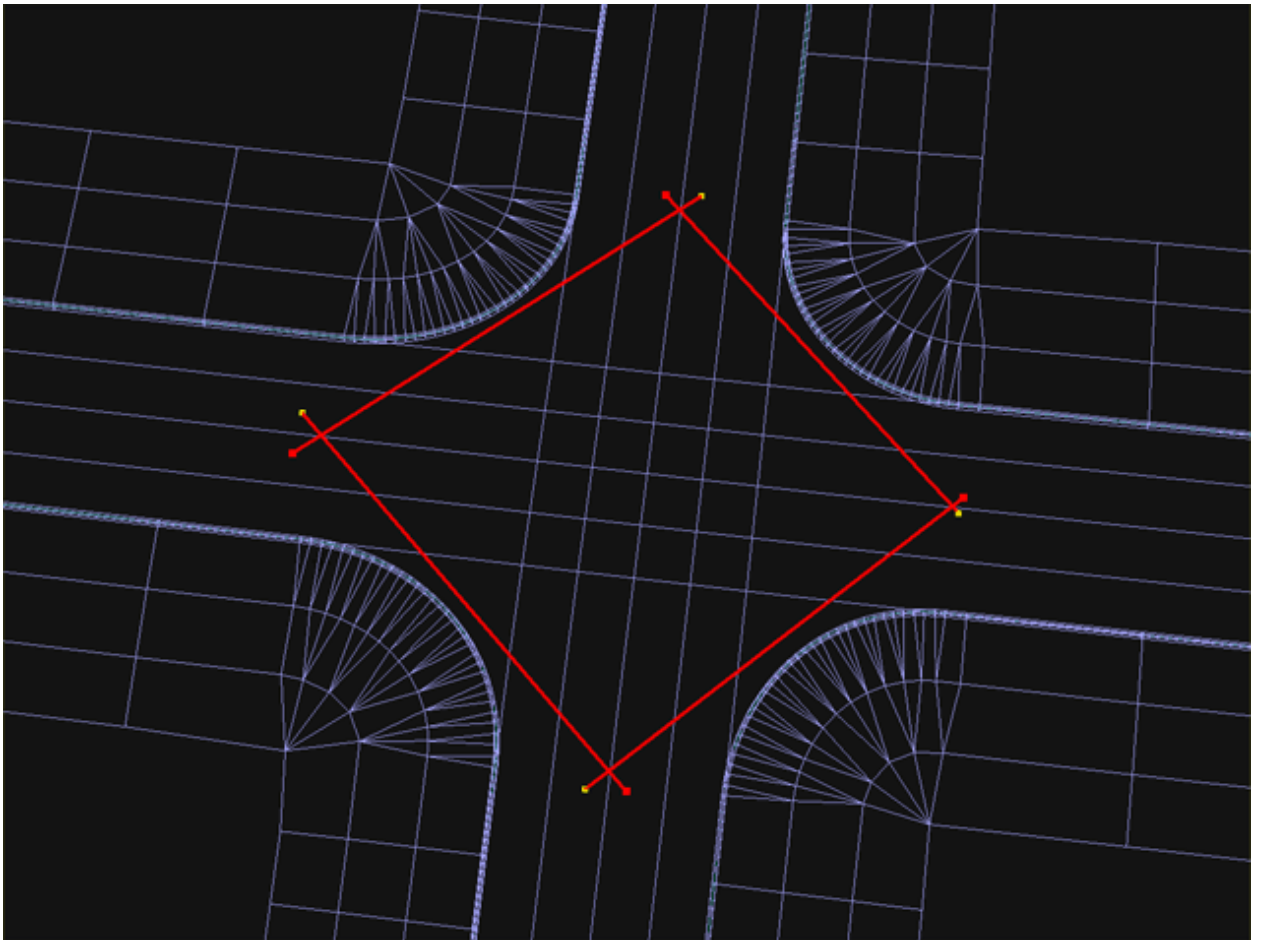
**Left Turn** – left turn is allowed

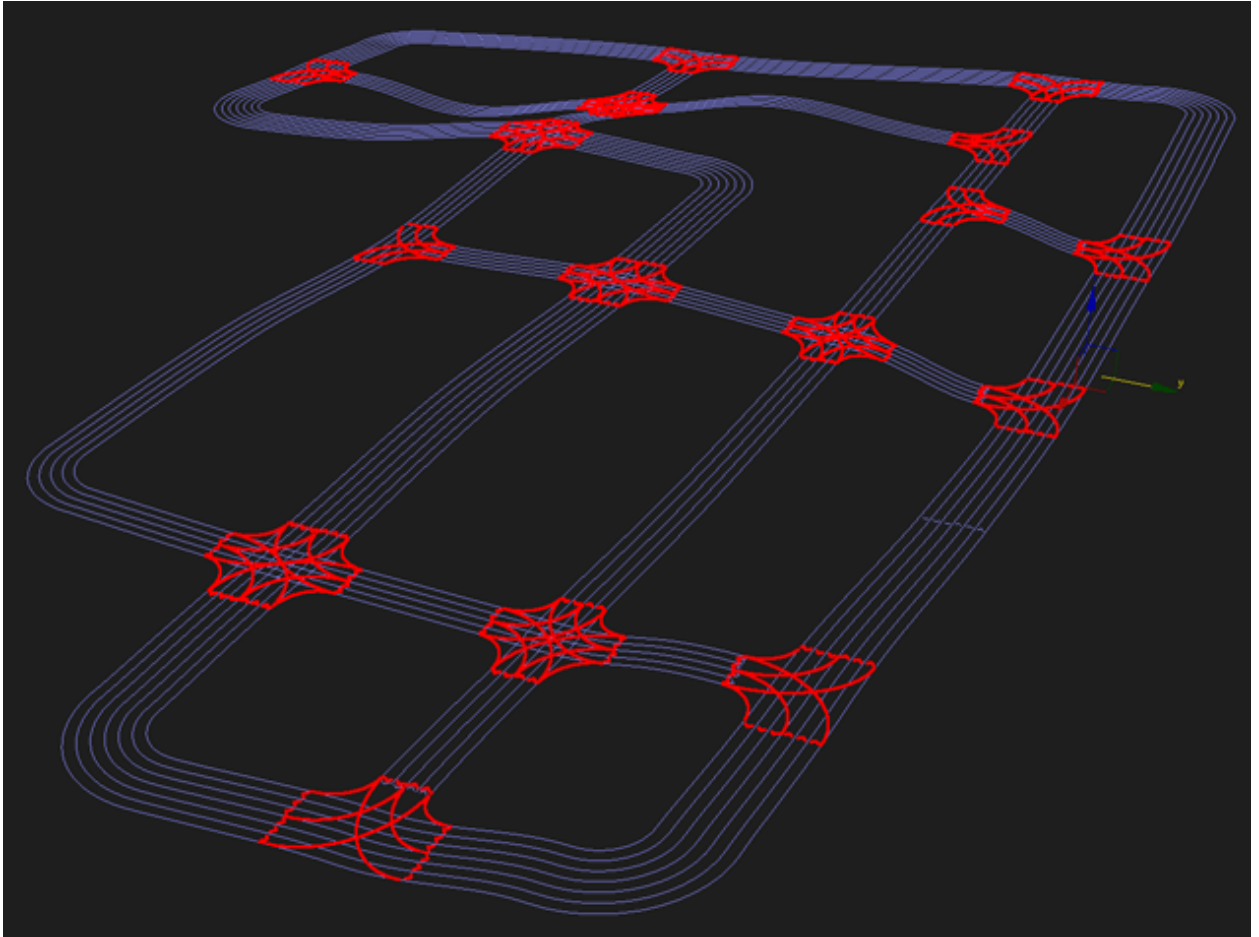
**Right Turn** – right turn is allowed

**MaxSpeed** – speed limit for the intersection



Arrange other intersections likewise.





The automatic intersection modeling system makes it possible to arrange numerous typical intersections. Nonetheless, it does not provide flexibility in managing traffic lanes, enabling turns from specific lanes, and making unusual radiuses and curves at intersections. If you are facing a task to develop an uncommon intersection, you need to do it manually. Draw all essential curves, turns and U-turns by means of splines, assign a **CityTraffic Road(WSM)** modifier and transform the splines into road sections with necessary characteristics. Try to connect the spline edges to the adjacent to intersections road sectors accurately. However, they do not have to be perfectly precise as the system as such is intelligent enough to allocate traffic flows correctly.

