



Using Airport & Scenery Designer With FS2002 and CFS II

by Steve McClelland

With the release Microsoft's Flight Simulator 2002, a *new flight simming world* has opened up. With totally new features in some areas and backward compatibility with earlier versions of Flight Simulator in other areas, FS2002 has caused quite a stir amongst scenery developers.

Over the past five years, many flight simulation users have relied on the **Airport & Scenery Designer** software (hereinafter referred to as ASD) to make these new worlds. Using ASD, users can enhance existing FS airports and scenery or create totally new airports and scenery. It remains the tool of choice for many professional designers.

This paper answers questions that scenery designers have asked about using ASD for creating new scenery for FS2002 and its sister program Combat Flight Simulator 2 (CFS2).

Basically, you can use almost all ASD features with FS2002. Some of its functions were designed with earlier versions of FS in mind, I will describe the "use/don't use" functions throughout this paper. To keep things organized, I'll work through each function on the ASD toolbars and discuss their applicability to FS2002.

MAIN TOOLBAR

Region Tool:

This is of limited use for FS2002. You can use it mainly to overlay the default FS2002 textures. It is limited because the regions that you assign are all at one elevation rather than the default 3d Mesh Terrain. You can still use it work with small areas such as a city texture, etc. You'll also find it useful with FS2002 to add semi-transparent textures such as lakes, cities, etc. Later, I'll discuss the sub-areas of the Region Tool.

Terrain Tool:

This tool was originally designed for FS98 and CFS1 and is of limited use for FS2002 since it overlays the default scenery textures and 3D mesh. I recommend that you use this for making small areas as it tends to overlay the default AUTOGEN scenery and produces some weird (undesired) effects such as solid white textures instead of the textures you specify. It also covers up any regions that you add such as roads, freeways, etc.

If you want to do more detailed 3D mesh; I suggest using the mesh tool in the FS2000 SDK. The mesh produced with this SDK tool allows the ASD roads, rivers, etc. to automatically track the elevation changes.

Mountain Tool:

This tool is of limited use with FS2002 since the default 3D mesh covers the entire world. You can use the Mountain Tool to make isolated peaks or fictional mountainous scenery.

Coast Tool:

Use this tool to make detailed coastlines in your custom scenery. This is especially useful if you are using coastline data from the NOAA. Use the Coast Tool in conjunction with the Beaches program (mentioned in the ASD manual) to add sandy definition to the coastal polygons instead of the sharp edges without. You can also create your own custom coastal textures using the transparent edge effect.

Macro Tool:

This tool works just as it was designed to do and places a single macro anywhere that you drop it in the scenery.

Tile Tool:

For FS2002, this tool has no use unless you are using them as a base for the 3D Terrain tiles. It was of great use in FS98 for texturing large areas of scenery at once.

Airport Tool:

This tool, without a doubt, is one of the most powerful ASD tools. Use this tool to create a new airport, enhance an existing airport, create new cities, new areas, and with a few twists, even alter the terrain around the area using airport polygons. I'll describe this in the tricks and hints sections below.

VOR Tool:

This tool works as designed for FS2002.

NDB Tool:

This tool works as designed for FS2002. It is used to make a radio, beacon for direction to the beacon/ airfield.

Exclude Tool:

This tool works within the areas it was designed to. However, you cannot exclude the default scenery textures or 3D mesh.

Region Tool Sub Areas

1. None Area: I have yet to find a use for this are in FS2002. I suspect it is similar to the Other Area, which I will touch on shortly.
2. River Area: This tool works great with FS2002. For best results, use segment lengths of 1000 meter or less. The shorter length allows the river to track to the default 3D mesh without disappearing into the side of a hill and reappear on the other side. You may want to create a custom texture with transparency or use the Beaches program to produce the riverbanks.
3. Lakes Areas: This tool continues to work well with FS2002. Again, I suggest that you use the Beaches program and/or custom textures to make great looking lakes. Alternatively, you can make a lake by creating a macro and a transparency bitmap. Scale the polygon to fit this bitmap or the area you want to cover.
4. Freeway Areas: This tool continues to work well with FS2002. As with the River Area, limit the segment length to 1000 meters or less to avoid the "thru the hill" result.
5. Road Area: Same as the Freeway Area. You can design your own roads, rivers and railways using the custom transparent textures and achieve dirt roads, railways, etc. and have them blend into the surrounding default textures. This is similar to how the Microsoft roads are made.
6. Island Area: This tool continues to work well with FS2002. The best results are achieved by using transparent textures.
7. City Areas: Again, use the transparent textures for the new city. Blend the texture into the AUTOGEN scenery. NOTE: The city polygon will turn off the AUTOGEN

