

00deg

AIRPORT DESIGN EDITOR

v.1.65

by
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USER MANUAL

by Helli Hauck

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Part 1

Getting Acquainted With ADE

1.0 Introduction

This Manual is valid for the **ADE version 1.65**.

"ADE" version 1.65 allows the editing of airports for Microsoft's FS9 and FSX, and for Lockheed Martin's Prepar3D (P3D).

FSX and P3D are nearly identical and are treated in this manual the same way. FS9 is different in many aspects..

In cases of difference, this manual is using the colour **blue** for all issues related exclusively to **FSX and P3D**, **green** for all issues related exclusively to **P3D** and **red** for all issues related exclusively to **FS9**.

NOTE from the Editor:

Since very first version of the ADE Manual written by Bob Keeshan he and his successor tried to maintain Bob's philosophy of providing a precise and concise and therefore an as short as possible volume content. Due to a significant increase over the time in complexity and power of ADE, this edition of the Manual breaks with this tradition. Hopefully the manual is still as readable and useful as before.

1.1 Acknowledgements by Jon Masterson

It is difficult to know where to begin. Many people have helped me both with the expertise to create working airports and with extensive program testing.

I must first acknowledge Lee Swordy for the inspiration of AFCAD. AFCAD has always been the benchmark against which I have measured ADE.

In addition to the program itself, I have heard many good things about the quality of the AFCAD documentation. If you see a similarity between the manuals for ADE and that of AFCAD, it is deliberate.

Special thanks also to Jim Vile and George Davison , who have been unfailingly patient as I have learned my way through the intricacies of airport design, and who have always supported and encouraged this development.

Thanks also to Graham Jackson for his work on parking specs. ADE uses his information to display airline codes and colour parking spots based on airline.

Special thanks also to Bob Keeshan for the initial versions of the ADE English Manual and the optional tutorials. Bob has managed to pull together the wide range of manuals and release notes that accompanied the earlier versions and made them into one coherent document.

Helmuth (Helli) Hauck who produced an excellent ADE Manual in German and who has kept us very much on our toes, has now taken on the even more daunting task of authoring both the English and German Manual.

Also many thanks to Martin Gossman, who, in addition to being part of the team, created the installer that is used starting with version 1.20. Martin is also responsible for the ADE Environment Checker and AI Aircraft Editor that ship with ADE

Tom Gibson has painstakingly proofread the manual and has given many valuable suggestions for better understanding the text.

The following people have given much of their time and expertise to help with the development of what will never be a complete program. The more I learn, the more I realize there is to learn.

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I thank them all for their patience, good humour, and invaluable help during development.

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Finally, thanks to the developers and contributors at the Code Project and StackOverflow.com. The Code Project is a constant source of ideas, code, and inspiration for amateur programmers such as I; and the folks at Stackoverflow have a wealth of knowledge on so many aspects of programming.

Airport Design Editor takes airport development to a whole new level of capability and sophistication. This is possible only because ADE is the product of a dedicated and experienced development team. Some of the MSFS community's most experienced developers have contributed to the program's development. Consequently, ADE has fixed most of the known issues and idiosyncrasies with AFCAD and offers unprecedented functionality and support.

Jon Masterson January 2015

1.2 What You Can Do with ADE

Airport Design Editor (ADE) is a powerful, freeware CAD-style program that allows to create and modify airports, their characteristics and their scenery of Microsoft's Flight Simulator (FS9 and FSX) and Lockheed Martin's Prepar3D (P3D).

With ADE, one has complete control over all facility information; that is, you can change the location, you can modify existing or add new runways, aprons, communication frequencies, parking, start locations, taxiways, tower views, and all associated markings and lights at your airports.

ADE also provides you with the ability to create and modify the surrounding airport background, most of the scenery objects and terrain elements found at or around the airport.

In the past, a developer had to use multiple utilities to add or modify library objects, generic buildings, land class, flattens, exclusions, and terrain vectors in their airport projects. Most of this work can now be completed in ADE.

Most important, all design activities can be done with ADE being connected to FS9, FSX or P3D respectively, thus permitting the use of the Flight Simulator for direct data transfer.

Finally, ADE allows experienced airport developers to add and modify approach code in their airport projects using ADE's Approach Designer. This combination of unprecedented functionality along with ADE's user-friendly interface makes ADE a powerful development tool.

1.3 Compatibility

There are a number of airport design utilities for FS9, FSX and P3D.

ADE is able to read the files from these utilities provided they comply with some basic requirements for the conversion of these files into Flight Simulator data.

1.4 ADE Support and Contact Information

ADE has its own web site at

<http://www.scruffyduck.org>.

This is the place where you can find the latest news about Airport Design Editor and where you can download not only the program itself but also additions and tutorials.

News, Release Notes and many articles on special features are accessible in

https://scruffyduck.screenstepslive.com/s/help_docs/m/20268

In addition ADE also has its own support forum located at fsdeveloper.com. Some of the best airport designers in the MSFS community have been involved in the development of this program. They spend considerable time in this forum and will help you when they can.

The web address to the Airport Design Editor forum is:

<http://www.fsdeveloper.com/forum/forums/airport-design-editor.95/>

A lot of time and effort has gone into the development of this program. We know it is not perfect and almost certainly has some bugs here and there. If you find something that does not work or if you get a message concerning an unrecoverable problem, please try to replicate it and make a note of the steps that led to the problem. If there is an error message, take a legible screenshot of it. Report the problem on the forum explaining what steps were taken and what happened.

ADE generates a running log file of what is happening and will make a record of most errors that occur. It is much easier for us to help you when we have a copy of the log file. One of the hardest things for us is when we get a “It did not work” problem or one that cannot be replicated. If one or more of the team can replicate your problem, we have a much better chance of fixing it. You can also e-mail the developers directly at jon@scruffyduck.co.uk.

1.5 Legal Disclaimer

This software is released as freeware and may not be used in whole or in part in any other software without the written permission of the developer. You may not change the install package or its contents in any way. You may not upload or distribute this software or any other part of the package without the written permission of the author. We cannot be held responsible for any effects this software may have on you, your computer, or your flight simulator installation. In other words, you make use of ADE entirely at your own risk. You need to either receive permission of copyright holders, or own the copyright yourself, of any scenery file that is modified with this program. We cannot be held responsible for any legal actions taken against you for any breaches of copyright or ownership that may result from the use of this software.

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Any pictures, images, or text in this document that is not generated by ScruffyDuck Software are copyright the author which is respected and used with permission.

1.6 Known Problems

Below is a list of currently known problems and bugs that you may encounter with ADE:

Free-Way Traffic

ADE cannot currently generate free-way traffic when you add a road terrain vector.

Display Setting

Sometimes menus in ADE will not appear correctly. When this is happening, then the only solution at this time is to use a **DPI setting** of "Normal Size" (96 DPI) in the "Resolution" entry of Windows' Rightclick Menu.

Wrong Message of Updater

There is a known issue with the on-line updater and Windows 8.1 The updater may report a problem with the application but it is a false message and the update will complete properly.

Move Airport (requires ProKey)

When moving a stock airport over a larger distance, problems might occur, because ADE does not have the means to move the Airport Reference Point (ARP) where the coordinates are stored for the Flight Simulator.

The consequences are explained in the following link, which will be updated, whenever the situation might change:

<http://scruffyduck.posthaven.com/moving-an-airport-in-fsx-slash-p3d>

2.0 Basics

ADE is not standing alone in the field of flight simulation.

A customer needs a few basic programs, applications and settings for the correct operation of ADE.