### Example

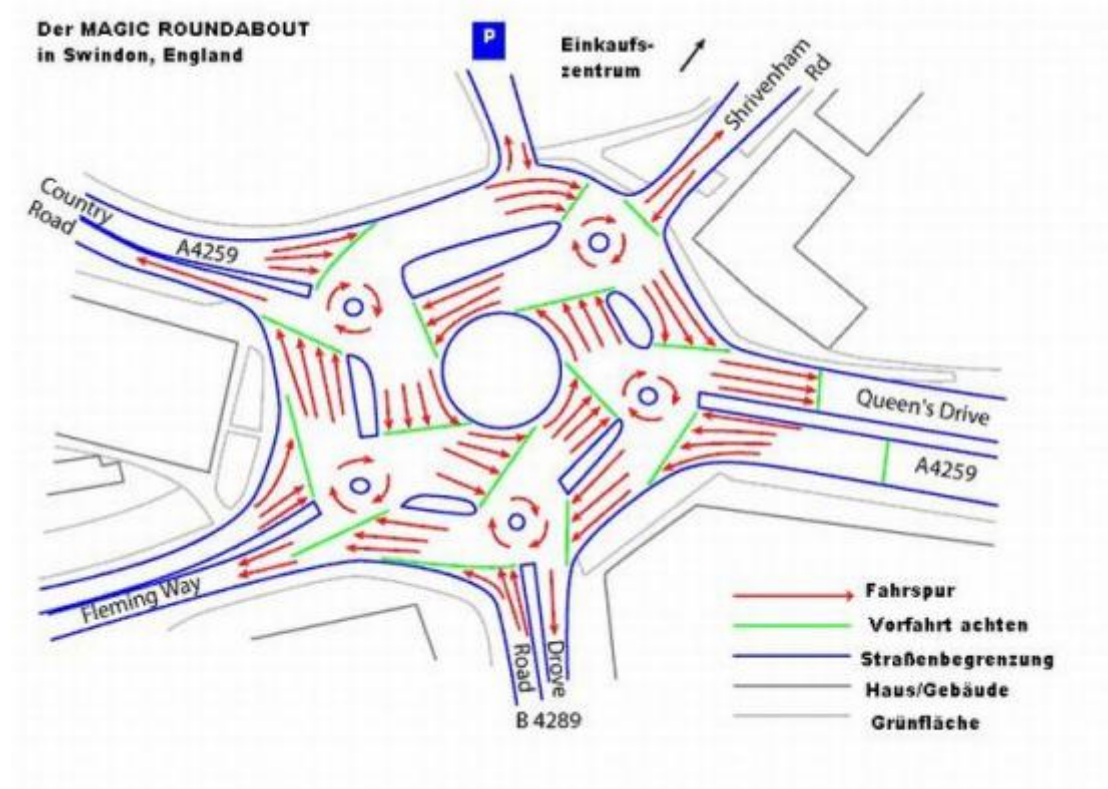
*As an example lets analyze an extremely sophisticated intersection, i.e. the Magic Roundabout in Swindon, England, famous for its complexity. This is how it actually looks like:*





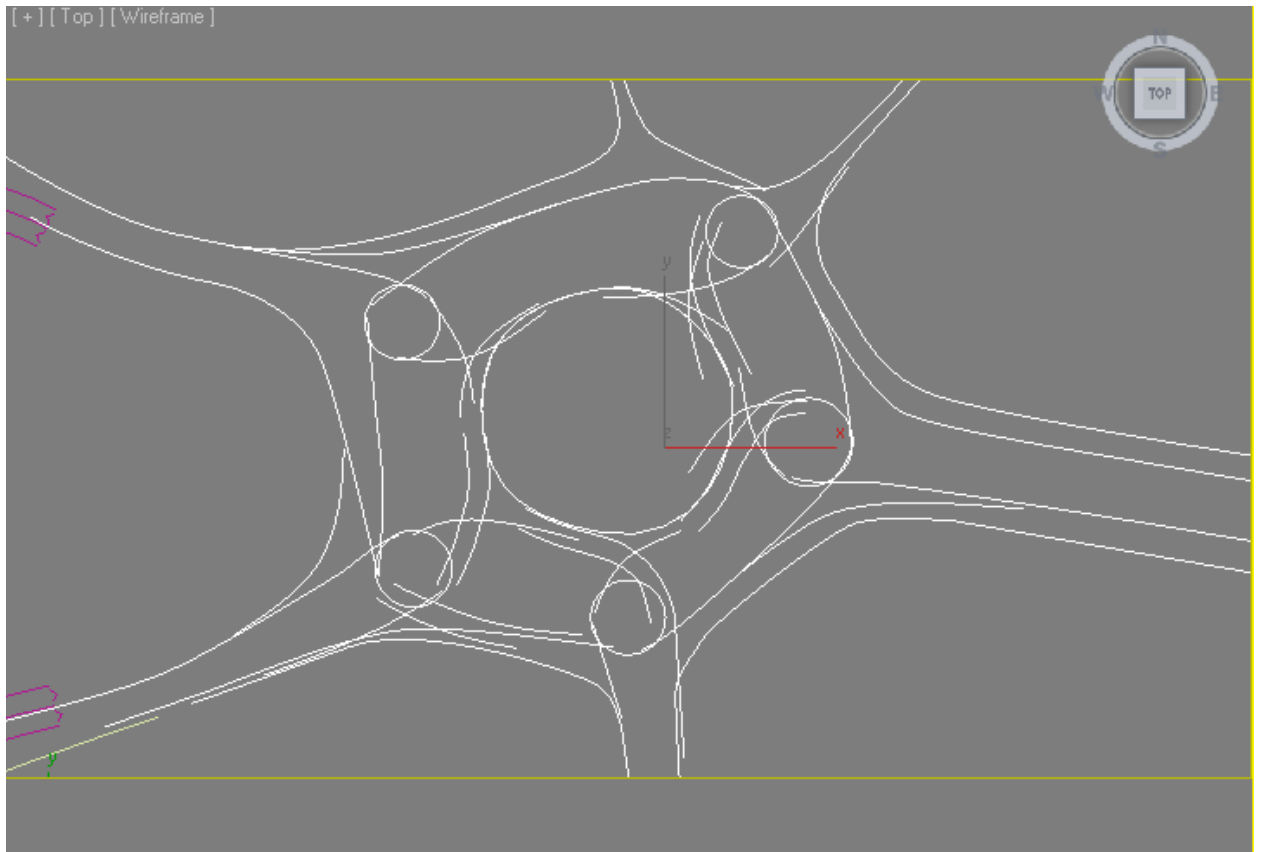


Here is its traffic plan:

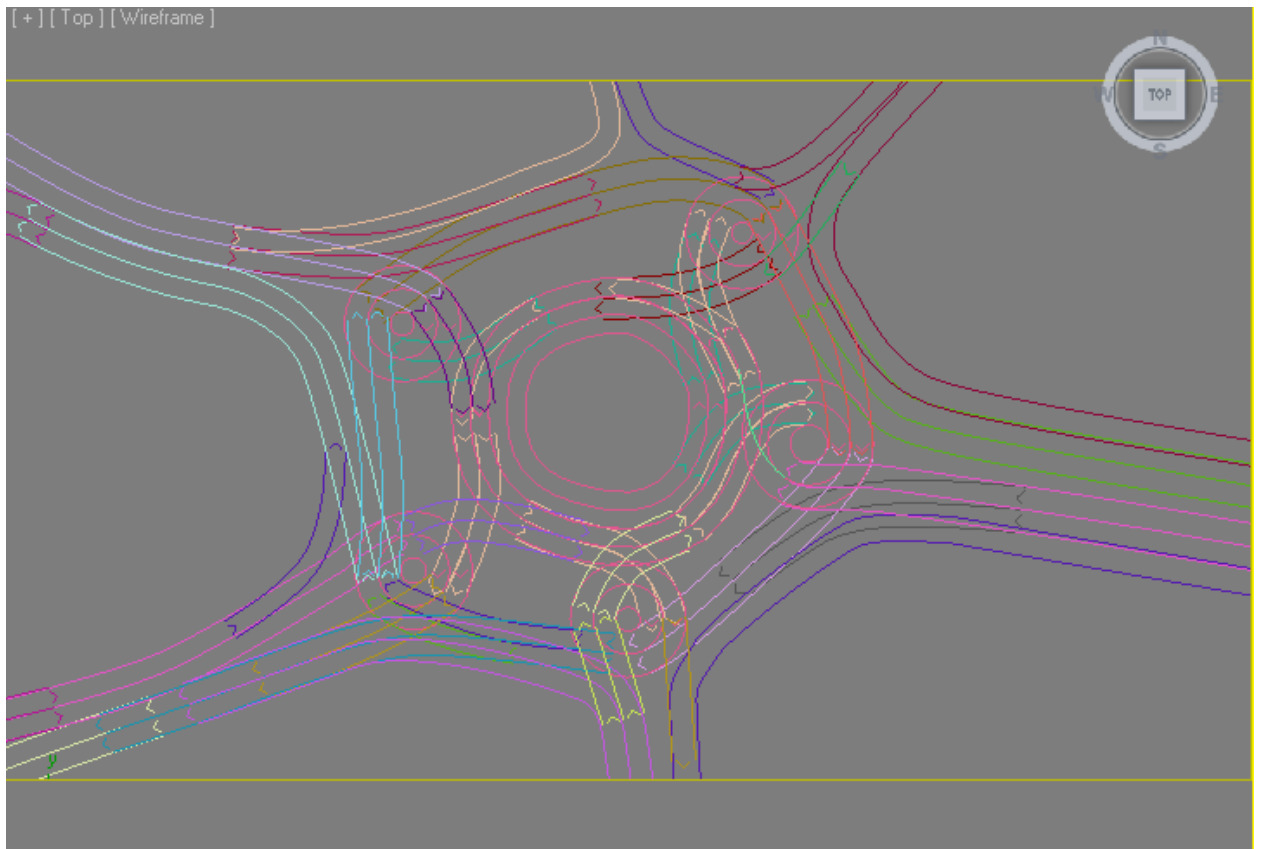


a) Let's start with modeling splines on all possible directions of the intersection; these do not have to be precise.