buildings, trees etc. in the polygon areas. To be able to retain the AUTOGEN scenery, use a completely transparent bitmap as the texture for the city.

8. Railways: This tool continues to work well with FS2002. Set the segment lengths to 1000 meters or less. Use custom bitmaps to blend the railways into the default scenery.

9. Coast Areas: This tool does work with FS2002 but lacks the graduation effects of the default scenery textures. If you have to alter the coastlines or want higher definition, use the Beaches program to give you a custom look to the edges between water and land. Alternatively, you can design your own custom textures.

10. Mountain Area: This tool is ideal for dropping a small mountain into a scenery, but isn't as detailed as the default 3D mesh. It is useful for custom scenery or fantasy scenery designs.

11. Other Area. As its name suggests, this is for the other stuff. Use it to place polygons, etc. and declare them as "Other" on a different layer or elevation.

Airport Sub Menu

All of the features within the Airport submenu continue to work well with FS2002 and CFS2.

I have built more than 1000 fields for CFS2 using this handy little tool! One thing to keep in mind is the layering technique, background textures around layer 4, roads, taxiways, etc. at layer 8, and so on. I normally always use the 12th layer for the fuel boxes. Always think in layers of 4!

See the Tricks section below on other uses for the Airport Tool!

Other Tools

Map Tools:

Used to import both maps and data for laying out roads, rivers, lakes, coastlines, etc. You can download detailed data ranging from 30 arc second data for the entire world or even 1-second arcs for the entire USA. For U.S. scenery, you can even download DLG's (digital line graphs) which allows you to drop in accurate highways, freeways, rivers, lakes, etc.

BGL Viewer:

This is worth its weight in gold as it allows you to view BGL files from other scenery files and import some of the airfields and scenery objects into your new scenery. I have used this to expand CFS2 over into Europe, the UK, and expand on the South Pacific areas.

Hints

Set your system to FS2000 in the Preferences settings! This works for both FS2002 and CFS2.

Always layer airport polygons in layers of 4. Background textures at 4, taxiways, roads, etc. at 8, fuel boxes at 12 and so on.

For Roads, Freeways, Rivers, railways, etc., remember to set your segment length to 1000 meters or less to avoid the "thru the hill" effect.

The River tool seems to work the best in FS2002 when it's set to be drawn as a Road.

Use custom bitmaps with transparent effects to allow your object such as rivers, roads, etc. to blend into the surrounding stock scenery.

Save your work constantly!

When importing airfield scenery via the BGL viewer, load both the AFD files and the scenery files. They are located in the FS2002/Scenedb folder.

When using the Region Tool to place a custom texture, turn on the tile grid and select one about the size you want the region to be. Then draw your region polygon to fit the Tile grid.

Always try to use the FS2000 style of buildings instead of the straight building macros. The 2000 style has night lighting built in and adds to the realism.

A little time spent on detailing scenery goes a long way. Place small "Detail" macros around in your scenery, this adds immensely to the overall effect. A farm area with a few cow macros dropped in looks a lot more interesting than an empty field as you fly past.

Taxi around the scenery you designed, look at everything from ground level. If it looks right here, it will look great from above on a low pass.

