

Scenery Definition File (TSC)

The TSC file is a [text file](#) that can be edited with a regular text editor. The file can contain coordinates for an airport, a custom scenery object, runways, helipads and a lot more.

These TSC files are placed in subdirectories of “places” folder in the scenery directory. For the creation of new scenery we have to set up a new TSC file and save it in our intermediate scenery folder.

We recommend reading through the [Scenery introduction tutorial](#) first which provides a bit more background.

Let's break down the content of the TSC file.

How to obtain the coordinates

Please visit the [Geographic Coordinates](#) tutorial to see how you can find out the coordinates that you need for your scenery projects.

Overview

The first area defines the type of scenery object that you defining, e.g. an airport. After that individual scenery objects like the ground mesh or decals are defined. The file then defines runway of an airport, start positions, parking positions and view positions. Entire blocks of the file can be removed when they are not applicable. E.g. you don't need to add the code lines for runways and parking positions if you only want to create a basic scenery object (and not an airport).

```

1 <[file]{}{}
2 <[tmsimulator_scenery_place]{}{}
3 <[string8]{}[type]{}[airport]>
4 <[string8]{}[sname]{}[Key West]>
5 <[string8]{}[iname]{}[Key West Airport]>
6 <[string8]{}[icao]{}>
7 <[string8]{}[country]{}>
8 <[string8]{}[coordinate_system]{}[lonlat]>
9 <[vector2_float64]{}[position]{}[-81.760022 24.554775]>
10 <[float64]{}[height]{}[0]>
11 <[float64]{}[size]{}[5000]>
12 <[vector2_float64]{}[tower_position]{}[0 0]>
13 <[float64]{}[tower_height]{}[0]>
14 <[bool]{}[autoheight]{}[false]>
15 <[string8]{}[lights]{}>
16 <[list_tmsimulator_scenery_object]{}[objects]{}>
17 <[tmsimulator_scenery_object]{}[element]{}[2]>
18 <[string8]{}[type]{}[object]>
19 <[string8]{}[geometry]{}[ewy_keywest_obj]>
20 <[tmvector3d]{}[position]{}[-81.760022 24.554775 0]>
21 >
22 <[tmsimulator_scenery_object]{}[element]{}[1]>
23 <[string8]{}[type]{}[ground]>
24 <[string8]{}[geometry]{}[ewy_keywest_rwy]>
25 <[tmvector3d]{}[position]{}[-81.760022 24.554775 0]>
26 >
27 <[tmsimulator_scenery_object]{}[element]{}[0]>
28 <[string8]{}[type]{}[decal]>
29 <[string8]{}[geometry]{}[ewy_keywest_decals]>
30 <[tmvector3d]{}[position]{}[-81.760022 24.554775 0]>
31 >
32 >
33 <[list_tmsimulator_scenery_object_animated]{}[objects_animated]{}>
34 >
35 <[list_tmsimulator_runway]{}[runways]{}>
36 <[tmsimulator_runway]{}[element]{}[0]>
37 <[vector2_float64]{}[endpoint1]{}[-81.7667503 24.5560690]>
38 <[vector2_float64]{}[endpoint2]{}[-81.7623334 24.5561955]>
39 <[vector2_float64]{}[threshold1]{}[-81.7667503 24.5560690]>
40 <[vector2_float64]{}[threshold2]{}[-81.7623334 24.5561955]>
41 <[float64]{}[width]{}[45]>
42 <[string8]{}[name1]{}[R1]>
43 <[string8]{}[name2]{}[I27]>
44 <[string8]{}[appltsys1]{}[mairs]>
45 <[string8]{}[appltsys2]{}[mairs]>
46 <[string8]{}[pap1]{}[left]>
47 <[string8]{}[pap2]{}[left]>
48 <[string8]{}[reil1]{}[none]>
49 <[string8]{}[reil2]{}[none]>
50 >
51 >
52 <[list_tmsimulator_startposition]{}[start_positions]{}>
53 >
54 <[list_tmsimulator_parking_position]{}[parking_positions]{}>
55 >
56 <[list_tmsimulator_view_position]{}[view_positions]{}>
57 >
58 >
59 >