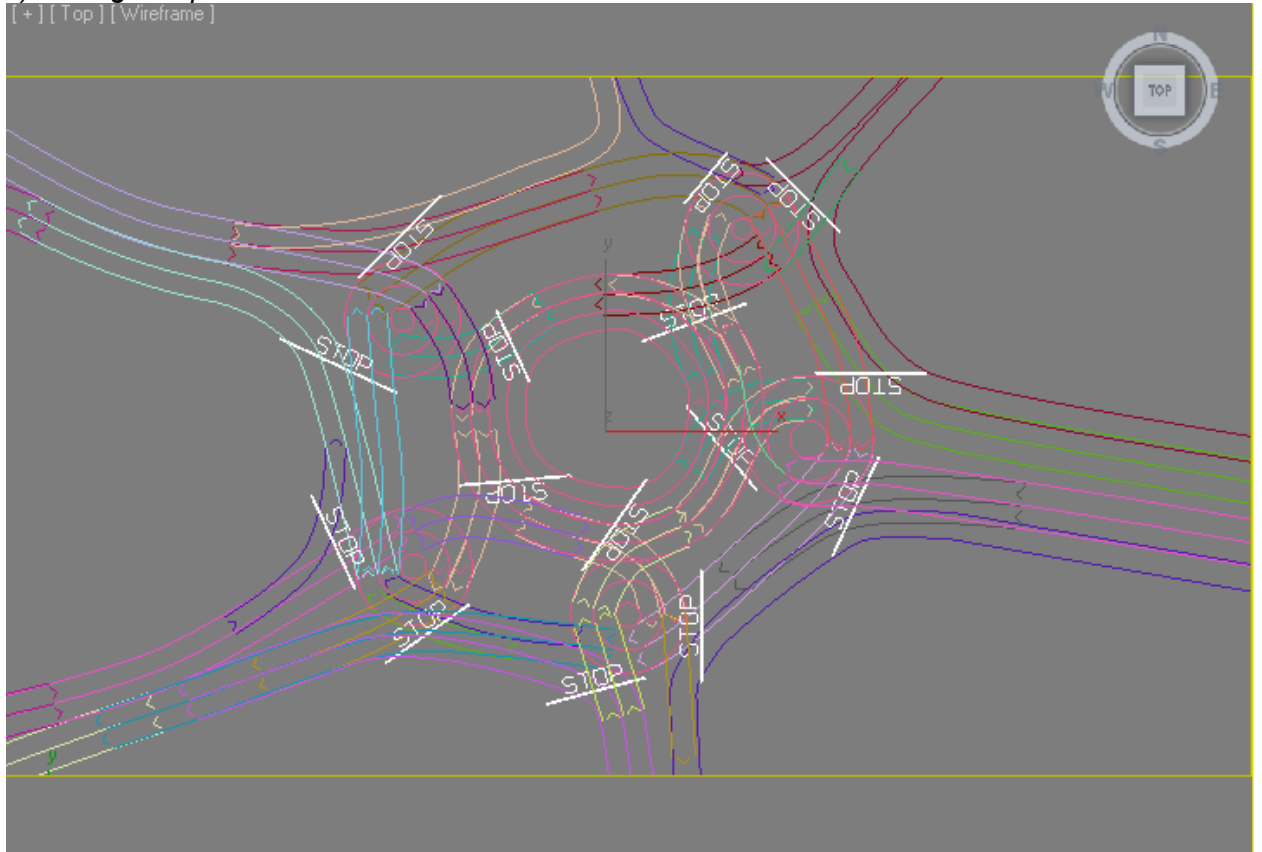


b) Then assign **CityTraffic Road(WSM)** modifiers to them and adjust the number of lanes and their widths. It is clear that there is no need to strive for perfect connections between all the elements.



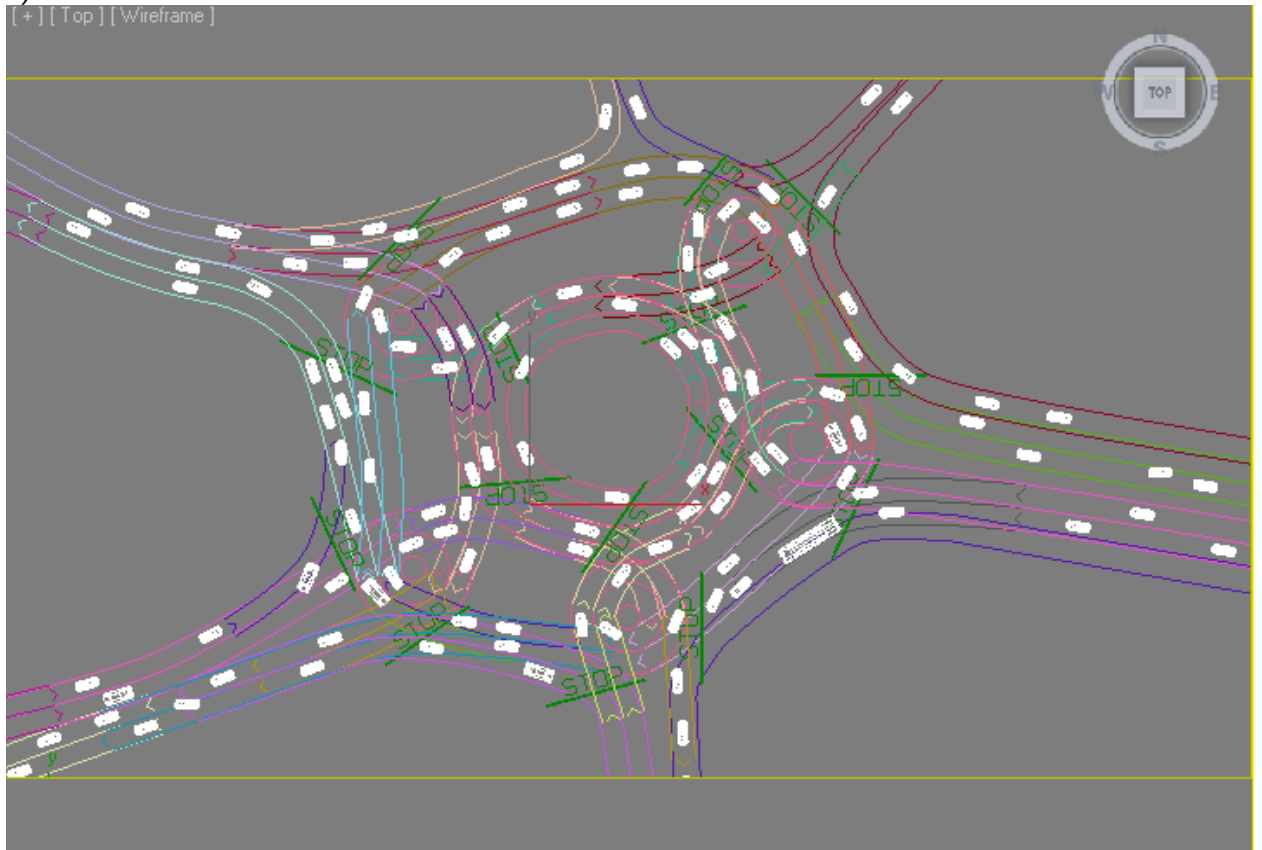
c) Arrange stop lines

[+] [Top] [Wireframe]



d) Make simulation

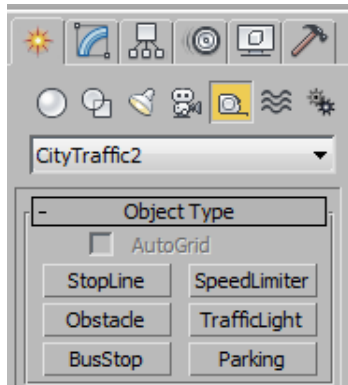
[+] [Top] [Wireframe]



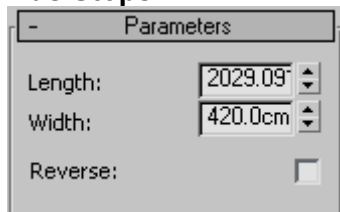
You can watch the result at <http://www.youtube.com/watch?v=conjlqsF7Ys>.

*As you can see, even a complicated uncommon situation like this can be simulated by means of **CityTraffic2**.*

**4)** Arrange bus stops, parking stalls, stop lines, and traffic lights where necessary. All of these elements can be found in the **Helpers** section of **CityTraffic2**.



