

Introduction

TrkMaker is a tool to help in the creation tracks for Papyrus N2003 and sims based on the ISI engine (F1-2001, F1-2002, F1-CC, rFactor and GTR).

TrkMaker stores the database in XML format. This allows you to choose a number of applications to edit the data and as XML is text based you can even read or write the database in a text editor.

TrkMaker can build a database from a Papyrus GPL format file allowing authors to convert their work to the newer sims listed above.

How To Use TrkMaker

You first need to create a database in XML. A GPL .TRK file or Nascar 2003 .PTF file can be converted to an XML database.

Alternatively you could start from scratch by using the 'New' command on the [Main Window](#).

To edit the XML you can use the [TrkMaker Edit Window](#) or any XML editor of your choice.

You can then either write to your chosen sim from within the editing window or, using a saved XML, write from the Main Window.

All the formats TrkMaker can write, except the XML, can be read by 3DSimED. You should also use 3DSimED to convert your trackside objects and any textures you need to convert.

Working With GPL

TrkMaker will not allow you to create new GPL tracks but it will help you to convert GPL tracks to other formats. An XML database can be created from a GPL .TRK file but to get the best result you should be aware of the texture hint field stored in each traction of a GPL .TRK.

This texture hint is a unique value for each different texture used. Unfortunately the GPLTRK utility, used to create many third-party tracks, places this value in a different position to Papyrus. GPL ignores these numbers but TrkMaker needs to know which type of GPL .TRK file it is reading so you make have to use the [Options](#) command on the [Main Window](#).

After writing the XML database please make sure you edit the [TractionTex](#) and [WallTex](#) tables before attempting to write files for any other sim.

Creating ISI Formats.

ImageSpace have either developed or provided the engine to a number of racing sims. TrkMaker supports F1-2001, F1-2002, F1-CC (all three .MTS objects), rFactor (.GMT objects) and GTR which again uses GMT objects. Please note that the .GMT objects within GTR and rFactor are very different; the shared extension does not mean you have use them interchangeably.

The track surfaces for these ISI format sims are meshes. The meshes are held in a number of objects and each face within the mesh is given a material. The material controls the grip or collision value of the face.

TrkMaker assigns material names using the title of the texture assigned to the face. For the ISI format you need material names such as ROADA, ROADB, GRASSA, GRASSB etc hence you will need to name your textures appropriately.

The second consideration will be the density of the mesh. If the track surface needs more faces you should look at the [TrackSummary](#) table which contains fields to control the mesh resolution for the whole track and the [Mesh](#) table which controls the resolution for a section of the track.

If you are converting trackside objects from other sims then use 3DSimED to convert the objects.

Working With .3DS.

By creating a .3DS mesh of the track you will be able to use 3DSMax for your editing. You can also view, and edit to a limited degree, in 3DSimED.

One very important consideration will be the density of the mesh. If the track surface needs more faces you should look at the [TrackSummary](#) table which contains fields to control the mesh resolution for the whole track and the [Mesh](#) table which controls the resolution for a section of the track.

TrkMaker Main Window



1. Creates an XML file from a GPL .trk file. Note that TrkMaker will not open a .TRK file from any of the tracks supplied with GPL. See also Options as TrkMaker needs to know whether you starting with a .TRK from the GPLTRK utility or a Papyrus format .TRK file. .

Remember that after creating the XML file you will need, at the very least, to set textures in the TractionTex and WallTex tables. The trackside object positions are not stored inside a .TRK file so you may have to use 3DSimED to convert them

2 Creates an XML from a .PTF. Note that TrkMaker will not open a .PTF file from any of the tracks supplied with N2003. See also [Options](#) as TrkMaker can read the [TSO](#) positions as XYZ or longitude, latitude and elevations.