```

Center Coordinates of your project

Add these lines to convert your models

Runway Information

Airport/Scenery Parameters

Parameter	Description
sname	= Short Name. This is airport name as shown on the map
iname	= Long Name. This a longer version of the airport name when more space is available, e.g. when the airport is selected in the menu.
icao	This is the unique airport ICAO code (leave empty if it's not an airport or if the airport doesn't have an ICAO identifier)
country	Country in which this scenery is located
coordinate_system	Coordinates in this file are defined in this coordinate system. Typically "lonlat". Some also have "web_mercator"
position	These are the center coordinates (lon/lat in decimal degrees) for your project
height	Height above ground in meters (usually zero for on ground)
size	Radius in meters where the scenery should be visible. Less increases performance significantly.
tower_position	Lon/lat coordinates of the airport tower
tower_height	Height of the airport tower in meters

Parameter	Description
autoheight	When enabled the airport will be transformed onto the terrain as it's loaded. This allows us to model the airport completely flat and then transform it onto the terrain later. When you set this to false you will have to build your airport at the true height above mean sea level, provide a custom ground mesh and also account for earth curvature, etc.

Scenery Objects

Individual geometries of the 3D model are used for specific functions such as (generic) objects, ground and decals. These functions are assigned as individual blocks within the tsc file.

You can defined multiple blocks of the same type if needed.

Please also read the documentation of the [different object classes](#).

```
<[list_tmsimulator_scenery_object][objects][[]
  <[tmsimulator_scenery_object][element][0]
    <[string8][type][ground]>
    <[string8][geometry][keyw_key_west_intl_rwy]>
    <[vector3_float64][position][-81.760022 24.554775 0]>
    <[float64][orientation][0]>
    <[int32][autoheight_override][-1]>
  >
>
```

Parameter	Description
type	Type of geometry that is being defined (object, ground, decal, object_transparent_atc)
geometry	Name of the object in the 3D model (e.g. ewy_keywest_obj)
position	Coordinates (lon/lat) and altitude (in meters) where the object should be placed
orientation	Rotates the object above the up axis, angle in degrees
autoheight_override	Can force the object above ground

Animated Objects

Animated objects require an animation to be set before exporting. The exporter then creates a .tma file that contains the keyframe animation data. Both the geometry (.tmb file name) as well as the animation file (.tma file name) are then added to the respective lines in the objects_animated elements.

```
<[list_tmsimulator_scenery_object_animated][objects_animated][[]
  <[tmsimulator_scenery_object_animated][element][0]
    <[string8][geometry][animations_guy_talking]>
    <[string8][animation][animations_guy_talking]>
    <[vector3_float64][position][11.350648 47.257897 0]>
    <[float64][rot_in_degree][0]>
    <[float64][duration][0]>
    <[float64][time_scale][1]>
    <[bool][autoheight][true]>
  >
>
```

>
>

Parameter	Description
geometry	File name of the geometry
animation	File name of the animation
position	Lon/lat coordinates and altitude in meters of the geometry origin (without animations applied)
rot_in_degree	Rotation of the object around the up direction (without animations applied)
duration	Duration of the animation sequence, zero for auto
time_scale	Timelapse factor 1 = real time, 2 = twice the speed, 0.5 = half the speed
autoheight	places object onto the terrain when loaded. When false then the altitude has to be set to meters above mean sea level

Runways

Each runway is defined in the tsc as a set of coordinates (lon/lat).

Example section:

```

    <[tmsimulator_runway][element][0]
      <[vector2_float64][endpoint1][ -122.396054939917
37.6298574167513]>
      <[vector2_float64][endpoint2][ -122.356142019883
37.6131189526278]>
      <[vector2_float64][threshold1][ -122.393396225665
37.6287425367392]>
      <[vector2_float64][threshold2][ -122.357143317297
37.6135389173978]>
      <[float64][width][60]>
      <[string8][name1][10L]>
      <[string8][name2][28R]>
      <[string8][appltys1][malsr]>
      <[string8][appltys2][alsf-2]>
      <[string8][papi1][left]>
      <[string8][papi2][left]>
      <[bool][papi1_has_custom_position][false]>
      <[bool][papi2_has_custom_position][false]>
      <[vector2_float64][papi1_custom_position][0 0]>
      <[vector2_float64][papi2_custom_position][0 0]>
      <[float64][papi1_glide_slope][3]>
      <[float64][papi2_glide_slope][3]>
      <[float64][papi1_spacing][6]>
      <[float64][papi2_spacing][6]>
      <[string8][reil1][none]>
      <[string8][reil2][none]>
    >