#### **Bus Stops:**

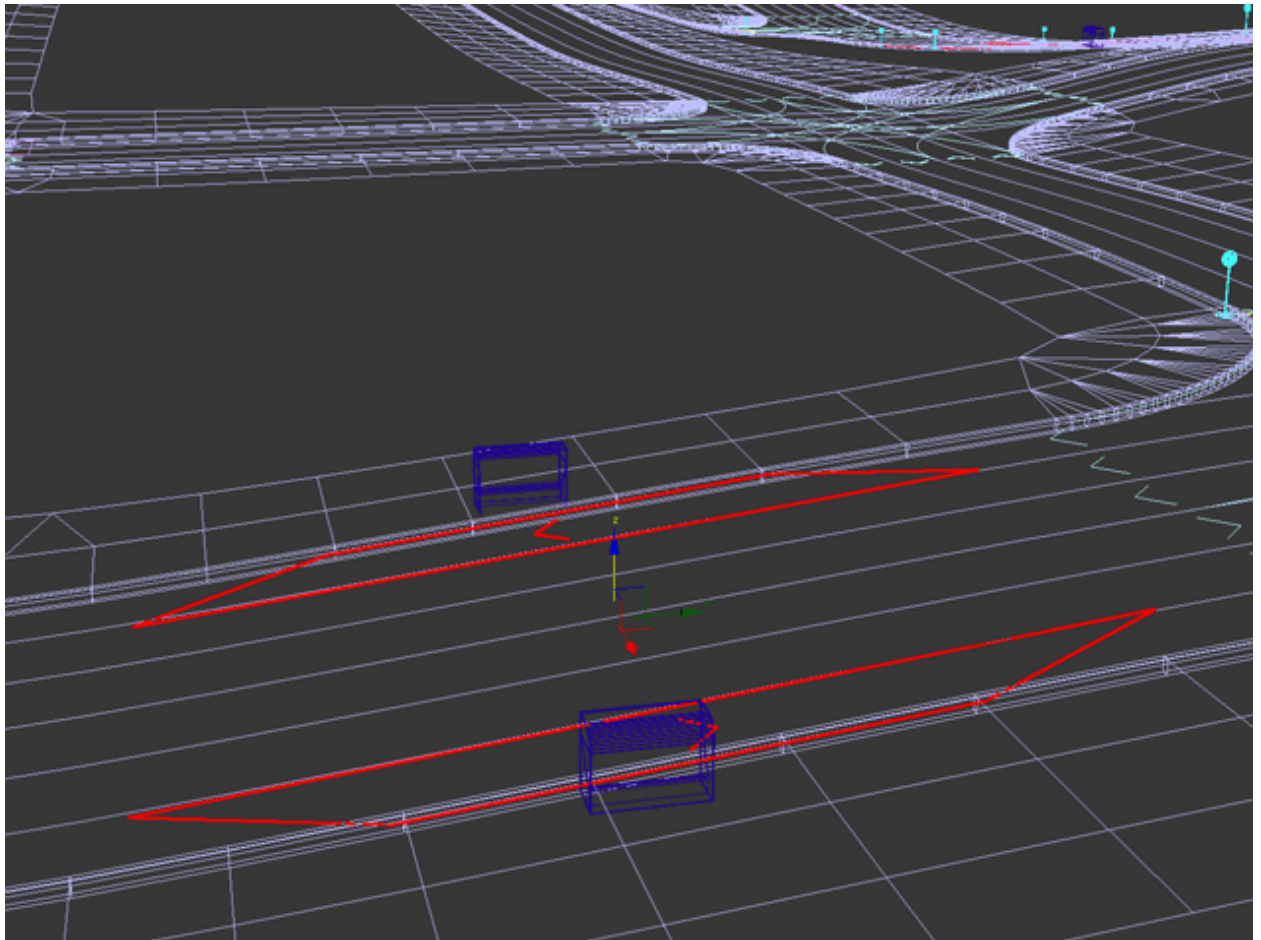


**Length** – length of a bus stop

**Width** – width of a bus stop

**Reverse** – reverse bus stop approach road

Buses will stop at this object.



