

CrossingConstructor

by TracMax (Version 1.02 beta)

Purpose:

Creation of intersections with up to 6 junctions at (almost) any angle. Road edges can be designed with up to 12 segments; This makes complex structures such as sidewalks, bounding walls or even bridges possible.

The output is an i3d file in Giants Editor format 5.0.1. Knowledge of the maps with the Giants editor is a prerequisite for using the intersections created.

Use:

The program was written to the best of our knowledge. It can be used free of charge for private purposes. Commercial use is prohibited. Any guarantees are excluded.

The objects created can be used freely when mapping. A mention in the credits would be desirable.

Service:

All parameters can be entered directly:

CrossingConstructor by TracMax

i3d-File: D:\TracMax\X\Crossing\Xtest01.i3d **Go**

Rand erzeugen

Rand

Datei: verge_diffuse.dds

Länge: 20 m

Start: 0

Randsegmente: 1

Breite: 1 m

Winkel: -30 °

Ende: 0.2

Fahrbahn - Geometrie

Breite: 7 m

Winkel: 15 ° für Unterteilung

Breite unterteilen

Breite: 1 m

Fahrbahn - Textur

Datei: road_diffuse.dds

Länge: 20 m

Texturbreite:

Start: 0

Ende: 1

Unterteilung: 0.2

TransformGroups erzeugen

Abzweigungen - Geometrie

Winkel	Radius
-15 °	3 m
120 °	3 m
120 °	3 m

Vierter Abzweig

45 ° 3 m

Fünfter Abzweig

45 ° 3 m

Sechster Abzweig

45 ° 3 m

Buttons: Load Parameter (freigegeben) Save Parameter Copy Memo Info

mmoStatus



calls up dialog for entering the i3d file to be generated; the filename will then be entered in the adjacent field. The file name can be edited later.

D:\TracMax\Streets\test.i3d

File name of the i3d file. Existing files will be overwritten without warning.



Create I3d file (any existing file will be overwritten).

Parameters for the roadway:

Road geometry:

Breite m

The width of the lane is entered here.

Winkel ° für Unterteilung

Angle for dividing the radii. The smaller the value, the more "Rounder" the intersection, but also more vertices and triangles (performance!).

Breite unterteilen

In the case of acute angles, it can be useful to edge the roadway and middle to divide. More later.

Breite m

Width of the edge segment.

Road texture:

Datei

The file name of the road surface texture is entered here. about the button calls up a dialog to open it.

Texture and i3d file should be in the same directory, as no path to the textures is entered in the i3d file.

Länge

Length of the texture in meters. If the road is longer than the texture, it will continued periodically. Very short textures are continued by reflections and folds in such a way that UV errors are avoided as far as possible. However, we cannot guarantee that objects are free of UV defects.

If the texture is shorter than the piece of intersection, the texture will be "cut off" there. With complex textures (e.g. cobblestones), there can then be abrupt transitions to the next stretch of street.

Start

The coordinate of the left edge of the texture is specified here.

Values greater than zero mean that part of the texture is left out.

Ende

Coordinate of the right edge on the texture. With values smaller

one, parts of the texture are left out on the right.

This function can be used, for example, to omit existing roadsides on the texture.

Unterteilung

If "Subdivide width" is active, the width of the Edging on the texture. The right marginal strip then extends from "Start" to "Start" + "Subdivision", the left marginal strip from "End" - "Subdivision" to "End". The entry is not (yet) checked for "nonsensical" values.

The "optimal" width of the subdivision is displayed below as a hint. If this value is entered, the texture of the edge segment is set to the coordinate that this texture point would have without the edge segment. Example: if the street is 5 m wide and if Start = 0 and End = 1 are selected, then the width of the texture is mapped to 5 m. If a subdivision is now entered at 1 m, the subdivision is $1 \text{ m} / 5 \text{ m} = 0.2$ or 20% of the texture width. If 0.2 is entered in "Subdivision" in this case, the edge strip (including any lane markings) remains as wide as it should. If you enter 0.1, $0.1 = 10\%$ of the texture is mapped on one meter of the object coordinates, the texture on the edge strip is then stretched (the lane marking on the edge is then twice as wide).