```

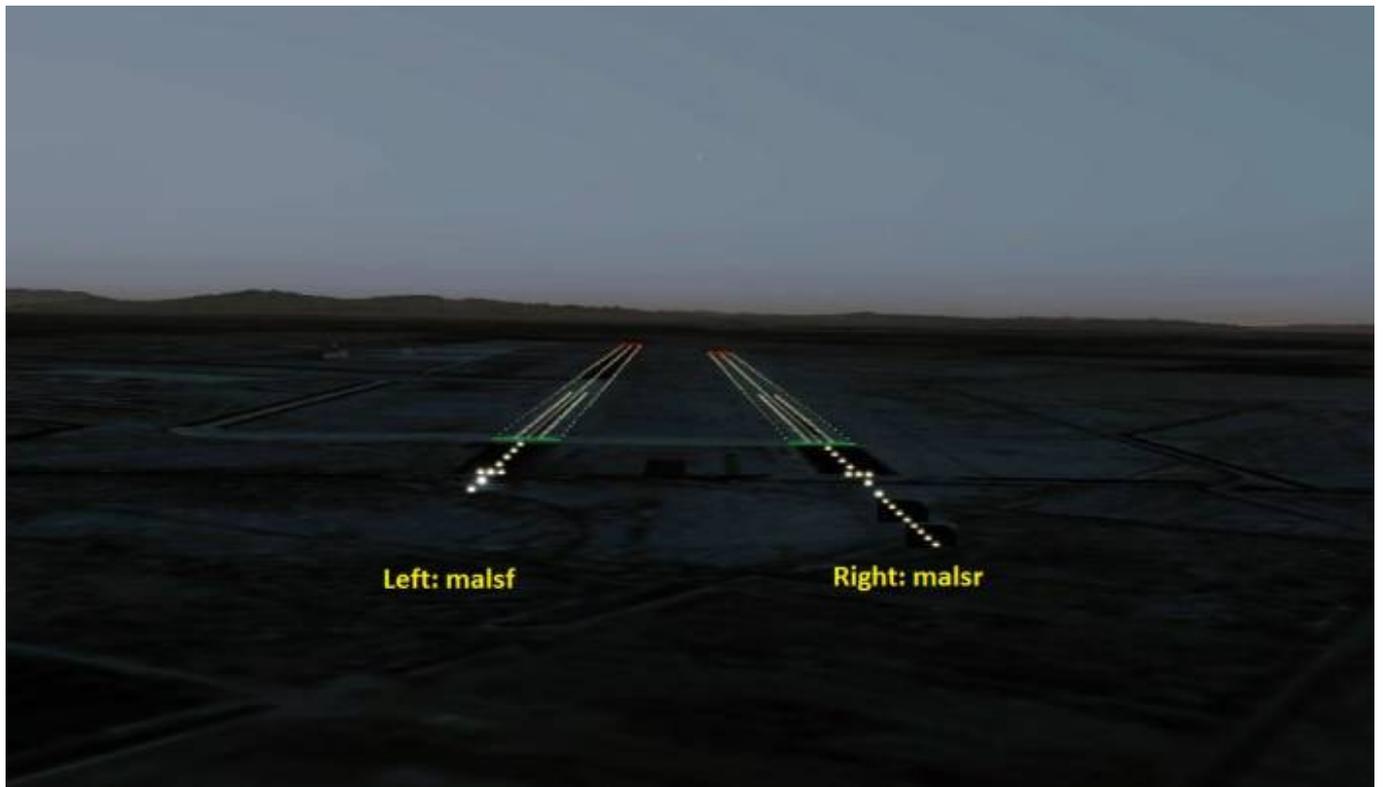
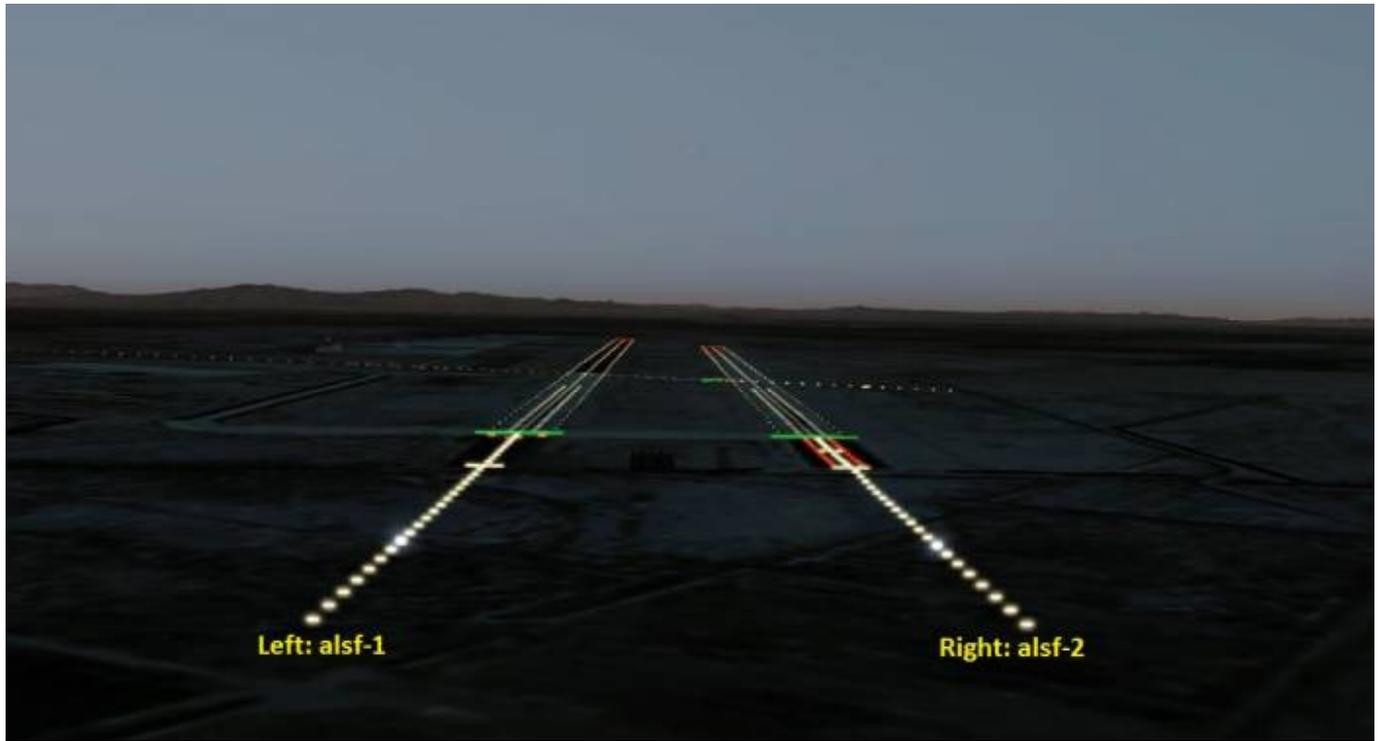
Parameter	Description
endpoint1 / ...2	Lon/lat coordinates of the end of the paved part of the runway in the first and second direction
threshold1 / ...2	Lon/lat coordinates of the runway threshold for the first and second direction
width	This is the width of your runway in meters
name1 / ...2	Runway identifier for the first and second direction
appltys1 / ...2	Approach light system installed for the first and second approach end
papi1 / ...2	This side of the of the precision approach path indicators (PAPI)
papi1_glide_slope	Glide slope angle of the PAPI lights in degrees
papi1_custom_position	Manual offset of the PAPI lights in meters
papi1_spacing	Distance between individual PAPI lights in meters
reil1 / ...2	Runway end identifier lights (REIL)