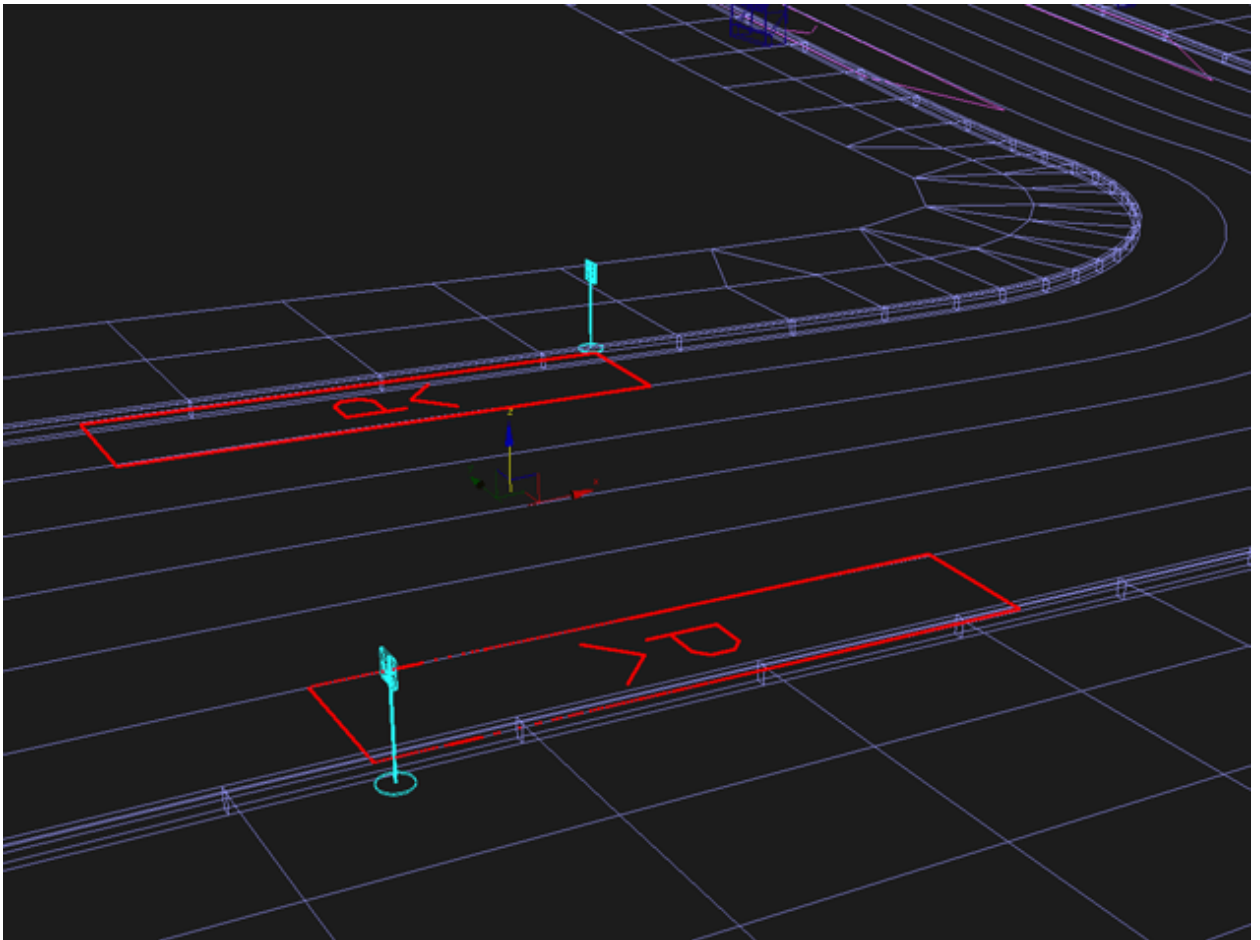
**Parking area:**

Parameters	
Length:	2000.0cr
Width:	420.0cm
Access Angle:	0.0

**Length** – length of a parking area

**Width** – width of a parking area

**Access Angle** – angle value for cars to park in a parking area  
Cars will park at this object.

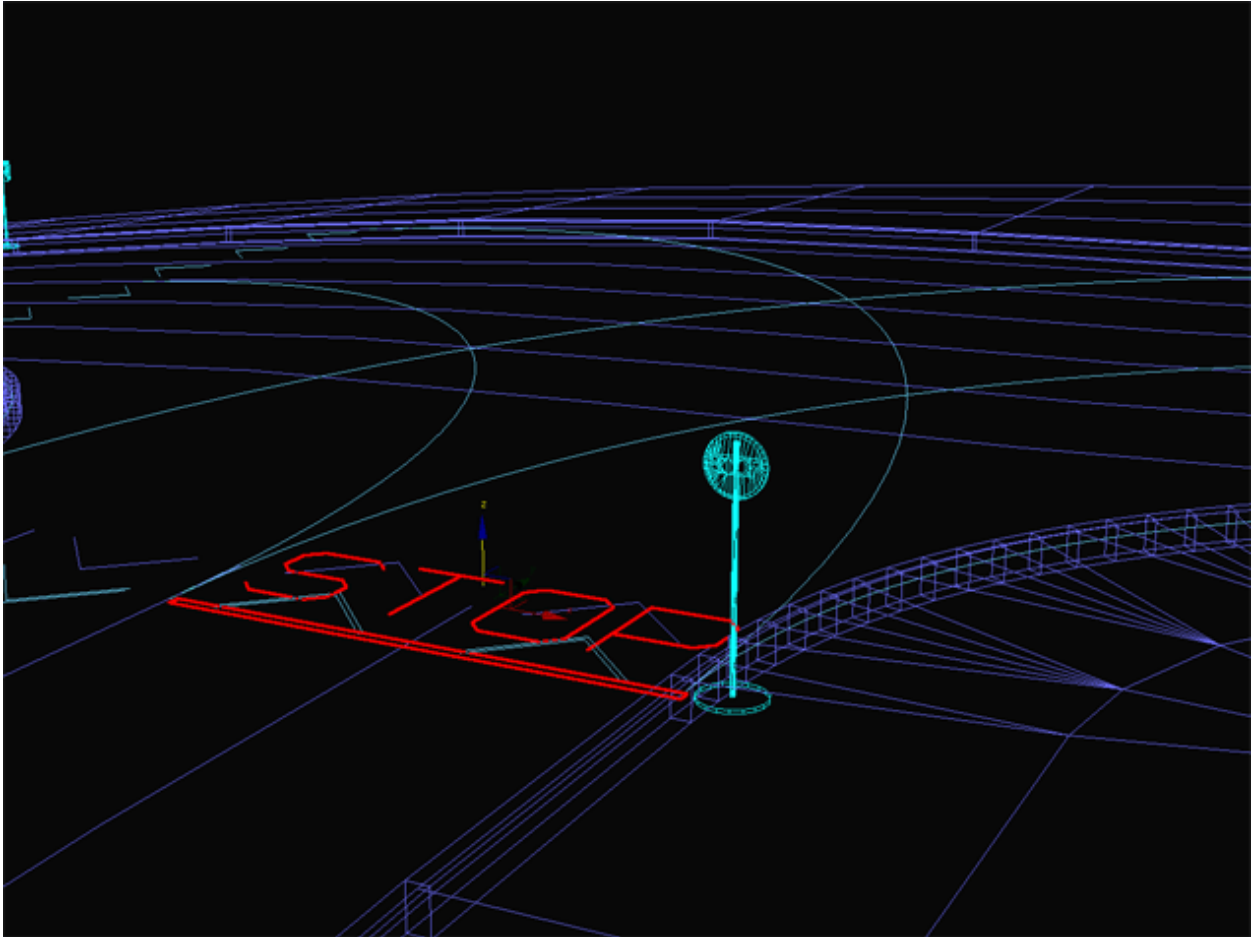


### Stop Line

Parameters	
Length:	203.6016
Width:	420.0cm

**Length** – length of a stop line

**Width** – width of a stop line



Do not make stop lines too small as they will be inconspicuous.

All vehicles will be slowing down and stopping prior to crossing this line. After stopping they will be driving on.

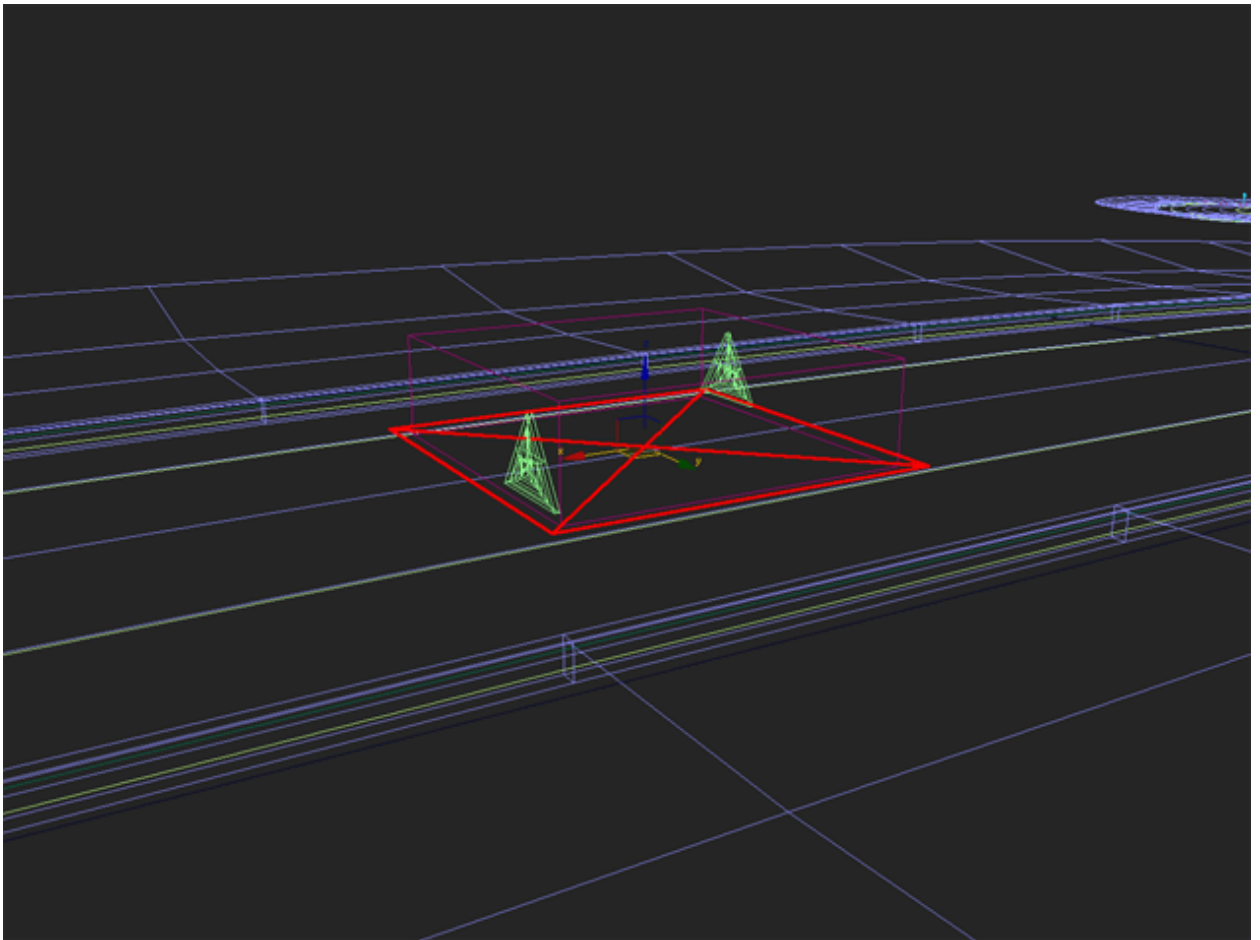
### Obstacle

Parameters	
Length:	418.1055
Width:	428.1396

**Length** – length of an obstacle

**Width** – width of an obstacle

Vehicles cannot drive into obstacles, so they will be trying to detour them.



Do not make obstacles too small as they will be inconspicuous.