2.1 Requirements

2.1.1 Flight Simulator

at least one or all of the three Flight Simulators

- o **Microsoft FSX Deluxe Edition**, together with the "Simulator Design Kit" (SDK)
- o **Microsoft FS9.1.**
- o **Lockheed Martin Prepare3D (P3D)**, together with the "Simulator Design Kit" (SDK)

Note that the FSX-SDK is shipped only with the Deluxe-version of FSX, along with the latest Service Pack Updates (SP1A, SP2), or with the Acceleration DVD. Note also that the FSX-SE version which is sold by Dovetail Games (DTG) does not contain the SDK.

This appropriate SDK need to be installed.

It is not installed automatically when you install FSX. You will need to locate the SDK on the DVD and install it.

A detailed tutorial on "**SDK Installation (FSX)**" can be found in the Wiki of the FSDeveloper Forum

[http://www.fsdeveloper.com/wiki/index.php?title=SDK_Installation_\(FSX\)](http://www.fsdeveloper.com/wiki/index.php?title=SDK_Installation_(FSX))

2.1.2 FSUIPC (Flight Sim Universal Inter-Process Communication)

- o **for FS9: Free version FSUIPC V.3.9.xx**
- o **for FSX and for P3D: Free version FSUIPC V.4.4xx**

both download at: <http://www.schiratti.com/dowson.html>

On this site you see two boxes. The one on top has below the header "FSX / Prepare3D v...." the option "FSUIPC4.." This is the free version for FSX/P3D.

Further down is a second box, where under the heading "FS2004" you find "FSUIPC 3.9..." This is the free version for FS9. Both packages come with a PDF-file containing installation instructions.

2.1.3 MSXML (Microsoft XML Core Services)

- o **MSXML** is a separate downloadable software design kit, which is required by the compiler BglComp.
ADE needs **version 4** (at minimum) and can be downloaded from

<http://www.microsoft.com/de-de/download/confirmation.aspx?id=15697>

2.1.4 Microsoft dotNET Framework

- o **Microsoft dotNET Framework** is a software platform for design and execution of application programs.
ADE needs **version 3.5** and can be downloaded from

http://www.chip.de/downloads/Microsoft-.NET-Framework-3.5_20894571.htm

2.1.5 Monitor Resolution

- o **The Minimum Monitor Resolution** for ADE is now 1280 x 768. This is the minimum to avoid losing buttons etc on the right side of the main display and text in command buttons and windows.

Once you have set up all these applications and programs you are all set to start ADE and try your first steps reconnoitring the feature4s of ADE.

2.2 Download ADE

If a user does not have ADE yet, the first step is to download and install it. You can download the ADE software from

<http://www.airportdesigneditor.co.uk>

In the window "ScruffyDuck Software" open the "Airport Design Editor"-Tab and select "Downloads".

The first line tells you the link to the current production version v.1.65 of ADE

The installation package for ADE 1.65 is a zip file that contains a read me file and an executable installer . The installer is a full install. It will allow you to install ADE for the first time on a computer or update an already existing version of ADE.

2.3 Install ADE

Extract the two files to a location on your computer.

Double click the installer to start it. You will probably see the User Access Control (UAC) message. Click Yes to start the installer

Details of this installation process are explained in the tutorial "How do I Install ADE? (1.65)" which can be downloaded from

https://scruffyduck.screenstepslive.com/s/help_docs/m/20268/1/258367-how-do-i-install-ade-1-65

The installer comes also with a "Readme"-text file. It is highly recommended to read that file, since it also contains some instructions about the installation process.

2.4 Starting ADE

ADE can be started in several ways. The two easiest methods are

- click on the ADE-icon on the desktop
- run "Airport Design Editor.exe" in the main ADE-folder

If FS9, FSX and P3D are installed, a small check-box appears, offering several choices.

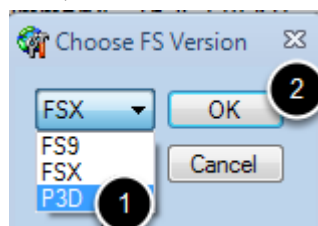


Figure 2-1: Choice of FS

- o By clicking on "FS9", "FSX" or "P3D" (1) one can choose between ADE9, ADEX or P3D. In case the choice should be wrong, the "Cancel"-button will abort the start.
- o With click on "OK" (2) the selected version is started.
Only one ADE version can be opened at a time.
- o If ADE finds one version of Flight Simulator only, you will not see the Selector and ADE will start in the mode matching the version it finds.
- o If ADE cannot find any versions of FS on the computer, the selection window will open with a red background and only the cancel button will be active
- o If you definitely have one or more FS versions on your computer and yet ADE cannot find it, then there is a problem with Registry entries. In this case you are referred to the ADE Support Team for adequate help.

2.5 First Configuration

After the very first installation ADE finds itself in "unknown waters" and needs to be told, where a few things are and how some other things should be handled.

For a new user, who does not yet know his way around, this could be quite confusing.

ADE has for this case a "wizard", which is a small utility with a series of screens that walk you through the task.

It is called "New User Wizard" and it will configure ADE to work properly on your computer.

2.5.1 New User Wizard Welcome

The New User Wizard begins with the Welcome Screen.

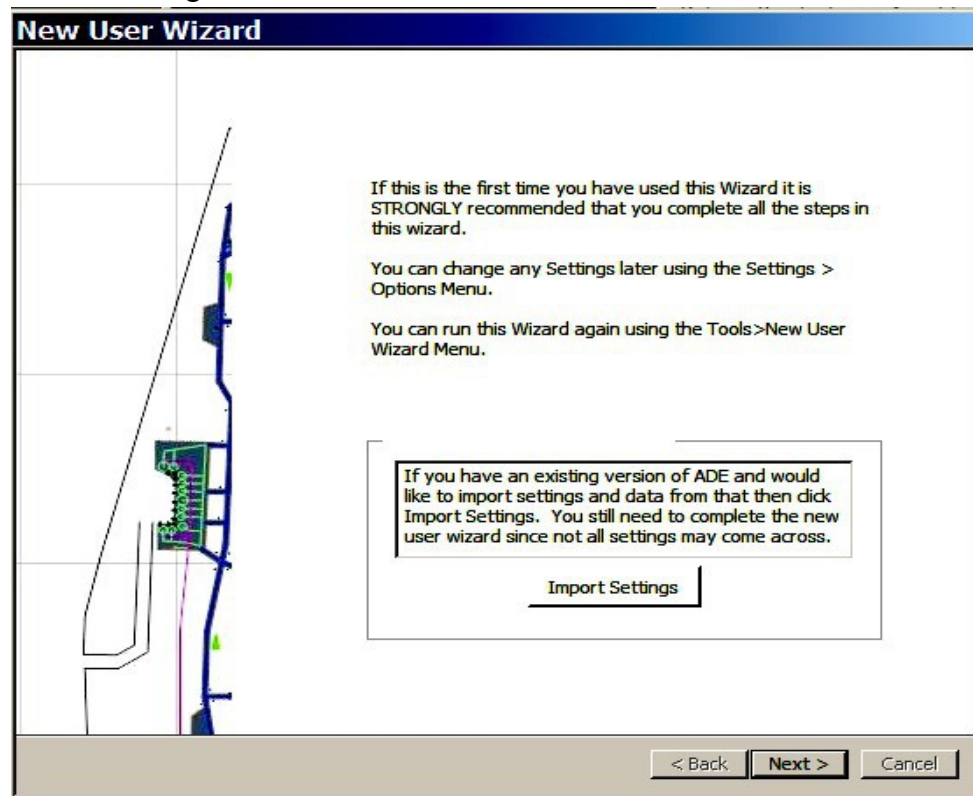


Figure 2-2: New User Wizard Welcome Screen

This screen reminds you that it is important to run completely through the Wizard's screens. In fact, it is not possible to cancel one of the steps offered by the Wizard. One is forced to go through all the screens.