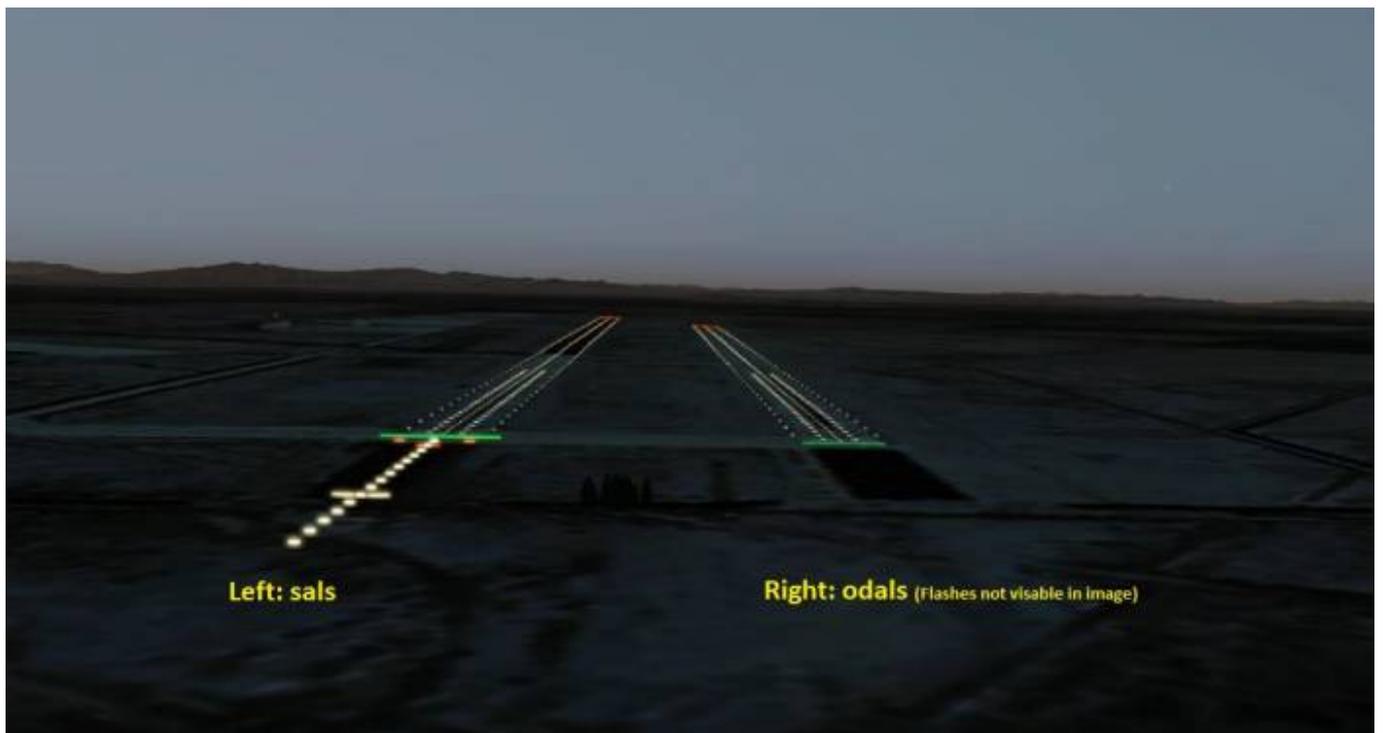