3. If you are really brave you can attempt to create a completely new XML file in the editing window, see [TrkMaker Edit Window](#)

4. Open an XML and edit it within TrkMaker. There are better XML editors than TrkMaker but with patience you can opt to stay inside TrkMaker for your editing, see [TrkMaker Edit Window](#)

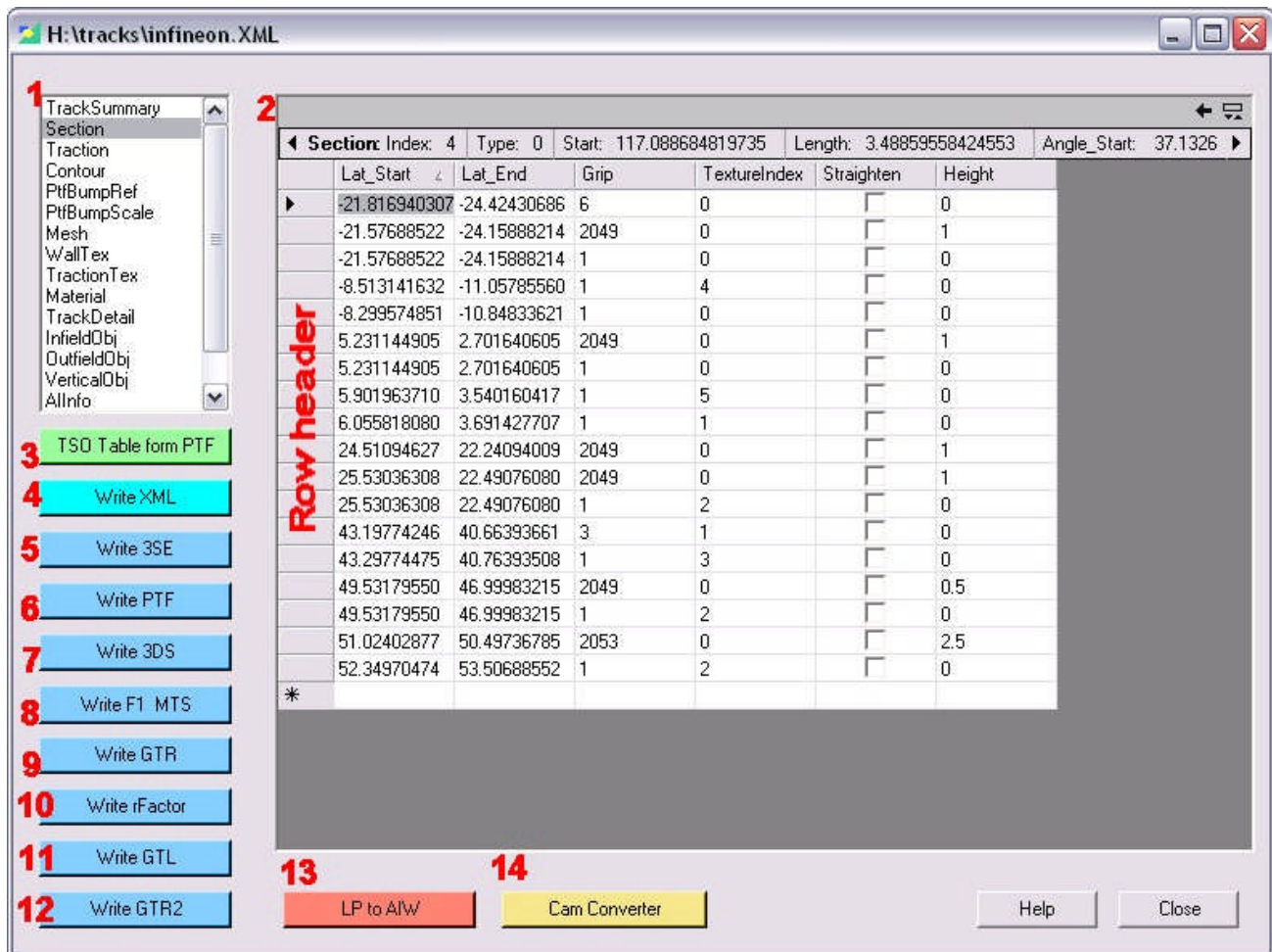
5. Create a PTF from an XML file. The PTF created will be in Nascar 2003 format and you can view, and edit it with 3DSimED.