At a first installation the button "Import Settings" should be left alone. It is useful however for users with other (older) installations of ADE existing on the computer. For this the New User Wizard with all detailed features is discussed in [chapter 13.8 New User Wizard](#)

By clicking "Next" you move to the next screen. You can go back at any time and change or check settings by clicking "Back".

2.5.2 General Settings

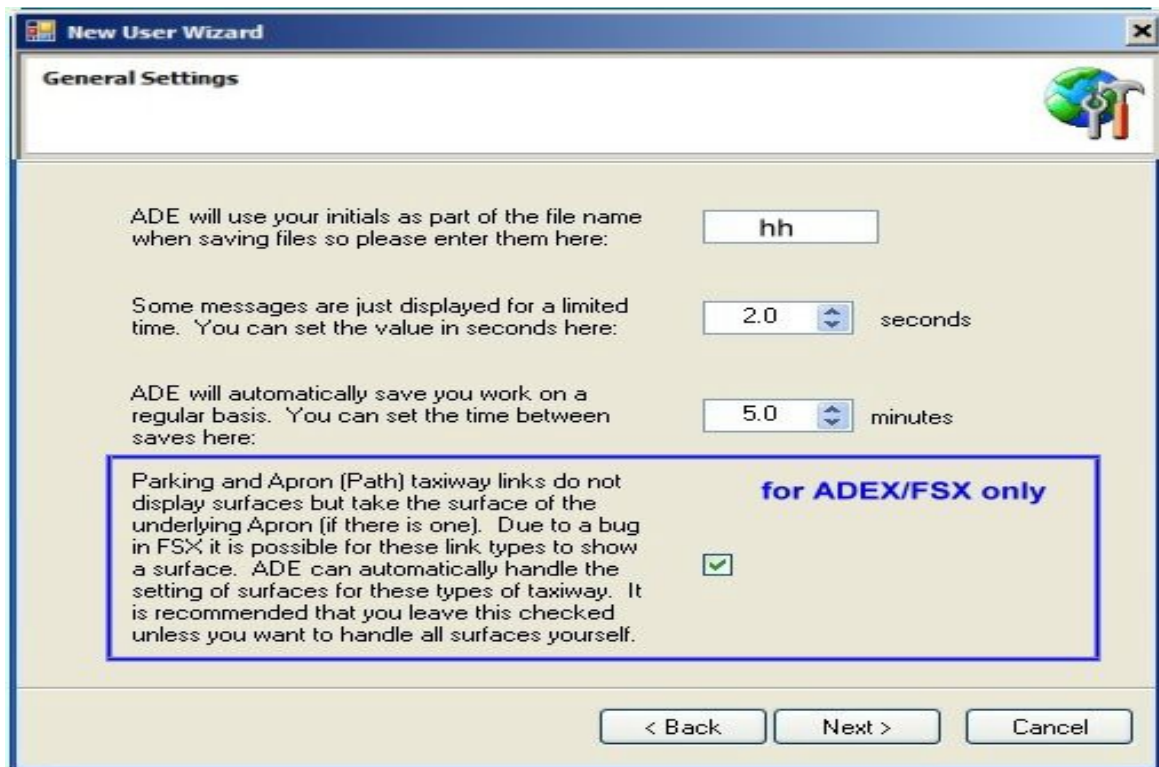


Figure 2-3: New User Wizard General Settings

There are four options to configure on this screen (**only three in FS9**):

- 1. Enter your initials** – It is recommended to insert here your initials. They will be added to the name of each of your Project files for easy recognition. When this is left empty, "ADE" will be used instead.
- 2. Message Timing** – Select a time in seconds to display temporary messages. The standard is one or two seconds. Messages like File Saved etc. will display for this time and close without you needing to do anything. You can set any time between one and five seconds in half second intervals.
- 3. Auto Save** – Select a time in minutes as the interval between auto-saves. Five minutes is a good starting point, but you can set it to any time between one and 30 minutes in 30 second intervals. When ADE auto-saves, it will store the project as "autosave.ad4"-file in the main folder of ADE => FS9, FSX, P3D or P32.
- 4. Parking & Apron Links** – this checkbox should be left as is. It will be explained and used much later downstream.

2.5.3 Folders

The "Folders" screen is next; it is a very important section in the Wizard, so please take time to enter the correct information.

The content is different for FS9 and FSX/P3D.