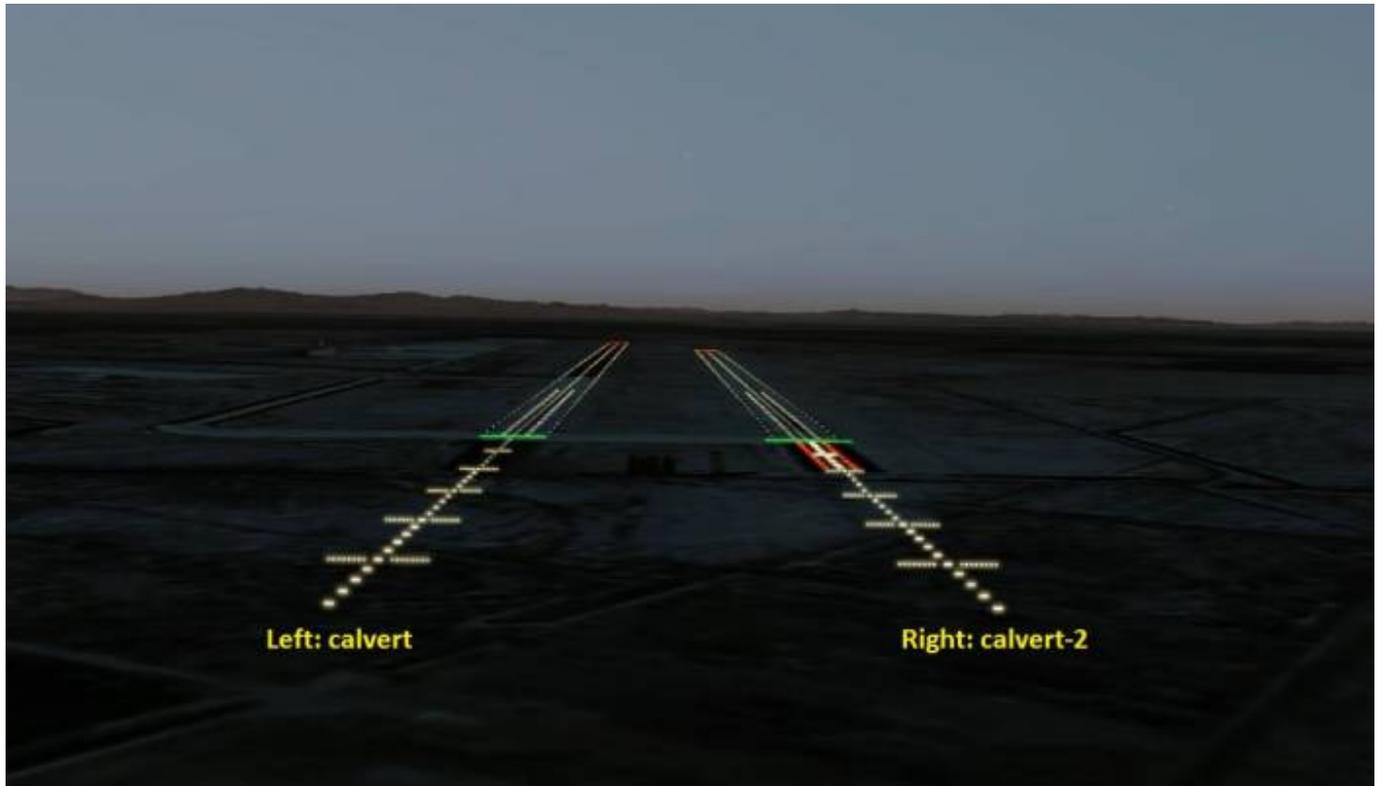
Approach Lighting System (ALS)