6. Create a 3DS form an XML file. For more information see [Working With .3DS](#)

7. to 9. Creating various ISI format files from XML. For more information see [Creating ISI Formats](#)

10. Change the way .GPL .trk or Nascar .PTF files are read. For more information see [TrkMaker Options](#)

TrkMaker Edit Window



Copy and Paste TrkMaker Edit Window allows for copy and paste of row data, available by right-clicking in the grey row header.

Quick Jumps . Double-clicking on the row header can quickly jump between tables. Double-clicking on the header of a row from the Traction table will jump to relevant row of the TractionTex or WallTex table. Double-clicking on either a TractionTex row or WallTex row will jump to Material table while from the Material table you can jump to the TractionTex or WallTex table depending on the material name.

1. List of Tables. Simply select from the list to edit the database. Note that tables such as Contour can also be accessed as child tables of Section.

2. The presently selected table is displayed in this grid.

3. Updates the present database TSO table from a .PTF. When creating .PTF files the database you will get back from reading will differ from the one you used to write the .PTF. For this reason this command is useful as it ensures that only the TSO table is altered. You would typically use this when editing the .PTF with 3DSimED.

4. Simply saves the database back to XML

5. Write an .3SE file (3DSimED native format).

6. Writes a PTF from the current database.

7. Writes an .3DS from the present database.

8. Writes the present database to ImageSpace MTS format files for F1-2001, F1-2002, and F1-CC.

9. Writes the present database to GTR format .GMT files.

10. Writes the present database to rFactor .GMT files.

11. Writes the present database to GTL .GMT files.

12 Write the present database to GTR2 .GMT files.

13 Writes an .AIW suitable for ISI sims converting from Papyrus .LP format. You must complete the AIInfo table and you will need .LP files from either GPL or N2003 to convert from and they must be from the same track as the database.

14 Converts a Papyrus .cam file from GPL or N4/N2002/N2003 to a .CAM file suitable for GTL,GTR,GTR2,or rFactor. The .CAM file selected for conversion should be from the same track as the database originated otherwise the conversion will fail.

TrkMaker Options Window



1. Controls how the positions of TSOs are recorded when creating an XML file from .PTF. If the box is ticked the positions will be XYZ coordinates, otherwise they will be recorded in longitude, latitude and elevation.

2. When creating an XML from a GPL .trk this option tells TrkMaker what format .TRK file is being read. If you are creating an XML from a Papyrus .TRK file then you should clear the checkbox.

3. When creating an XML from a GPL .trk or N2003 .PTF this option allows for material names, suitable for ISI format tracks, to be generated.

4. For exporting to PTF choose whether to export in N4 or N2003 format.

TrkMaker Database Overview

The database for TrkMaker is stored in XML files. For each track you work with you will need a separate XML.

TrackSummary General information about the track	
Section Describes the xy geometry of a section of the track.	
	Traction.

The tables on the right column are all children of the Section table	The track surfaces of the Section.
	Contour Elevation data for the Section
	Mesh Defines the mesh resolution of the Section (for ISI formats and .3DS)
	PtfBumpRef Bumps referenced by this section (only applicable for .PTF files).
	PtfBumpScale Scaling for the PTFBumpRef (only applicable for .PTF files)
TractionTex Describes the texture to be used for track surfaces.	
WallTex Describes the texture to be used for wall surfaces.	
TSO Trackside object positions	
PtfTrackDetail	
PtfBumpDef	
PtfInfield	
PtfTreeObj	

TrackSummary

Name

Written to the database when creating an XML from an .PTF or GPL .trk file but not required when creating a track.

Comment

Unused.

LengthMiles

Written to the database when creating an XML from an .PTF or GPL trk but not required when creating a track.

X_Origin

The X coordinate of the centre line at the start of the track. Changing this will move the track.

Y_Origin

The Y coordinate of the centre line at the start of the track. Changing this field will move the track.

Z_Origin.

Always 0 when a database is created from a .PTF or GPL trk file. Change this to shift the track up or down. Note that this field is different from the X_Origin and Y_Origin as you would normally use 0 for the Z_Origin and allow the [Contours](#) to define the absolute elevation.