for FS9 only

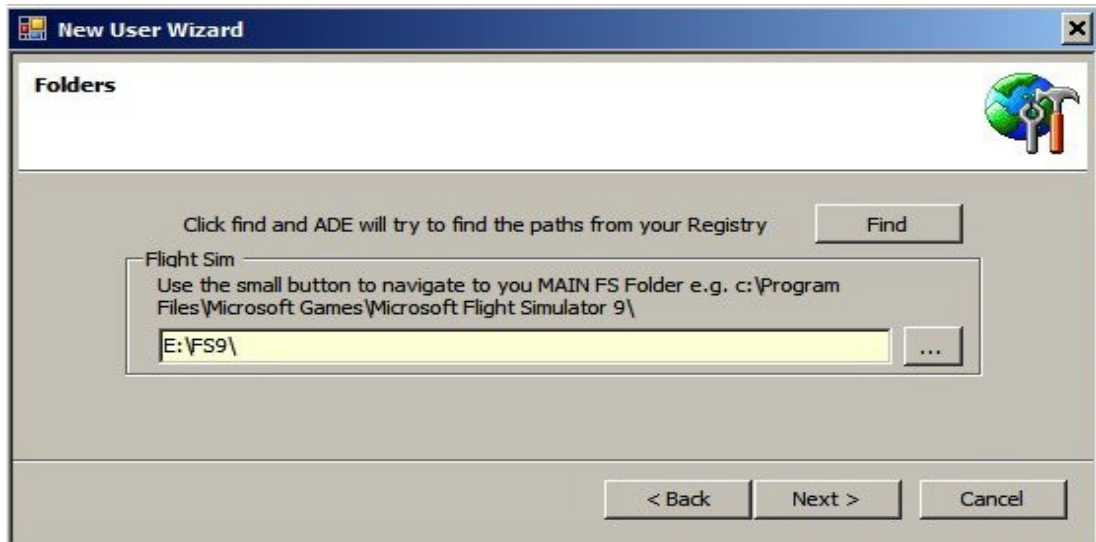


Figure 2-4: Path to the FS9 installation

for ADEX/P3D

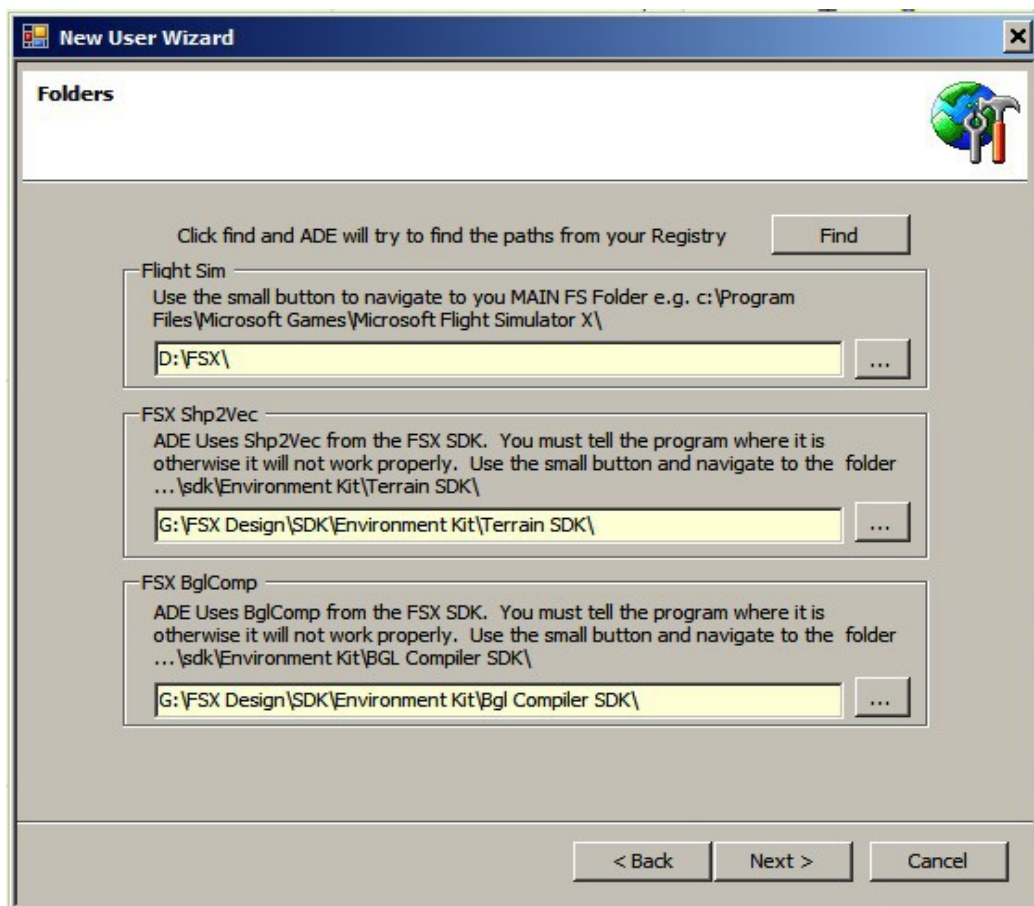


Figure 2-5: Paths to the FSX/P3D Installations

- o **Paths to the FS9-, FSX- and P3D-files** - ADE needs to know, in which directory the Flight Simulator files are stored on your computer.

The simplest way to set up the path structure is to have ADE do it for you. Click the "Find" button. ADE will search your registry to fill in the details.

If ADE cannot find your FS9 or FSX/P3D installation path, there may be a problem with your registry entry. If you prefer to select the paths yourself, use the small "... " button and fill in the right the path manually.

- o **Paths to the SDK (only for FSX/P3D)** - To have ADE set up your paths, click the "Find" button. ADE will search your registry and use the SDK and FSX registry keys to fill in the details. If ADE cannot find the entries, it becomes a little more complicated.

What ADE is looking for are two files named "BglComp.exe" and "Shp2Vec.exe".

To find BglComp.exe click the "... "button and go to the folder, where you have stored the SDK (see **chapter 2.1.1 Flight Simulator** above). There you will see the following folders and files:

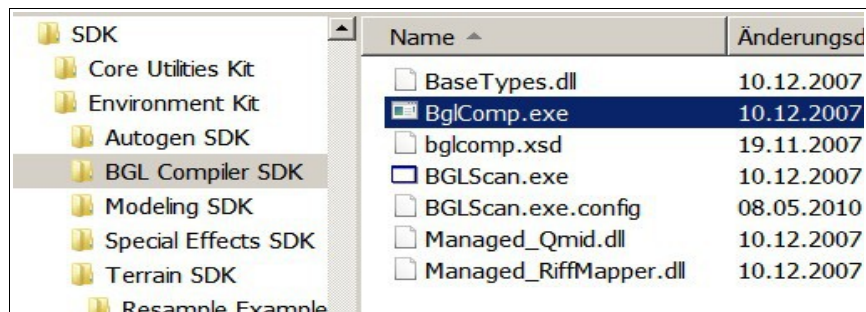


Figure 2-6: Location of BglComp.exe in the SDK Folder

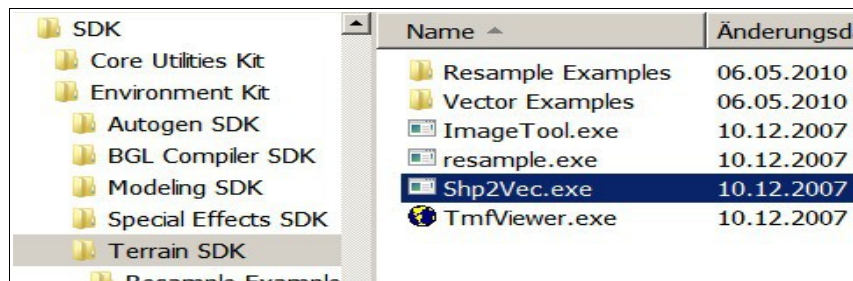


Figure 2-7: Location of Shp2Vec.exe in the SDK Folder

BglComp will be in the "BGL Compiler SDK" folder under the Environment Kit sub-folder.

Shp2Vec is located in the "Terrain SDK" folder located below the BGL Compiler SDK.

When clicking on these folders, their path is transferred automatically to the window in Figure 2-7 above.

Once you have properly configured the locations for the Flight Simulators, BglComp and Shp2Vec, click the "Next" button.

2.5.4 Units

and

2.5.5 Project Settings

we leave as they are, since ADE fills them with "default"-settings values, which are sufficient for the new user's first steps. All parameters in the New User Wizard's windows can be changed to other values at a later time.

2.6 ADE Environment Checker

ADE contains a utility which is useful to check, whether all settings have been done correctly. It is located in **chapter 13.3 ADE Environment Checker**

2.7 Update, Exit and Uninstall

o Updates

Updates for the current version of ADE are obtained on-line.

The **On-line updater** works in the background each time you start ADE. It checks to see if you have the current version of ADE. If so you will see the green tick and Up to Date status on the right side in the “Status Bar” of the ADE-Main Display

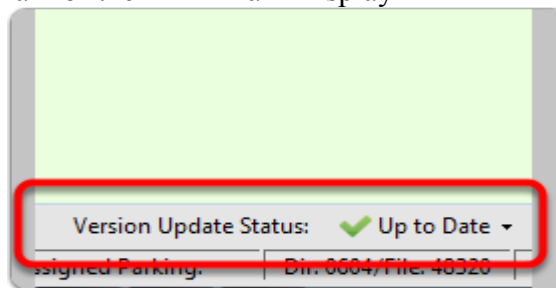


Figure 2-8: Update Status

If ADE finds a new update it will provide some information. in two places:

1. The version status area which is now showing “Downloading”
2. An icon in the Notify tray

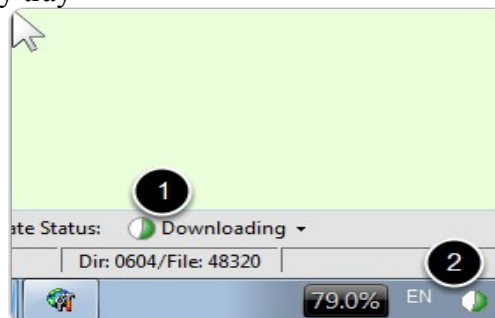


Figure 2-9: Update Available

After the download is finished you will see the “Click to Update Now” status.

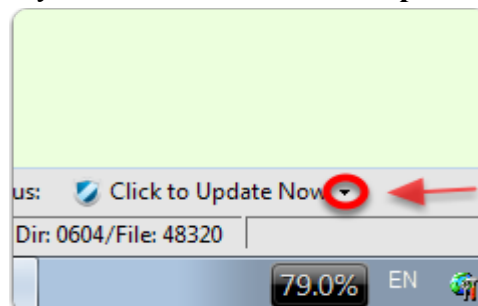


Figure 2-10: Ready for Updating

Click the small down arrow to the right of the status notification to obtain more information about the Update.