### Speed Limiter

Parameters	
Length:	944.4808
Width:	2184.578
MaxSpeed (Km/h):	30.0

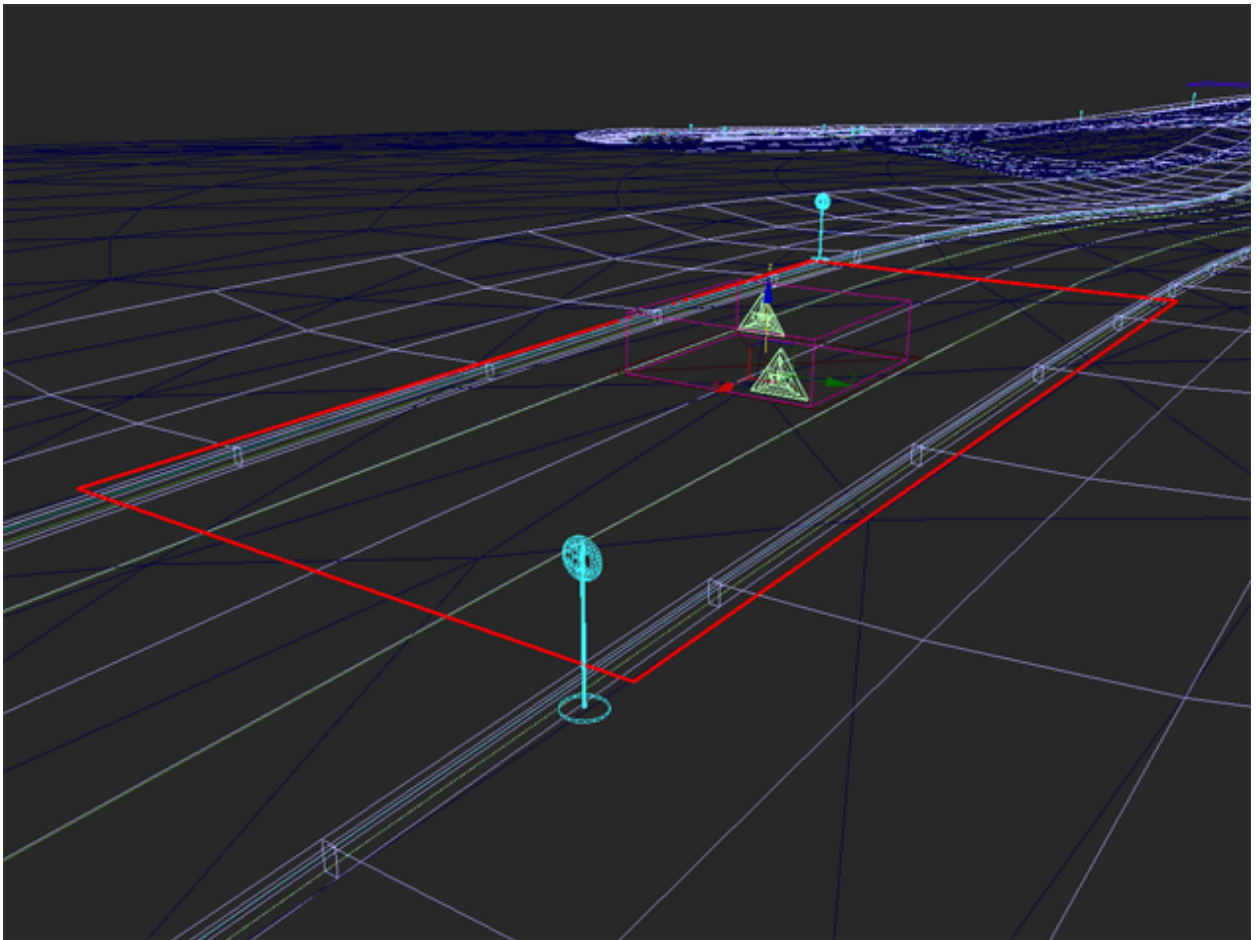
**Length** – length of a speed limiter

**Width** – width of a speed limiter

**MaxSpeed** – top speed on a limiter

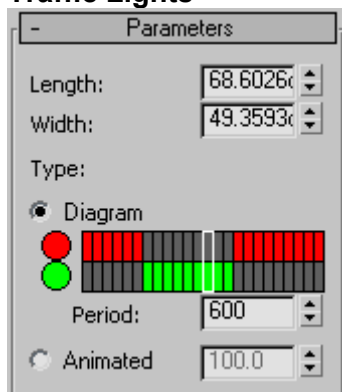
This item can be used to decrease or increase the average speed of traffic flow on certain road sections, for example, to create speed bumps.





Do not make speed limiters too small as they will be inconspicuous.

## Traffic Lights



There are two ways to regulate traffic lights – by means of the diagram and animated. In case of the diagram, the length of a period is defined by setting of a number of frames and assigning them permitted and non-permitted values. Alternatively, if the animated parameter is more than 50.0, then traffic lights allow traffic to proceed.

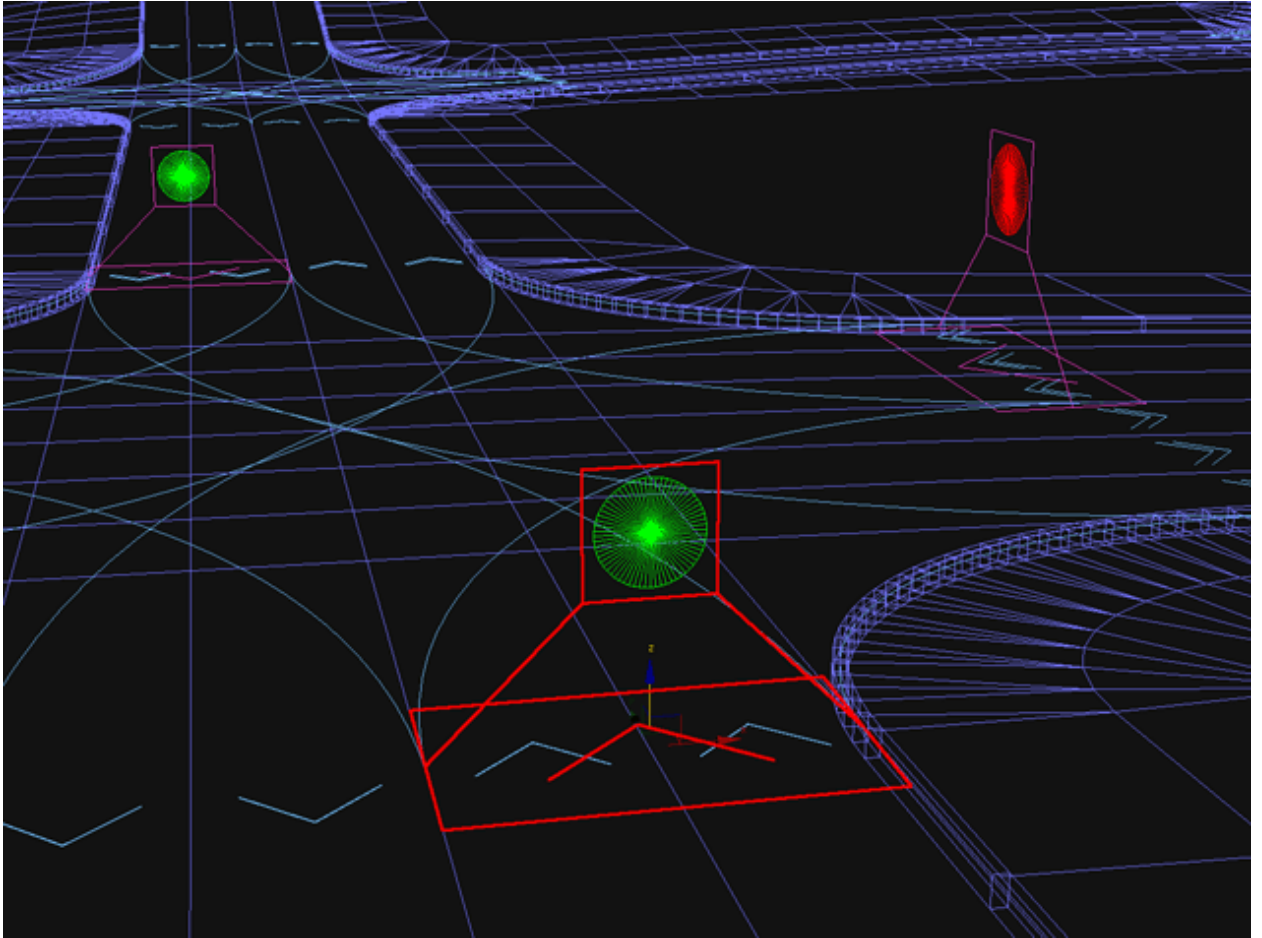
**Length** – length of traffic lights

**Width** – width of traffic lights

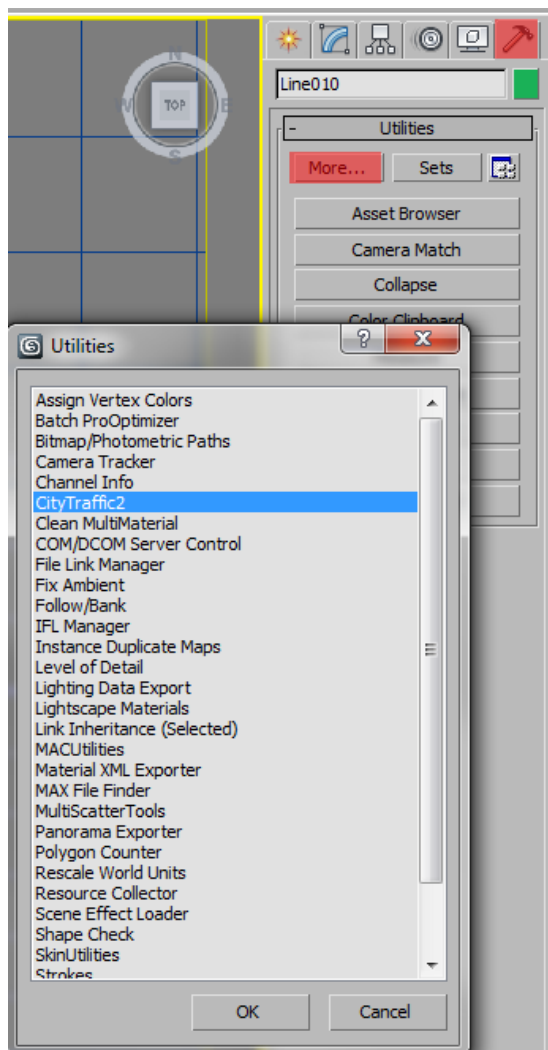
Traffic lights impact the lanes they cover.