StartAngle

The direction of the centre line at the start of the track. In degrees anti-clockwise from the east.

NS_Angle

Only used when creating a .PTF to give the direction of the sun during the day.

Ambient

The ambient light only relevant to creating a .PTF.

LongitudinalResolution

Not required when creating a PTF but important when writing Mesh formats. Defines the greatest length of any face created.

If this field is blank (NULL) then TrkMaker will use the default value of 10 metres.

ArcResolution

Used when writing mesh formats (not required when creating a .PTF). Defines, for corners, the largest angle through which a face will be drawn.

TrkMaker uses the best of ArcResolution and LongitudinalResolution resolution for creating faces for corners.

If this field is blank (NULL) then TrkMaker will use the default value of 5 degrees.

LateralResolution.

Used when writing mesh formats (not required when creating a .PTF). Defines the greatest width of any face created..

If this field is blank (NULL) then TrkMaker will use the default value of 20 metres.

Section

The Section table holds information required to generate the geometry of a section of the track.

Index

The zeroth based number of the section. TrkMaker ignores this value when writing a track. However, **Index** will be given a value when a track is converted to a database and it is intended to be a useful comment for the user.

Type

For a corner 1, for a straight 0.

Start

The longitude of the start of the section in metres. TrkMaker ignores this value when writing a track. However, **Start** will be given a value when a track is converted to a database and it is intended to be a useful comment for the user.

Length

The length, in metres, of this Section.

Angle_Start

The direction of the start of the section in degrees anti-clockwise from East. TrkMaker ignores this value when writing a track. However, **Angle_Startt** will be written to when an PTF or GPL track is converted to XML and it is intended to be a useful comment for the user.

Angle_Change

The Angle change, in degrees anti-clockwise, of a **Section**.

Radius

The radius of the section in metres. TrkMaker ignores this value when writing a track. However, **Radius** will be given a value when a track is converted to a database and it is intended to be a useful comment for the user.

Split

Allows the user to split a Section in two. **Split** is the position, in metres, at which the split should occur. After splitting a Section you should write the resulting PTF and then convert the PTF back to XML so that you can edit your new **Section**.

Traction

To copy and paste row data, right click on the row header (the grey left-hand column). To delete a row use the delete key.

To jump to the relevant TractionTex or WallTex (using the Grip and TextureIndex) double-click on the row header.

Lat_Start

The Latitude, in metres, of this Traction at the start of the Section. Negative values are to the right and positive to the left of the centre line of the Section. If you omit the Traction table for a Section then it is assumed that the previous Section's Tractions will be used.

Lat_End

The Latitude of this Traction at the end of the Section.

*If blank (null) set to **Lat_Start**.*

Grip

The grip of this traction. If this value is 2048, or above, this Traction is a wall.

TextureIndex

This value is used with the **Grip** to find a match in the [TractionTex](#) table or the [WallTex](#) table. If the **Grip** value is 2048, or greater, the match should be in the WallTex table.

Straighten

Only of use when creating Papyrus .PTF. This controls how a traction is aligned if the Section is a corner.

If blank (null) will be read as FALSE (0).

Height

Overrides the height that would be set by the WallTex for a wall. Height values are automatically generated when creating a database from a N2003 .PTF or GPL .trk.

If Height is blank (null) then the height of the wall will be that set to that in the WallTex table.

HeightEnd

Overrides the height that would be set at the end of the wall. HeightEnd values are automatically generated when creating a database from a N2003 .PTF or GPL .trk.

If HeightEnd is blank (null) it will be set to the value of Height.

Width

Overrides the width that would be set by the WallTex for a wall. Width values are automatically generated when creating a

database from a N2003 .PTF or GPL .trk.

If Width is blank (null) then the width of the wall will be that set to that in the WallTex table.

WidthEnd

Overrides the width that would be set, at the end of the wall, by the WallTex1. WidthEnd values are automatically generated when creating a database from a N2003 .PTF or GPL .trk.