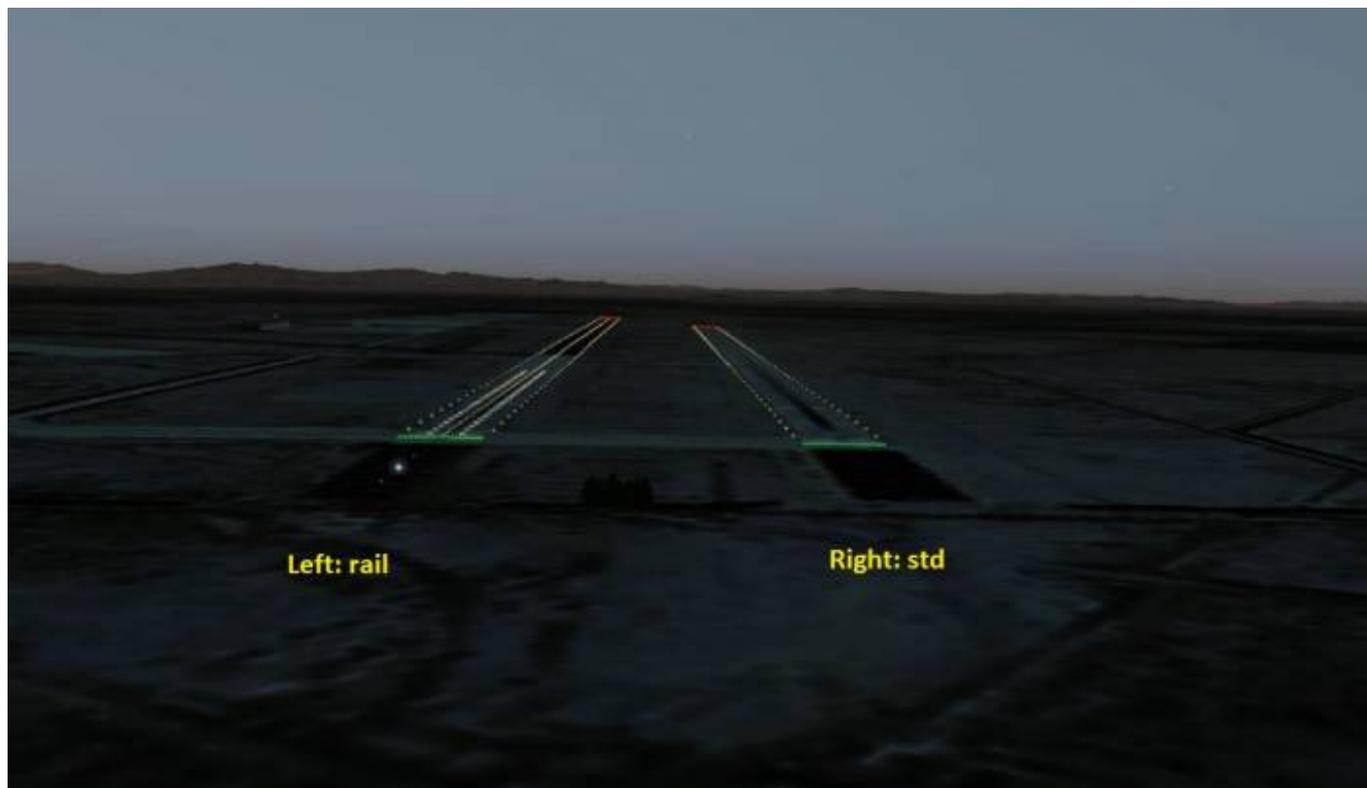
appltys1 - approach lighting system on approach end 1