Clicking on the text “Click to Update Now” will start the update.

IMPORTANT NOTE

It can take some time for the download to be completed. You may work with ADE while the download is taking place. If the user has changed the project file then the automatic updater will not initiate and the user will be advised to save the project and then try the updater again. This does not require that the patch file is downloaded again. Once it is on the user computer it should stay there ready until the update is applied. ADE will warn you if you need to save your work once the download is complete. You should allow the download to complete even if it seems to take a while. At busy times the server can appear slow

o Close ADE

ADE can be closed either in the "File" Menu by clicking the entry "Exit" or by clicking the cross in the top right corner of the ADE main display.

o Uninstalling ADE

ADE 1.65 can be uninstalled via the Control Panel. **NOTE** that this will not uninstall settings and other user created files. To remove everything please use your file manager to delete the installation folder.

2.8 ADE at a Glance

2.8.1 ADE Main Display

The Main ADE Display includes the Title Bar, Menu Bar, Tool Bar, Connect/Disconnect to/from FS Buttons, Pointer Coordinates and Display Orientation, the main display screen, the Status Bar, and the ADE Approach Mode Editor

Note: The Main Title Bar, the Menu Bar, the Toolbar and the Status Bar are different in the displays of ADE9 and ADEX. This will be explained later in the relevant chapters.

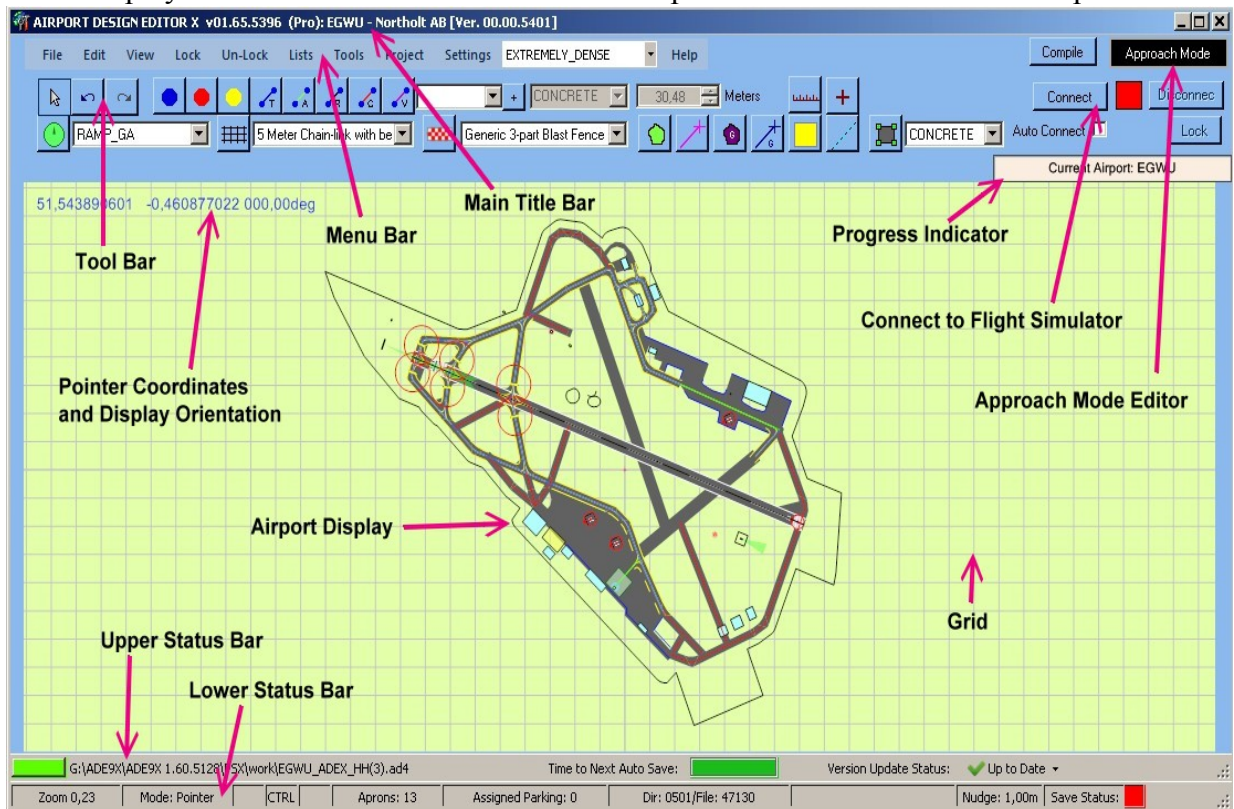


Figure 2-11: ADE Main Display

- o **Main Title Bar** – Display the ADE version, the name of the selected airport and its version number.
- o **Menu Bar** – Contains the main menu items, which are described in more detail below. All items are pull-down menus.
- o **Tool Bar** – The icon buttons on the tool bar provide access to different function and commands. When you mouse over a tool bar icon, the name of the tool is displayed.
- o **Pointer Coordinates & Display Orientation** – Shows the coordinates of the current position of the mouse pointer and the orientation of the airport display.
- o **Airport Display** – This is the overhead view of your airport layout.
- o **Status Bars** – Provide important information about your current airport project. See below for more information about the ADE Status Bar.
- o **Connect to FS** – connect directly to FS9, FSX or P3D using these buttons
- o **Grid** – switch on/off in “View”-Menu, grid spacing is defined in “Settings”-Menu
- o **Approach Mode Editor** – toggles the ADE display between Airport Mode and Approach mode
- o **Progress Indicator** – shows loading progress for projects and files

2.8.2 Main Menu Bar

The Main Menu Bar is where you control many of ADE’s features and settings.

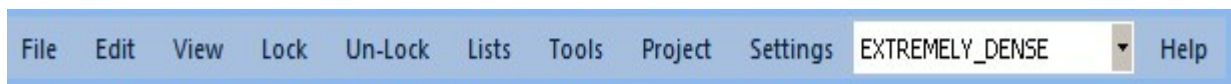


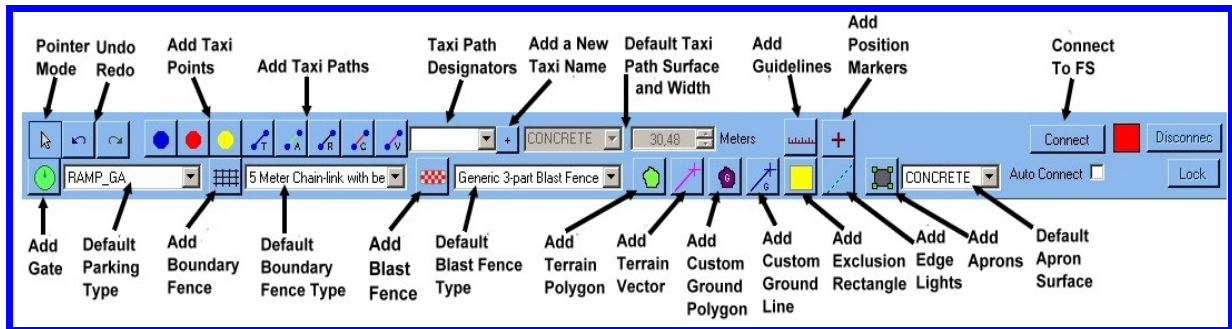
Figure 2-12: The Menu Bar

- o **File Menu** – Home to ADE’s opening, saving, compiling, and printing functions
- o **Edit Menu** – Provides access to the Undo and Redo functions
- o **View Menu** – Identifies which objects you will see on the airport schematic
- o **Lock Menu** – Allows you to enable project-level locking for aprons, runways, taxiways, background images and terrain polygons
- o **Un-Lock Menu** – Allows you to disable project-level locking for aprons, runways, taxiways, background images and terrain polygons
- o **Lists Menu** – Provides an alternative way to manage airport elements in a convenient list format
- o **Tools Menu** – Contains useful features to help you configure your ADE installation, fault check your current airport, and manage scenery objects
- o **Project Menu** – Allows you to search for projects by airport ident, shows project statistics and allows you to take a backup of the project at any time
- o **Settings Menu** – Allows you to modify the way ADE works or looks
- o **Scenery Complexity** – Determines what scenery objects ADE will display in your airport diagram
- o **Help Menu** – Refers to Manual for help and program version information