If WidthEnd is blank (null) then it is set to the same value as Width.

Contour

Each Section contains a Contour table giving elevation data. If you omit Contours for a Section then TrkMaker will attempt to generate sensible values from previous and later Contour tables. You may find this useful if the length of a Section is small.

Latitude

The latitude, in metres, of this contour at the start of the Section. Negative values are to the right and positive to the left of the centre line of the Section.

Z

The height, in metres, at the above latitude at the start of the Section.

Grad

The gradient at the above latitude at the start of the Section.

Latitude_End

The latitude, in metres, of this contour at the end of the Section.

Z_End

The height, in metres, of this contour at **Latitude_End** of the end of the Section.

Grad_End

The gradient of this contour at **Latitude_End** of the end of the Section.

Mesh

The Mesh table is a child of the Section table. You would use this table to change the mesh resolution of ISI formats or 3DS files. Note these values are ignored when writing Nascar PTF files.

LongitudinalResolution

Resolution of mesh in the direction of the track in metres.

ArcResolution

Applicable only to corners: resolution in degrees of mesh For a corner TrkMaker will select from the LongitudinalResolution and ArcResolution the one that will give the densest mesh.

LateralResolution

Resolution of mesh perpendicular to the direction of the track in metres.

TractionTex Table

To copy and paste row data, right click on the row header (the grey left-hand column). To delete a row use the delete key.

To jump to the Material table entry for the material used by the TractionTex double-click on the row header.

The TractionTex table is used to control the texturing of the track tractions.

When TrkMaker processes a [Traction](#) it looks up the TractionTex table for a matching entry which has the same Grip and Texture Index. If a TractionTex row has a TextureIndex of -1 it becomes the match for all Tractions of the same Grip.

Grip

A **Grip** you have used in the [Traction](#) table.

TextureIndex

A **TextureIndex** you have used in the **Traction** table. You can use -1 to allow just a match by **Grip**. You would normally use the -1 entry as a default TractionTex.

A blank (null) entry for this value will be read as -1.

GripOverride

Allows you to override the Grip. A value of -1 is ignored.

A blank (null) entry for this value will be read as -1.

RaceType

Only relevant to Papyrus PTF file. This helps N2003 understand the type of driving surface.

1 is for a normal racing track surface.

2 is for a pit lane surface.

3 is for off the track (grass etc)

4 is for a pit stall.

5 is for a pit entrance or pit exit road.

A blank (null) entry for this value, or 0, leaves the decision to TrkMaker which will set Tractions of Grip 1 to RaceType 1 and all others to RaceType 3. Hence, you only need to set the RaceType for surfaces associated with the Pit Lane.

Tex

The title of the texture to use. For example grass, asphalt etc

If you have a [Material](#) table TrkMaker will attempt to find a match in the Name field. If a match is found then the texture name used will be from the MapName field of the Material otherwise the Tex field will be used.

You cannot leave this blank.

RepeatLength

The distance in metres along the track before a texture repeats.

A blank (null) entry for this value, or 0, will be set to 20 metres.

RepeatWidth

The distance in metres across the track before a texture repeats.

A blank (null) entry for this value, or 0, will be set to 5 metres.

ClampHint

A bit flag to define clamping of the u & v mapping of a texture.

Bit 0 (value 1) clamps the u mapping so that a whole width of a texture will be used.

Bit 1 (value 2) clamps the v mapping so that the whole height of a texture will be used.

Bit 2 (value 4) reverses the u mapping.

A blank (null) entry for this value will be read as 0 which is no clamping.

ContourFlag

Only of use for a Papyrus .PTF file. This flag controls whether an X_Section is generated for these Tractions. You may want to set this to FALSE (0) if the traction is always narrow.

A blank (null) entry for this value will be read as TRUE (1).

R90

Set this to TRUE(1) if you want the texture to be laid with the u coordinate increasing in the direction of the track (with the v coordinate across), otherwise the v coordinate will increase in the direction of the track with the u coordinate across.

FirstSection

This value is not used when writing a track. When reading a PTF it is a note to the user to indicate in which section this TractionTex was first found.