Tricks

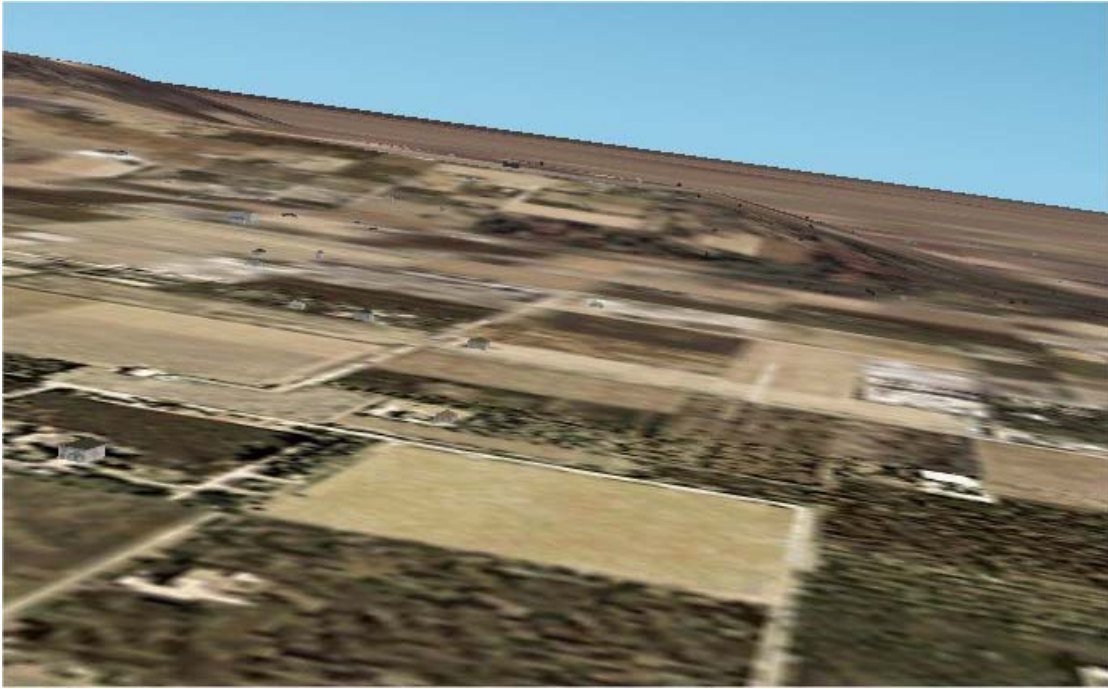
Here are a few tricks that you may want to try using ASD with FS2002.

1. Who said an airfield has to be an airfield and have runways, etc.? Use the airfield tool to create cities, towns, custom areas, etc. Only your imagination and a single elevation limit the tool! Use the next trick to bypass the single elevation limitation.
 2. To create custom terrain, first create a normal airfield area and populate it as you wish. Create a second airfield next to the first; name it as blank, with the city-state-country names as NONE (this will prevent it showing up in the FS2002 Airfield menu listing). Set the second field's elevation as above or below the first elevations to raise or lower the terrain you wish to produce. Create polygons in the shapes you want the terrain to follow and place them on the second field. Assign them a totally transparent texture, which will allow the AUTOGEN of FS2002 to produce trees on the slopes and buildings on the tops. Compile it and take a look at it in FS2002. You may have to adjust the polygons to produce the terrain effects you want. Irregular polygon shapes work the best as it tracks with the 3D mesh under it to produce ravines, slopes, etc. See the images below for some idea of what you can do with multiple airfields and differing elevations.
 3. You should also be able to use the above trick to produce depressions such as manmade drainage ditches, raised mounds, and trenches, foxholes etc. Be advised it will take some changing of the polygons to produce the effects you want. Play with it to see what you can do with 2 or more pseudo fields.
 4. Layering! Use this to create river valleys using the above example. Adjust your polygons to allow a river at the base of the mounds or depressions you create. Drop in the river segment in a layer above the ground polygons. Using the transparent textures, you can have areas with and without water in it.
 5. Custom bitmaps with transparencies! These will produce a blended in effect just like the stock roads, rivers, etc. You can produce dirt roads with grass growing in the areas between the tire ruts, lakes that merge into the surrounding textures, freeways with customized medians, and so on. You can replace all of those sharp polygon edges with a gradient effect, which merges your scenery into the surrounding stock scenery. The use of these custom images and the transparency support for them is limited only by what you imagine.
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The following illustrations show how I've used a "Blank" airfield with differing elevations at each.