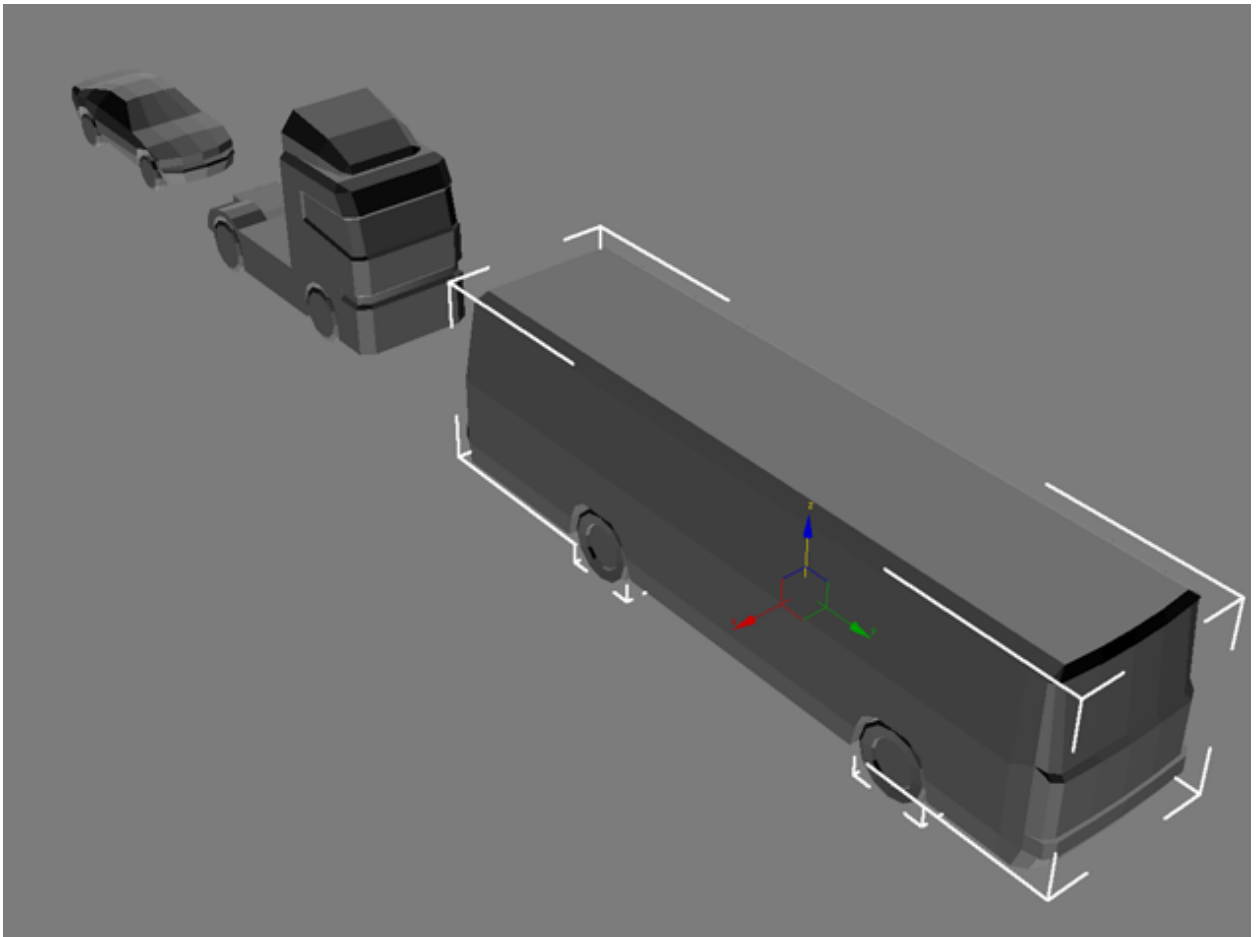
**Period** – number of animated frames within which the behavior of traffic lights corresponds to the diagram settings once



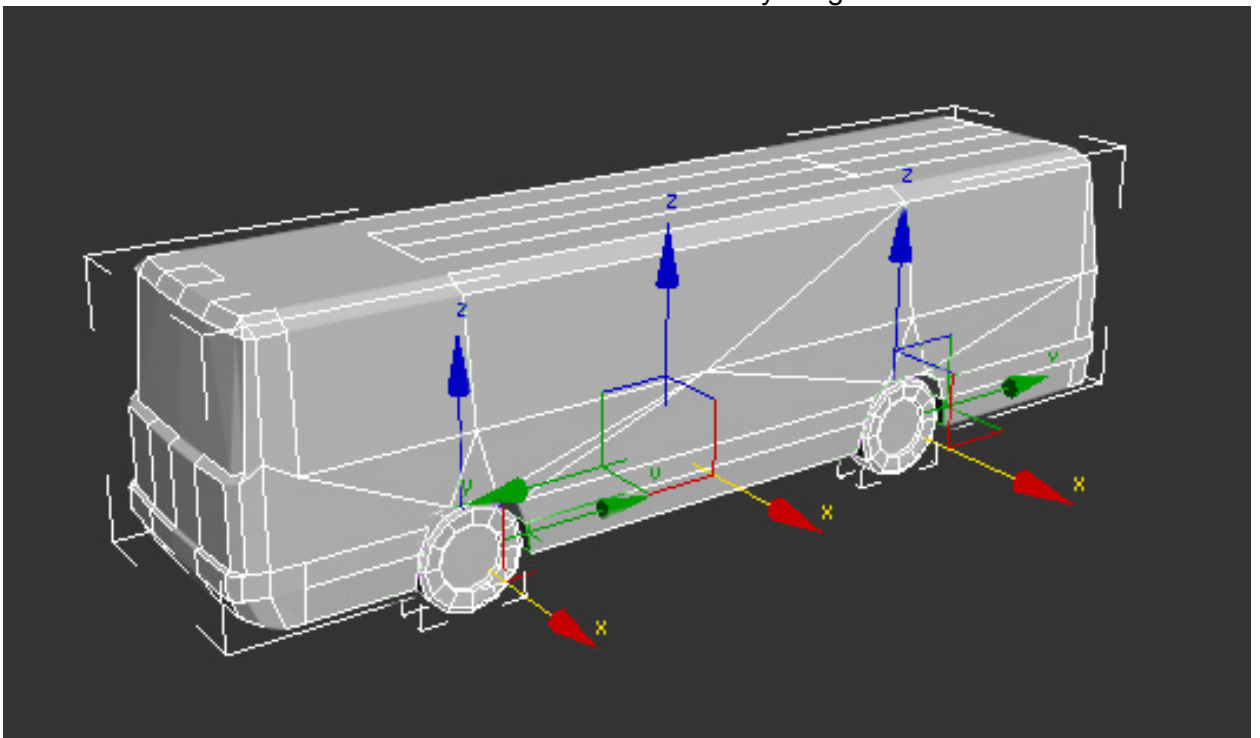


5) Apart from roads and road signs, you also need to set vehicles. You can do it by means of the **CityTraffic2** utility.

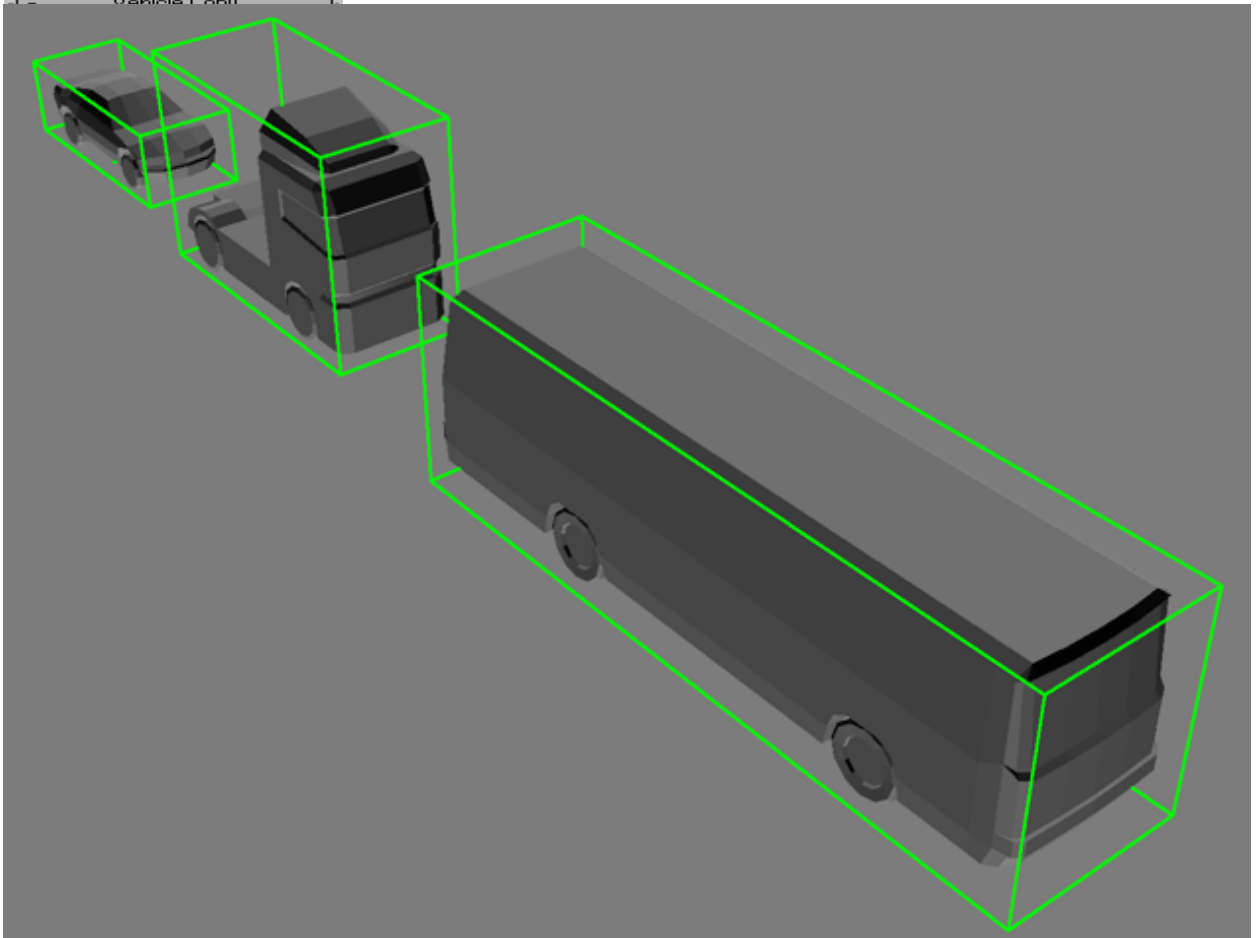
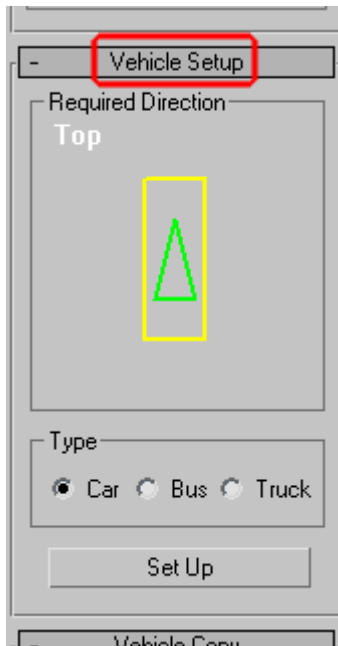