WallTex

To copy and paste row data, right click on the row header (the grey left-hand column). To delete a row use the delete key.

To jump to the Material table entry for the first material used by the Wall double-click on the row header.

The WallTex table is used to set the properties of walls.

When TrkMaker processes a [Traction](#) it looks up the WallTex table for a matching entry which has the same Grip and Texture Index. If a WallTex row has a TextureIndex of -1 it becomes the match for all Tractions of the same Grip.

Grip & TextureIndex

Should match a Grip greater or equal to 2048 set in the [Traction](#) table.

GripOverride

Use this to override the grip. If set to -1 the **Grip** value remains unchanged.

If this is blank (null) the GripOverride will be set to -1.

RaceType

Only relevant to Papyrus PTF file. This helps N2003 understand the type of driving surface.

1 is for a normal racing track surface.

2 is for a pit lane surface.

3 is for off the track (grass etc)

4 is for a pit stall.

5 is for a pit entrance or pit exit road.

A blank (null) entry for this value, or 0, leaves the decision to TrkMaker which will set the RaceType to 3.

TexLeft

The texture for the left side of the wall.

If you have a [Material](#) table TrkMaker will attempt to find a match in the Name field. If a match is found then the texture name used will be from the MapName field of the Material otherwise the TexLeft field will be used.

No texture will be set if this value is blank (null). This is acceptable for Papyrus .PTF but for other formats you will need to set the texture to a transparent bitmap.

TexRight

The texture for the right side of the wall.

If you have a [Material](#) table TrkMaker will attempt to find a match in the Name field. If a match is found then the texture name used will be from the MapName field of the Material otherwise the TexRight field will be used.

No texture will be set if this value is blank (null). This is acceptable for Papyrus .PTF but for other formats you will need to set the texture to a transparent bitmap.

TexTop

The texture for the top of the wall.

If you have a [Material](#) table TrkMaker will attempt to find a match in the Name field. If a match is found then the texture name used will be from the MapName field of the Material otherwise the TexTop field will be used.

No texture will be set if this value is blank (null).

TexEnd

The texture for the left side of the wall.

If you have a [Material](#) table TrkMaker will attempt to find a match in the Name field. If a match is found then the texture name used will be from the MapName field of the Material otherwise the TexEnd field will be used.

No texture will be set if this value is blank (null).

Width

The width of the wall in metres. The extent of the wall will be it's latitude in the Traction table +/- half the Width..

A blank (null) value will set the Width to 0.

Height

The height of the wall in metres.

A blank (null) value, or 0, will set the Height to 1.2 metres.

Vertical

A flag to indicate whether the wall is vertical or follows the cross-section of the track.

A blank (null) value will set Vertical to FALSE (0).

MinTexV

The minimum value of V part of the texture coordinate for the wall sides and ends. This is the value used at the top of the sides or ends.

A blank (null) value will set MinTexV to 0.

MaxTexV

The maximum value of V part of the texture coordinate for the wall sides and ends. This is the value used at the bottom of the sides or ends.

A blank (null) value will set MaxTexV to 1.

CatchFence

A flag only applicable to Papyrus .PTF files. Set to TRUE (1) the fence will rendered as curved inwards at the top.

A blank (null) value will set CatchFence to FALSE (0).

RepeatLength

The distance, in metres, before the textures for the left, right and top repeat.

A blank (null) value, or 0, will set RepeatLength to 20 metres.

RepeatModulus

This value rounds the texture mapping coordinates. For example if your texture has 12 tyres you should set the RepeatModulus to 12 to ensure you always see whole tyres.

A blank (null) value will set RepeatModulus to 0 (no rounding).

FirstSection

Not required when writing a track. This value is only used when reading a .track to indicate in which section this WallTex was first used.

TrackDetail

This table controls the creation of track detail objects. TrkMaker will automatically generate this table when reading a .PTF.

Note that when exporting TrkMaker automatically generates names for the objects written to disk with the fixed prefix "trd"

Longitude, Latitude.