Road geometry:

* m

The angles and radii of the branches are entered here. The first angle cannot be entered, it is calculated: 360° minus the sum of all angles. ATTENTION: The calculated angle should be positive (is only checked rudimentarily), otherwise in the best case the results will be strange. In the worst case, the program crashes. Radius: the more acute the angle and the larger the radius, the more the intersection is stretched. It is therefore advisable to use smaller radii for acute angles. However, small radii can lead to problems with the edge texture.

Vierter Abzweig

Three to six branches are possible, depending on how many ticks are set.

Parameters for the margins:

The parameters for both edges are of the same importance. However, two different margins can be created.

Rand erzeugen

Check the box if the border should be created.

Datei 

The file name of the edge texture is entered here. On the Button calls up a dialog to open it.

Länge m

Length of the texture in meters. If the road is longer than the texture, we continued periodically. Very short textures are continued by reflections and folds in such a way that UV errors are avoided as far as possible. However, we cannot guarantee that objects are free of UV defects.

Start

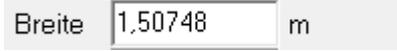
Here the coordinate of the left edge becomes the right edge texture specified. The left edge texture is mirrored so that the same values can be used for both edges. Values greater than zero mean that part of the texture is left out.

Randsegmente:

Up to 12 edge segments are defined and parameterized here.



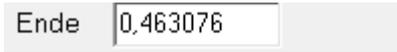
Select the segment by entering the number or using the Arrow keys. The button adds another segment at the end, the button removes the last segment (not the one just marked !!!).



defines the width of the edge segment. All edge segments are like a link rod connected to each other.



indicates the angle of the edge segment with respect to the roadway. 0 means it is a continuation of the roadway. 90 goes up 90 degrees from the roadway.



indicates the texture coordinate of the segment end. The texture coordinate of the segment start is determined by the texture end of the previous segment, the segment start of the first segment is set to "Start". If the value is smaller than that of the previous end, the texture is mirrored accordingly. UV errors are not intercepted here, please make sure that all values are in the interval [-8.8].

In the case of tight radii, the edge may be wider than the radius. Then there can be bizarre results. The edge is almost as wide as the radius, creating very narrow triangles. A summary of points that are close together is not implemented and, because of the calculation of the normals, not so easy to implement.

A parameterization of each edge has not yet been programmed, but may come in a later version. Alternatively, the edges could be output as separate shapes, which can be left out or swapped when mapping as required.

Miscellaneous:



If there is a check mark here, the object is converted into a TransformGroup embedded, which includes the street and another TransformGroup at the end of the street. This means you can continue streets seamlessly if you either put the next street in the end transform group or copy the coordinates of the TG to the next street.



and



This means that all entries can be made in an INI file

copied or restored from it.



indicates the INI file that has just been loaded or saved. This display remains after modification of the parameters (possibly ToDo in the next version).

It is also possible to open parameter files of the StreetConstructor. The lane width, the texture parameters and the edge parameters are read from the right edge. The default values are used for the branch angles.

A distinction between the parameter files of StreetConstructor and CrossingConstructor on the basis of the ending (currently for both: .INI) will possibly be made in a further version.

The memo box at the bottom shows debug information and can safely be ignored. In the event of malfunctions, the content can provide clues as to what went wrong. The parameters of the TransformGroups are also specified.

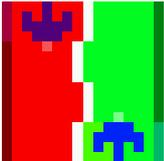


With the content is copied to the clipboard.