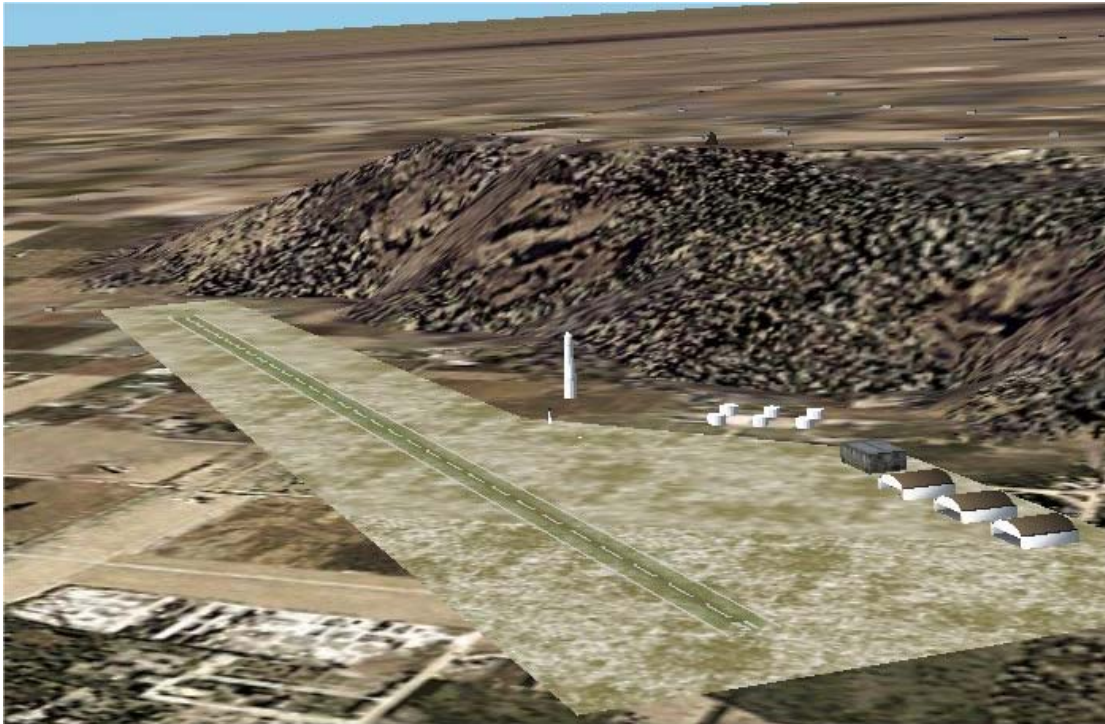
In this view, we're taking off from a stock FS2002 field (SkyDive, Houston, Texas USA). The new airport(s) in the background is actually below the elevation of the stock field. You can see the AUTOGEN trees on the slopes and buildings on top of the raised areas. In the stock scenery, this area is pretty flat!



This is the multiple elevation effect when two "Blank" fields with differing elevations are combined. Note the changing elevations at the left top.



At the top left, you can see a road tracking along with the elevation changes in the airport polygons from area to area.



This is the new field created for FS2002 Pro and has several “Blank” fields with differing elevations around it. Using a transparent bitmap as the blank field polygons, it allows the AUTOGEN scenery to be created over the top of the transparent one. You can still place macros, layer other polygons, etc. on top of the AUTOGEN scenery.

The last thing I’ll mention is that scenery design becomes addictive! This is my fourth year of doing making scenery and there is no end in site!

In closing, ASD has provided myself and countless others with the means to build scenery as we envision it should be. And through our efforts at scenery design, it has enhanced the flightsim experience for tens of thousands of users across the world.

The **Airport & Scenery Designer** software is available from

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