appltys2 - approach lighting system on approach end 2

Value	Result
alsf-1	Approach Lighting System with Sequenced Flashing Lights configuration 1
alsf-2	Approach Lighting System with Sequenced Flashing Lights configuration 2
malsf	Medium-intensity Approach Lighting System with Sequenced Flashing lights
malsr	Medium-intensity Approach Lighting System with Runway Alignment Indicator Lights
sals	Short Approach Lighting System
odals	Omnidirectional Approach Lighting System
calvert	High Intensity Approach Lighting System ICAO-compliant configuration 1
calvert-2	High Intensity Approach Lighting System ICAO-compliant configuration 2
rail	Runway Alignment Indicator Lights
std	Standard runway lighting
none	no approach lighting system



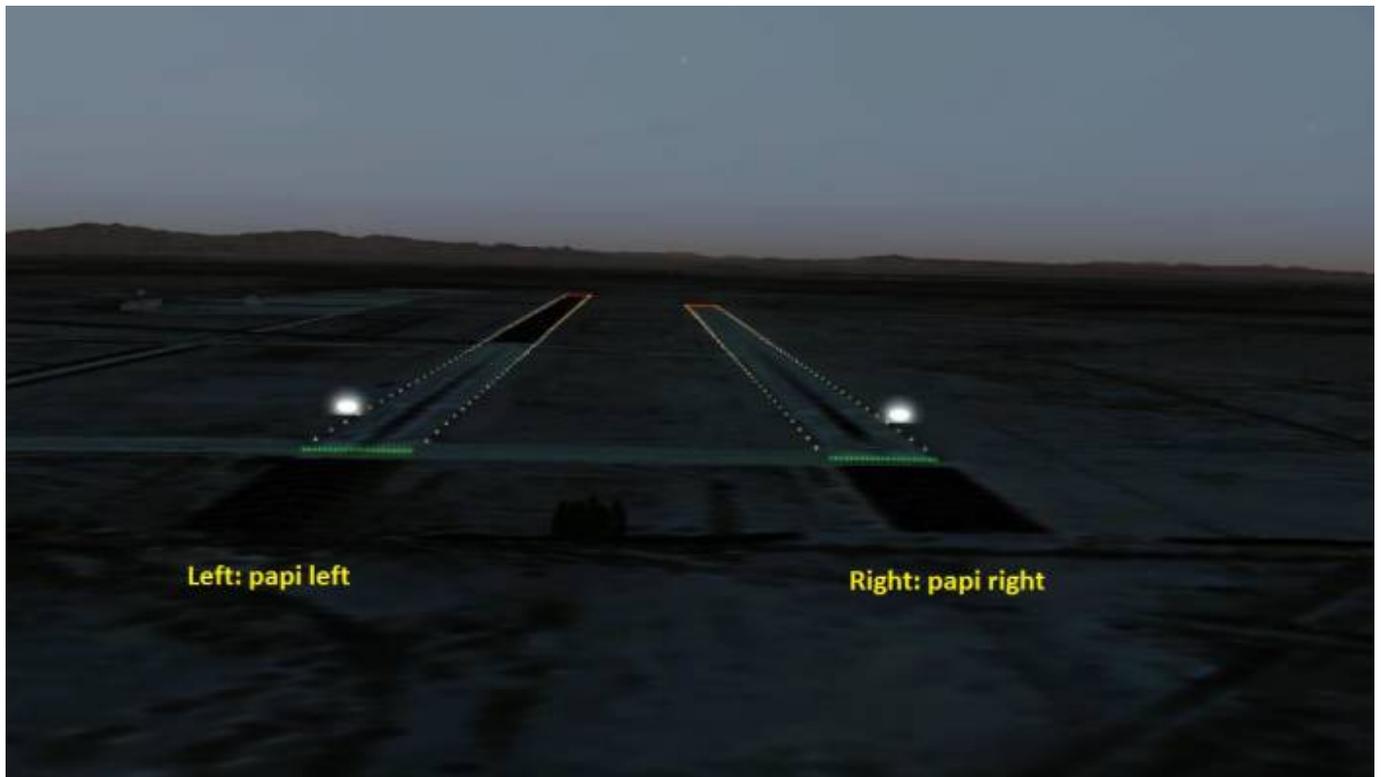




Precision Approach Path Indicator (PAPI)

papi1 - precision approach path indicator on approach end 1
papi2 - precision approach path indicator on approach end 2

Value	Result
left	papi position left of runway when approaching
right	papi position right of runway when approaching



Runway End Identifier Lights (REIL)

reil1 - runway end identifier lights as seen from approach end 1
 reil2 - runway end identifier lights as seen from approach end 2

Value	Result
reil_uni	reil in one direction
reil_omni	reil in all directions

Helipads

Helipads are defined in the tsc file as well:

Example:

```

<[list_tmsimulator_helipad][helipads][]
  <[tmsimulator_helipad][element][0]
    <[string8][name][H1]>
    <[string8][type_name][building]>
    <[vector2_float64][position][-81.7599657782887
24.5549091932849]>
    <[float64][radius][8]>
    <[float64][heading][89.13]>
    <[float64][height][0]>
  >
>
  
```

Parameter	Description
name	Name of the helipad
type_name	Name of the helipad type (e.g. building)
position	Lon/lat coordinates of the helipad
radius	Maximum rotor radius in meters
heading	Direction of the parking position in degrees from true North
height	Height above ground in meters

Parking Positions

Towards the end of the file you can define individual parking positions.

Example:

```

<[list_tmsimulator_parking_position][parking_positions][]
  <[tmsimulator_parking_position][element][0]
    <[vector2_float64][position][-122.387688269125
37.6102106074827]>
    <[float64][heading][29.28]>
    <[string8][name][Parking Position #1]>
  >
  <[tmsimulator_parking_position][element][1]
    <[vector2_float64][position][-122.378445704023
37.6277080224156]>
    <[float64][heading][297.68]>
    <[string8][name][Parking Position #2]>
  >
>

```

Parameter	Description
position	Lon/lat coordinates of the parking position
heading	Direction of the parking position in degrees from true North
name	Name of the parking position (e.g. West or East apron, etc.)

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