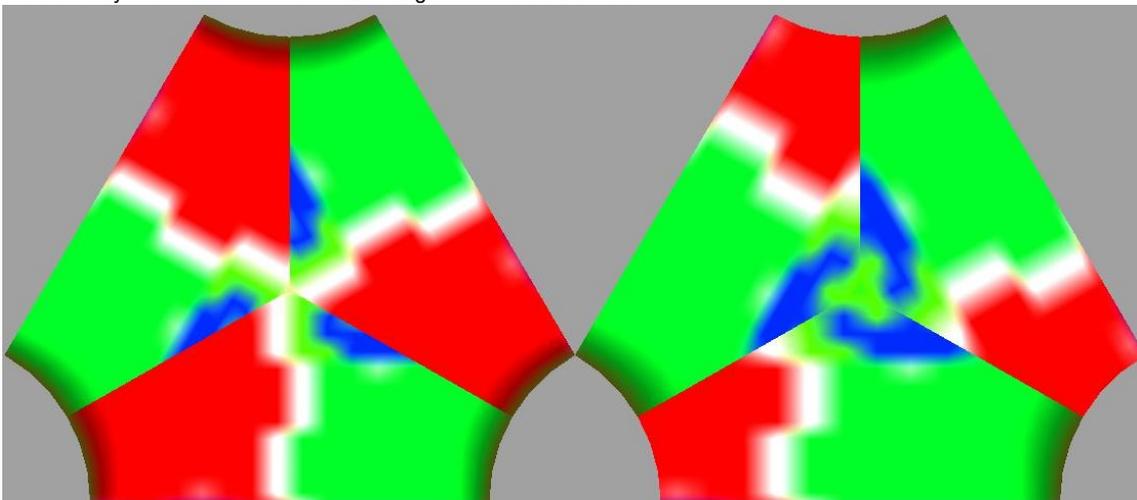
At the request of the user, the position of the input window is saved in the ini file "CrossingConstructor.ini" under "[Preferences]" → "ScreenPos_Top = ..." and "ScreenPos_Left = ...". If the entries are missing, 1 is used (ie the window appears at the top left of the screen).

Working method:

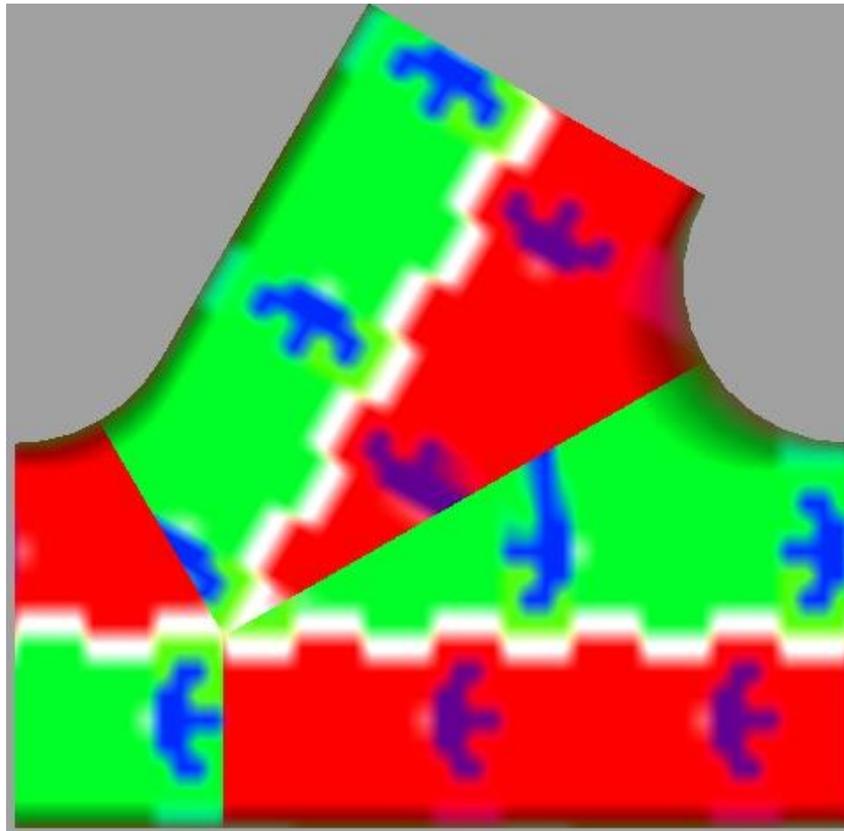
The CrossingGenerator puts the road sections together in a pointed middle. Therefore, the road surface texture should be symmetrical because the right and left sides meet in the middle. In addition, "start" and "end" should be symmetrical. This becomes clear from a sample texture:



The generated 3-way intersection with three 120 ° angles then looks like this:

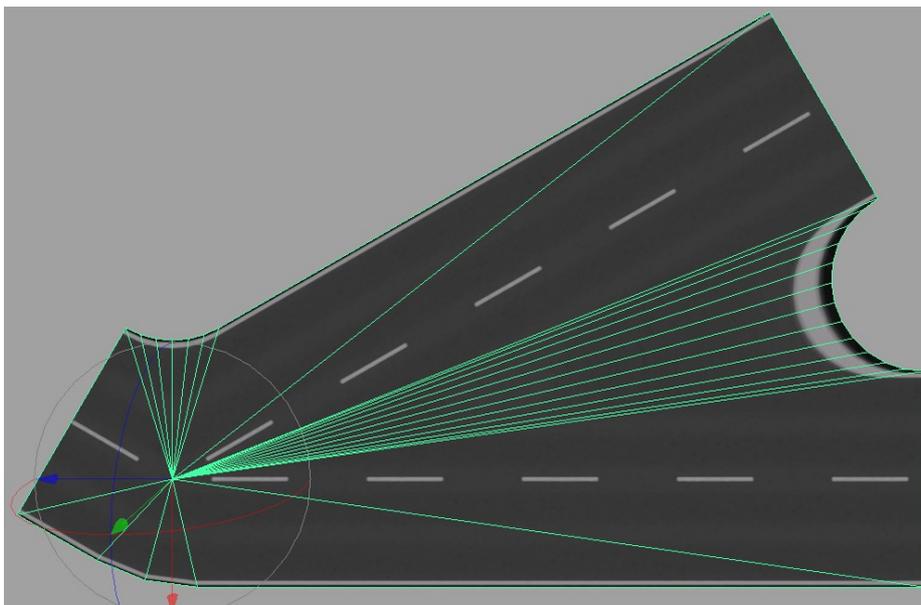


On the left, start and end are symmetrically 0 or 1, on the right is start at 0.3 and end at 1.

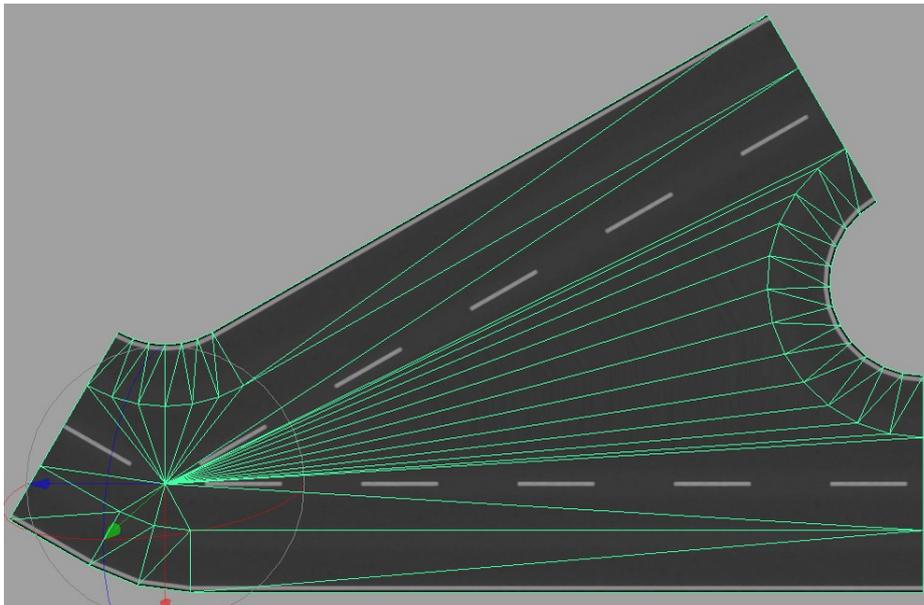


With an asymmetrical intersection, you can see that the texture is distorted, especially at the acute-angled branch. You can also see the repetition of the texture (here length 5 m). A long texture is recommended for such crossings, which has very few structures, especially at the lower edge, and can therefore be distorted without major loss of quality.