The longitude and latitude of the centre of the detail.

Length, Width

The length and width of the detail.

Angle

The angle, relative to the track direction, of the track detail.

U,V

Maximum u and v values applied to the textures. Normally you would just use 1 for both. The minimum u and v are always 0.

Tex

The title of the texture map applied to the track detail.

VerticalObj

This table allows vertical objects to added to a track. The faces and points are generated by TrkMaker and exported when the database is exported to another format.

Title

The filename title for the object. Make sure this is unique.

LongStart, LatStart.

The longitude and latitude of the left of the object.

LongEnd, LatEnd

The longitude and latitude of the right of the object.

Elevation

The elevation of the bottom of the object. This will be negative if you need the object to start below the track surface.

Height

The total height of the object.

Material

The material to be used for the object faces.

OutfieldObj

This table allows TrkMaker to create objects to join to the outside of the track.

Title

The title for the filename of the object.

Start,End

The longitude of the start and end of the object.

WidthStart, WidthEnd.

The width at the start and end of the object. Note that negative values of WidthStart & WidthEnd are taken as meaning the object is on the right-hand side of the track.

ElevationStart, ElevationEnd

The elevation at the far left or right of the object.

PeakHeight.

The object is created as a pyramid with the peak of the pyramid located at the geometric centre of the object. You can raise or lower this peak with the PeakHeight which can make a more realistic looking object.

Tiling Scale.

The distance between points, in the longitudinal direction, used to create the mesh for the object.

Material

The material used for all the faces of the object.

TextureMappingScale

The distance before a texture repeats itself within the object.

TSO

The TSO table holds the position of the trackside objects.

Name

The title (no extension) of the object.

WorldXYZ

A flag to indicate how to interpret X,Y,Z. If **WorldXYZ** is set to TRUE (1) then X,Y,Z are the coordinate position. If **WorldXYZ** is set to FALSE (0) then XYZ are respectively the longitude, latitude, and elevation.

Note that when converting an PTF to an XML TrkMaker defaults **WorldXYZ** to FALSE. To change this use the Options button on the [main window](#).

X,Y,Z

See above.

WorldAngle

A flag to indicate how to interpret the A,B,C values. If **WorldAngle** is set to TRUE then A,B,C are the absolute angles in degrees of the rotation of the object. If **WorldAngle** is set to FALSE then A,B,C are relative angles

When TrkMaker converts an PTF to an XML the **WorldAngle** flag is always TRUE.

A

The yaw angle (or angle about the z axis) in degrees.

B

The Roll angle (or angle about the y axis) in degrees

C

The Pitch angle (or angle about the x axis).

Comment

InfieldObj

An infield object fills inside gaps in the track such as hairpin corners.

Title

The filename title for the object. Make sure this is unique.

Start, End.

The longitude of the start and end of the object.

ExculdeStart, ExcludeEnd

The longitudes excluded from the infield objects.

Peak

How far to raise the geometric centre of the object.

Tiling Scale

The resolution of the polygons used to generate the object. If null the TrkMaker assumes this to be 10.

Material

The material to be used for the object faces

TextureMappingScale

The repeat distance of the texture.

AIInfo

The AIInfo table holds information used to help generate .AIW files for ISI sims.

MergePitIn, MergePitOut

The longitude at which cars branch from the racing line to enter the pits and the longitude at which cars leaving the pits merge to the racing line.

These are equivalent to merge_to_pit_line_dlong & lane_merge_dlong from a N4/N2002/N2003 track.ini or pit_lane_start_dlong & merge_from_pit_line_dlong of GPL track.ini

StallsLongStart, StallLatStart

The longitude and latitude at which the pit stalls start.

If you have a GPL or N4/N2002/N2003 track.ini this will be equivalent to the entry for the last stall of pit_lane_0.

StallsLongEnd, StallLatEnd

The longitude and latitude of the end pit stall.

If you have a GPL or N4/N2002/N2003 track.ini this will be equivalent to the entry stall_0 of pit_lane_0.

PtfBumpRef**PtfBumpScale****PtfBumpDef**