2.8.3 Toolbar

The ADE Toolbar gives you access to many of the commands and functions you will need when working on your airport project. The combination of the Toolbar, the rightclick Menu (see [chapter 12.11 Right Click Menu](#)) and the Tools Menu provides the basis of all the interaction with ADE's design capabilities.

o for FSX/P3D



o for FS9



Figure 2-13: The Tool Bars in ADEX and ADE9

Note:

On the right of the bars there is a difference. The upper bar shows two “Connect/Disconnect” buttons, the lower bar shows only one “Test” button.

This is depending whether the box “Auto Connect” is checked or not.

2.8.4 Status Bar

The Status Bar is located at the bottom of the main ADE display and provides you with important information about your airport project.

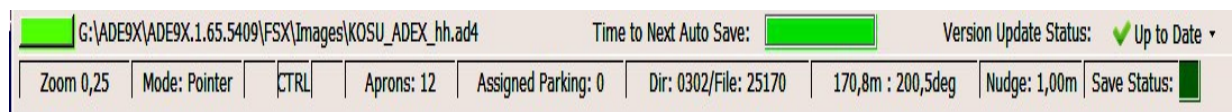


Figure 2-14: Status Bar

From left-to-right, the upper line in the Status Bar presents the following information:

- o On the left side is a button, which normally is green and does not respond to any clicking. It is the “Issue Manager Status” button, which is explained in detail in [chapter 13.2 Fault Finder](#)
- o Here the folder, the path and project file name of the current airport are shown
- o The “Time to next Autosave” Indicator is a countdown progress bar, that displays the time left before the next auto save. The color of the bar changes as the time counts down.
Auto Save will only start when there are unsaved items in the project.
(see [chapter 14.18 Recovery from Crash](#) for more details).
- o The “Version Update Status” Indicator shows the status of your version of ADE as explained in [chapter 2.7 Update, Exit and Uninstall](#).

From left-to-right, the lower line in the Status Bar presents the following information:

- o The current display zoom level
- o The selected Toolbar function, (Pointer, Add Link, Add Apron etc)
- o Indicates whether the Shift-, Alt- or Ctrl key is currently held down

- o The number of aprons in the current project FS9 and FSX or P3D limits the number of aprons at an airport to 254. The background color of this Status Bar indicator will turn orange when reaching 250.
- o The number of parking spots that have one or more airline codes assigned to them. **In FS9 there is a 254 airline code limitation, and this Status Bar indicator will help you keep track.**
- o The FS folder and file associated with the airport latitude/longitude. This information can be helpful in adjusting your scenery within FS because of how FS groups scenery based on geographic location. By referencing the folder/file numbers, you can review the associated scenery using the TMFViewer utility found in the terrain SDK folder. For example, given the folder/file combination 0302/2517, you can find the associated default scenery and terrain elements in the file "...scenery\0302\cvx2517.bgl".
- o Distance and bearing between bookmark and mouse pointer
- o The currently selected value in Meter for "nudging" a selected object (adjusting the position with high accuracy) (see chapter 14.4.4 Nudging)
- o With the indicator "Save Status" ADE tells the user, whether the current airport design is already saved. If not, the indicator is red.

2.8.5 The Main Display Controls

ADE offers a variety of display controls. As an introduction the three most important ones are explained here.

o Zooming

To zoom in/out at a particular location on the airport schematic, move your pointer to that location, right click, and select a Zoom percentage. If you have a mouse wheel, you can easily change the zoom scale by moving your pointer to the location and scrolling the mouse wheel to the desired view scale.

You may also change the zoom scale using the "+" and "-" keys on your keyboard.



Figure 2-15: Zooming the Display

ADE has the maximum zoom limited to 100x. This is equivalent to 1 centimeter per pixel.

o Panning

Panning or moving around the airport is a simple procedure. If you have a middle mouse button or a wheel, depressing it will change the cursor to a four-headed arrow. Drag the four-headed arrow around the airport layout to pan. If you do not have a middle button or mouse wheel, you can use the four keyboard Direction Arrows.

If you get a bit lost while panning around, you can easily get the Airport Reference Point (ARP) back to the centre of the display by selecting Center on ARP from the rightclick Menu.

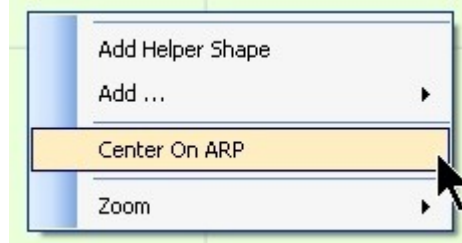


Figure 2-16: Centering the Display

Note:

Occasionally it might happen, that a mouse button is pressed accidentally while the mouse wheel is held down .

This returns the cursor into the pointer mode.

To stop an uncontrolled panning, when moving the pointer over a display edge, click once with the mouse wheel.

o Rotating

When ADE loads an airport, it always orients the layout with North on top. In some cases, it might be helpful for you to change the schematics orientation.

Canberra, for example, has the main runway North/South. If you have a mouse wheel then you can rotate the display by first depressing the Ctrl or Shift keys and then scrolling the wheel.



Figure 2-17: :Canberra (YSCB) rotated 90 degrees clockwise.

Using Ctrl results in a coarse rotation (five degrees per click), while Shift provides a finer rotation (one degree per click).

Note that the airport rotates around the current mouse location, and ADE displays the shift in rotation in the upper-left hand corner of the schematic.

You can also rotate the schematic using your keyboard. The "**Page Down**" key rotates the schematic clockwise, while the "**End**" key rotates it counter clockwise. Either the "**Home**" key or the "**Space**" Bar will reset the schematic to a North orientation.

o Centering Display

When working on expansive airport projects, it can be helpful to re-center your display on a common location. ADE allows you to centre your airport diagram five ways.

1 Center on Bookmark

Using your mouse, you can select a particular point on your airport diagram or in approach mode where you want to “bookmark” the centering location. To do so, place your mouse at the desired location on the display and press the ‘**B**’ key.

This will place a red circle bookmark at that location, which you can later use to centre your display by pressing Shift + B.

The bookmark is very small and is visible with a zoom of 2.00.

For more details on bookmarks refer to [chapter 14.11 Bookmarks](#)

2 Center on Airport Reference Point

You can centre the display on the Airport Reference Point (ARP) by selecting “Center On ARP” from the rightclick Menu.

3 Center on Selected Object

You can use selected objects at your airport as centering points by selecting an airport object and selecting “Centre on Selected Object” from the rightclick Menu.

4 Center on Mouse Location

You can centre the ADE display on your current mouse location by pressing the ‘**M**’ key

5 Center on Tower Viewpoint

You can use the Tower Viewpoint as centering points by selecting this option from the rightclick Menu.

3.0 Creating a New Airport from Scratch

This chapter is intended for new users

- who know how to fly in Flight Simulators,
- who are dissatisfied with some features in FS9/FSX/P3D airports,
- who want to change them
- and who are interested how they could use ADE to do this.