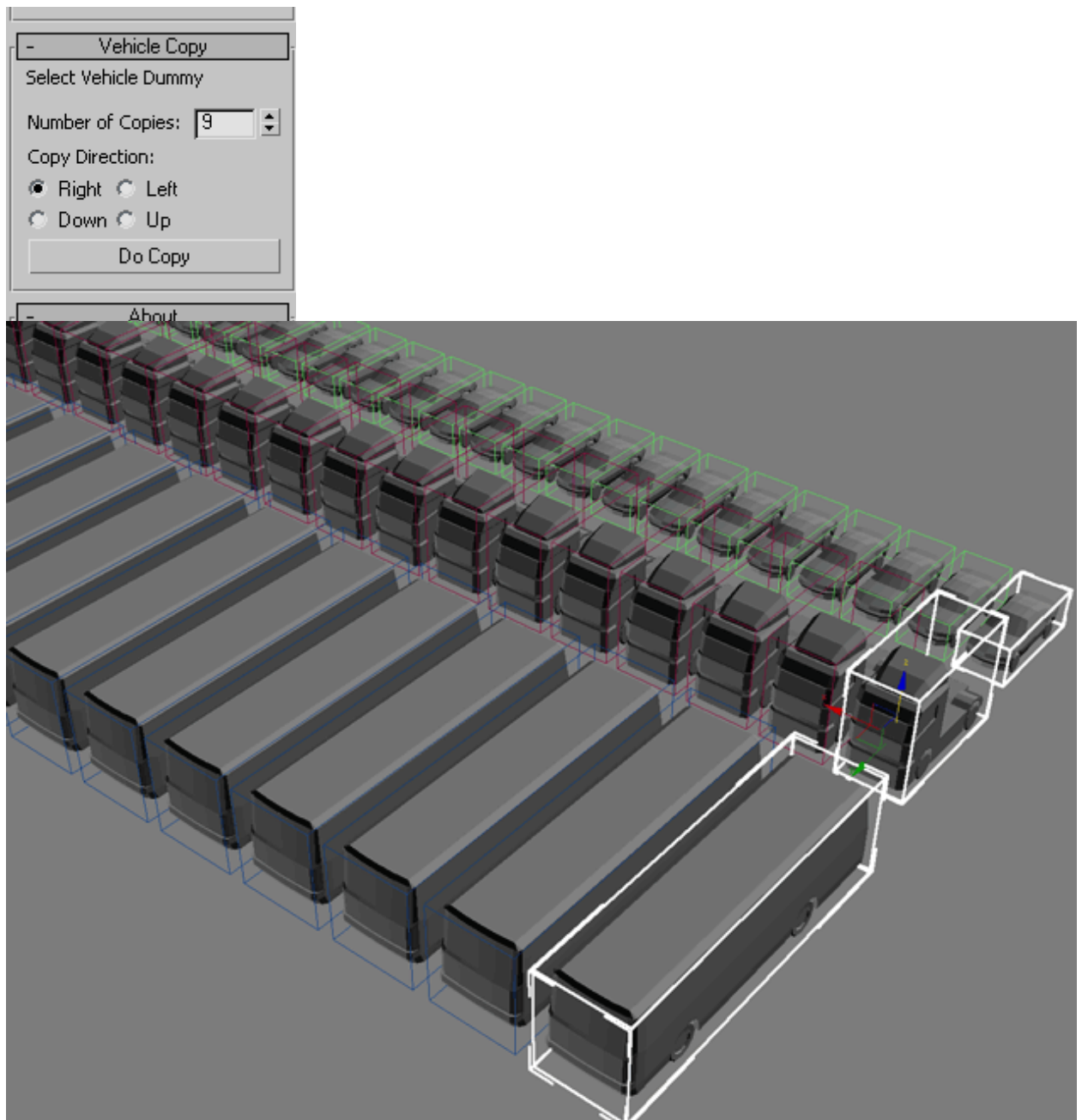
Select a vehicle; it must consist of one object of body and four or six objects of wheels. Body should be Y-axis oriented (Y-axis corresponds to forward movement of a vehicle.) Wheels should be oriented in such a way that local X-axis is outward-directed. Local axes should locate both in the center of rotation of wheels in the center of body weight of a vehicle.



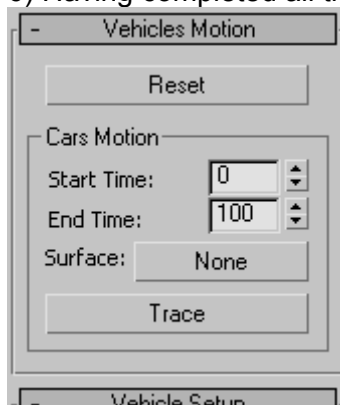
Open the Vehicle Setup section of the **CityTraffic2** utility, then choose a vehicle type, i.e. a car, a bus, or a truck. Cars can park in parking areas. Buses can stop at bus stops. Trucks can only move. Once you have picked all the necessary objects and specify the vehicle type, press the '**Set Up**' button. Thus, you can customize different vehicles.



In order to multiply customized vehicles, use the **Vehicle Copy** section. Select a vehicle Dummy, set number of copies and a directory, and press the '**Do Copy**' button.

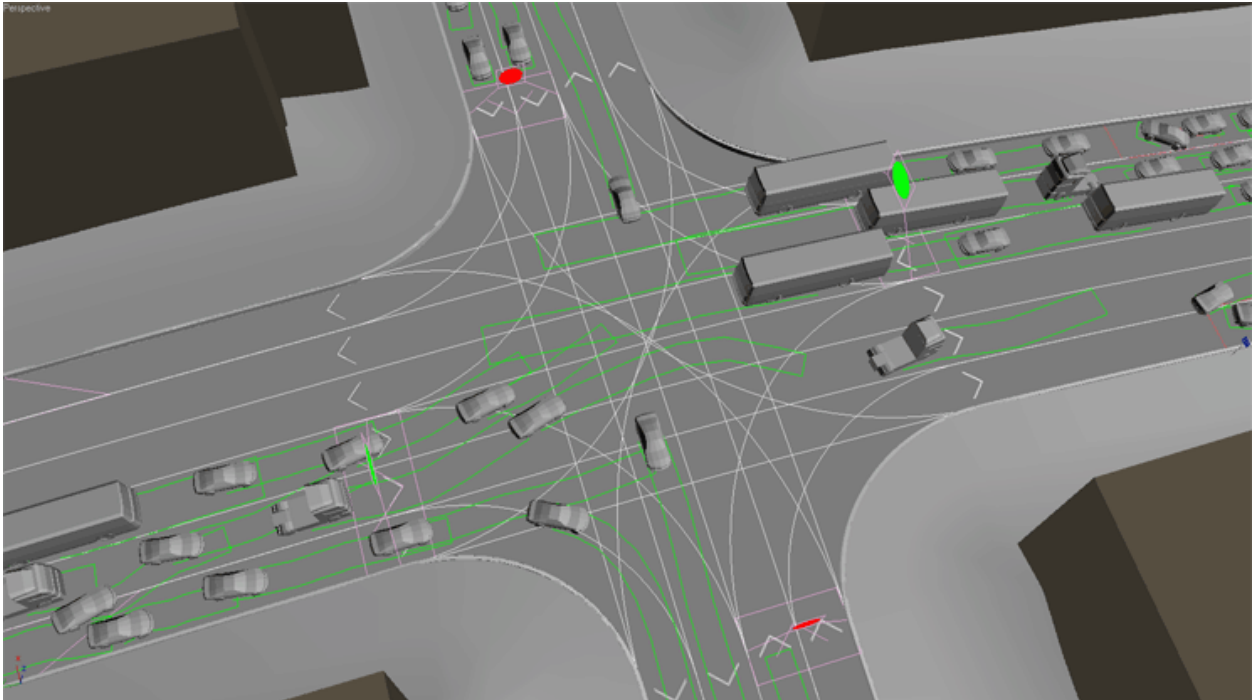


6) Having completed all the previous steps, you can proceed to simulation.



Choose **Surface**. It should cover the whole road area, otherwise cars will fall when getting to absent parts of the roadbed.

Specify the number of the starting and the ending frames (**Start time, End time**). We recommend making the starting frame negative (for example, -200) to give time for acceleration and balancing of all the vehicles. Click '**Trace**'.



Calculation may take from a few minutes to a few hours depending on number of frames and vehicles. If you are not happy with the result, press the '**Reset**' button (this will erase all data of the calculated simulation), change all the necessary parameters, and click '**Trace**' again.