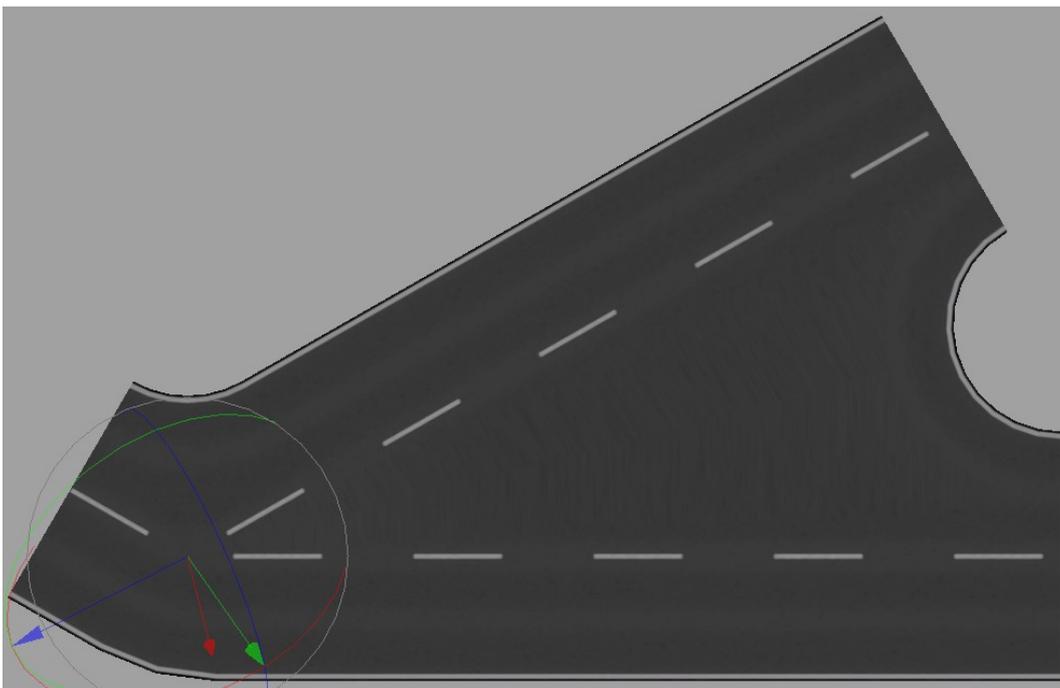
In order to keep the edge strips as undistorted as possible, there is the option of subdivision (tick "Subdivide width").



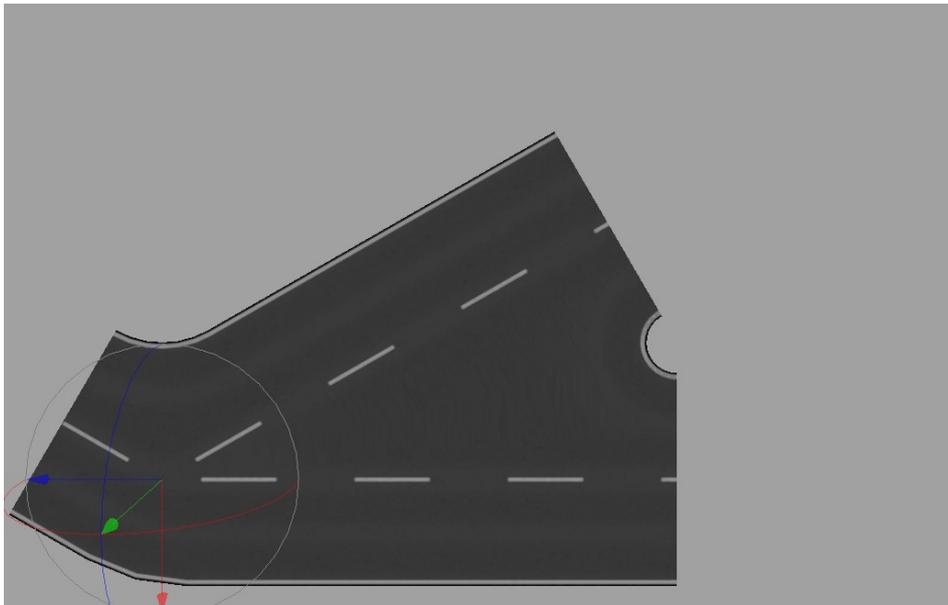
This picture shows an intersection with a 30 ° branch without subdivision. The marginal strip there is severely distorted.



Here the same intersection with subdivision (lane width 7m, subdivision 2m, texture subdivision $2/7 = 0.2857$). You can see the additional vertices and triangles for the edges, which are no longer distorted as a result. Instead, the middle is now more stretched.



Here the whole thing again without highlighting the vertices.



And here with a reduced radius (1m instead of 3m) for the 30 ° branch.



And here with the "Subdivision" parameter that is much too small (0.05 instead of 0.286).

Because of its universality, textures can be overly distorted. I can't change that at the moment. Then the only option is to use the intersection as an .obj. to export and with Maya, Blender or similar to create an extra texture mapping.

Have fun with many new crossings and other creations for the Farming Simulator

TracMax