If you are familiar with airport design and know ADE, you could skip this chapter and go directly to **chapter 4.0 Basic Airport Elements in ADE**

3.1 Essential Elements of an Airport

ADE can handle about 60 different airport elements for editing and adding.
But less than 10 of them are required for a basic airport with AI flight traffic.

The plan for this exercise here includes

- airport location somewhere in a desert area
- airport ground app. 3000 x 1000 meter
- runway 1500 meter length, with hold short nodes and start locations
- apron
- taxiways
- aircraft parking

3.2 Location for a New Airport

Note before we start: be prepared to operate both the ADE- and the FS-screen simultaneously, either by using two monitors or switching back and forth between the two screens.

- Start your Flight Simulator (further on called **FS**)
- Start a flight, using the existing default flight parameters
- when the simulator window appears, click the "Y"-key. This will change the simulator to "**Slew**"-mode.
- Select "**Map**" from the "Environment"-Menu and change the values for Longitude and Latitude to:

N32° 41.50' Long W113° 57.20'



Figure 3-1: Coordinates for the new Airport

This is a location in the desert of Arizona, USA, east of Yuma.

- Click on "OK" will bring the FS-display to that location.

Note: For the following steps you should be able to "slew" your aircraft around and to change the "Views" from your aircraft as indicated. There are helpful links

- for Slew Commands:

<http://flyawaysimulation.com/downloads/files/1333/fsx-controls-keyboard-commands/>

- for View Commands: google for "Using Views and Windows" (it is a PDF-file)

- Go to "Outside View" => "Top Down" and raise the aircraft till you see the following display:



Figure 3-2: Top Down View of selected Area

This is the area chosen for a new airport.

Now we need to connect the Flight Simulator (FS) with ADE to transfer this location to ADE.

3.3 Connect FS with ADE

- Start ADE.
- In the upper right corner of the ADE-display activate the box "Auto Connect". That way ADE and FS are automatically connected when both are running.

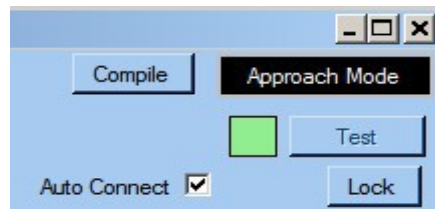


Figure 3-3: Connection

3.4 Transfer Location to ADE

- right-click on an empty spot in the ADE display and select "Center on Aircraft". This moves the ADE display to the location of the aircraft in FS,

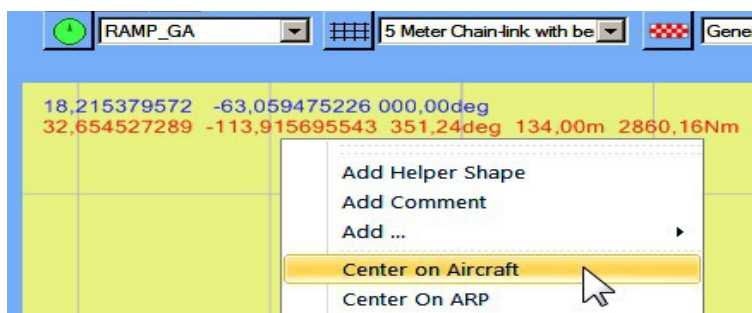
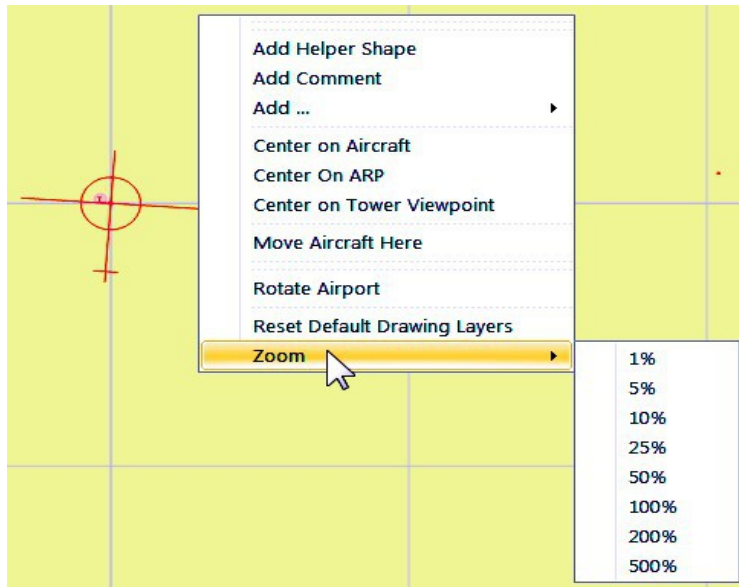


Figure 3-4: Move ADE to Aircraft Location

In the center of the ADE display you see now an "Aircraft Symbol", which is locked to the aircraft position in FS. For better visibility you can pan the display via the four "Arrow"-keys. Zooming is also available: just right-click on the display, select the entry "Zoom" and choose a percentage among the offered values .



You can zoom also by rotating the mouse wheel.

With the mouse wheel pressed down you can "pan" (move up or down) the whole ADE display.

Figure 3-5: Aircraft Symbol and Zooming in ADE

3.5 Creating a New Airport

- In the "File"-menu in the top left corner of the ADE display is the top entry "New Airport"

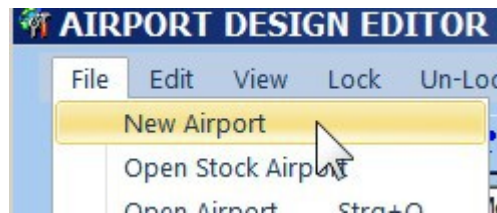


Figure 3-6: New Airport

- When you select this option, ADE confronts you with the New Airport Dialogue Box

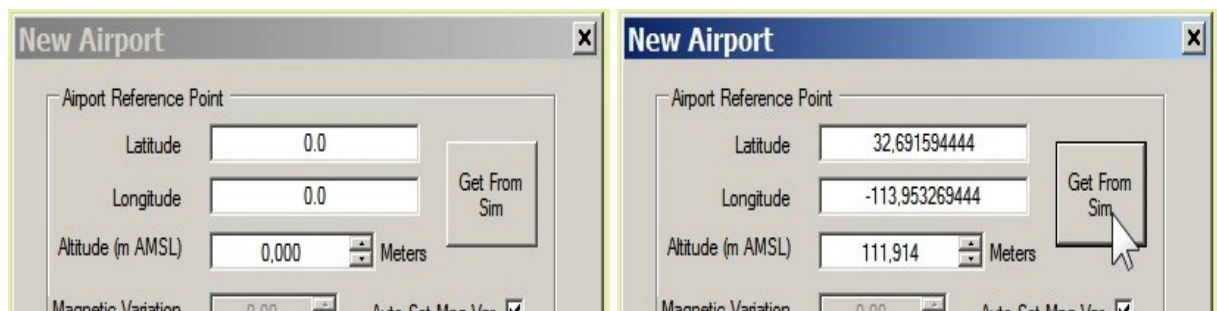
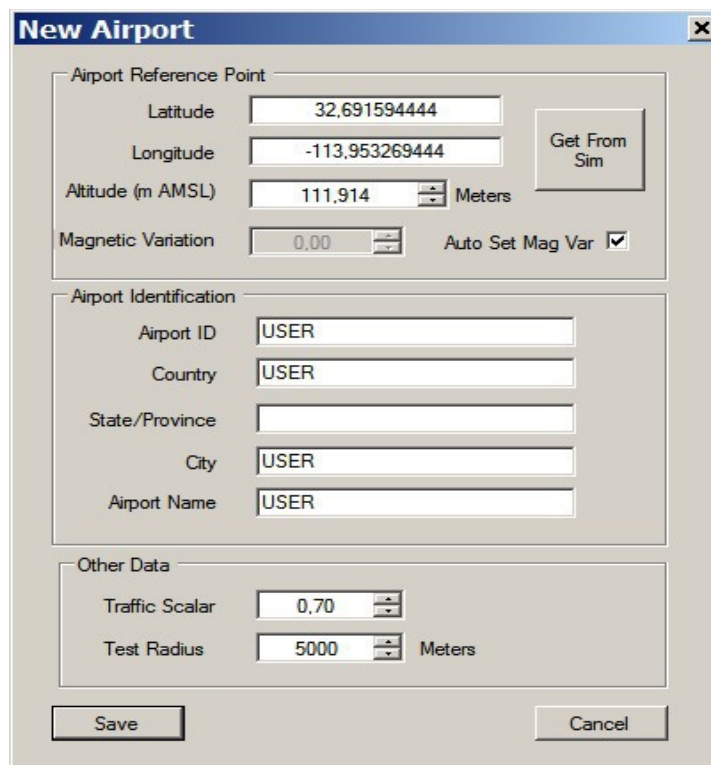


Figure 3-7: Get Coordinates from Flight Simulator

- Clicking the button "Get From Sim" will transfer the coordinates and the airport altitude from FS to ADE
- Furthermore Airport ID, Country, City and Airport Name are mandatory. To simplify matters we take "USER" for all of them.
- Everything else is not important at this stage



New Airport

Airport Reference Point

Latitude: 32.691594444

Longitude: -113.953269444

Altitude (m AMSL): 111,914 Meters

Magnetic Variation: 0,00 Auto Set Mag Var ☒

Get From Sim

Airport Identification

Airport ID: USER

Country: USER

State/Province:

City: USER

Airport Name: USER

Other Data

Traffic Scalar: 0,70

Test Radius: 5000 Meters

Save Cancel

Figure 3-8: New Airport Data

- clicking "Save" closes the window and shows the new airport USER in form of the "Airport Reference Point" (ARP), which is a small red dot (needs a zoom of 200% to be properly visible).



Figure 3-9: ARP and Tower (pulled apart for better visibility)

3.6 Preparing the Ground

The ground is not ideal to be used for an airport. A view from the aircraft confirms it.



Figure 3-10: Ground Condition of Selected Location

Therefore we have to flatten the ground and remove the vegetation. For this ADE offers "Terrain Polygons", which are surfaces with a defined dimension.

Caution: the terrain polygons are different in FS9 and FSX/P3D
in FSX you have a wide choice of types, in FS9 only one "Flatten"-Polygon

- Placing the polygon in ADE is not easy, because the scenery, visible in FS, is not displayed in ADE.
 But it is not necessary to draw the terrain polygon blindly. ADE offers some help
- The first help is the "Airport Reference Point" (which we created in chapter 3.5 above).
- The second help is the "Aircraft Symbol", whose position is visible in both FS and ADE.
- The third help is the most important one: "Guide Lines".

We need two Guide Lines, 1000 m and 3000 m long and perpendicular to each other, originating close to the ARP.

- Move the ADE display with the "arrow"-keys, till the ARP plus Aircraft Symbol are located top left under the coordinates display.
 This is recommended, because when drawing a Guide Line, right under the coordinates the actual length of the guide line is displayed.
 Select a zoom of 10% (with right-click and "Zoom") .

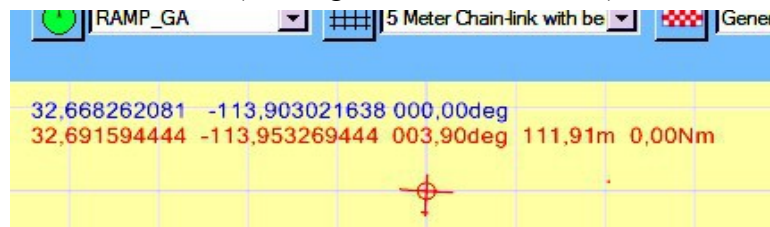


Figure 3-11: Beginning of Drawing a Guide Line

- To draw a "Guide Line", click in the Tool-bar on top of the ADE display the icon "Add Guidelines" (see Figure 3-12). The cursor turns to a red crosshair.
- Move the crosshair to a point left and below the aircraft symbol, press the left mouse button and draw the first line.
- While you draw the line, observe the length indicator and stop at app. 1000 meters

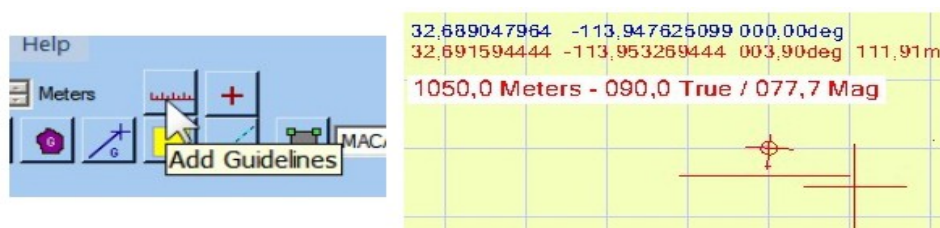


Figure 3-12: Adding a Guide Line

- Release the button, press again and draw the next section.- The second line is drawn from the right end of the first line, down to a length of app. 3000 meter.

When a line is not as expected you can delete it this way:

- leave the line-drawing mode by clicking the "Arrow"-icon left below the "File" menu-button, then touch the offending line with the cursor till a tooltip comes up and click "Del" (delete) on the keyboard.

Within the area indicated by the two guide lines we shall draw next the "Terrain Polygon" For this we use the icon "Add Polygon" (see Figure 3-13 below).

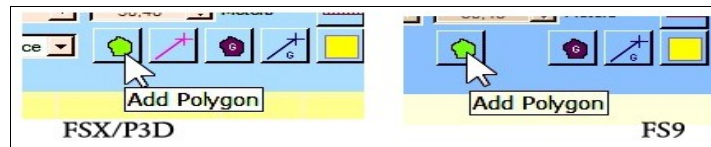


Figure 3-13: "Add Polygon" Icon

- Start the drawing in the upper left corner, click once when you are going to change the direction and close the rectangle in the lower left corner (left part of figure 3-14).
- Close the drawing with a double click and the polygon surface shows up.

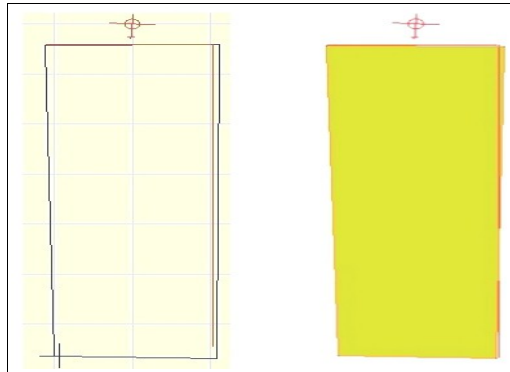


Figure 3-14: Drawing the polygon

Together with the olive polygon the "Properties" window for Terrain Polygons is opened.

in FS9: since the polygon only flattens, there are no properties to choose.

in FSX/P3D:

In this window we will choose the "**Type**" and the "**Tag**" = Properties for the terrain polygon.

The choice is extensive, there are 5 Types and - when you scroll down you can see - and for each type a varying number of tags.

We choose for our purpose "**Airport Background**" and "**Flatten Mask Class Map ExcludeAutogen**"

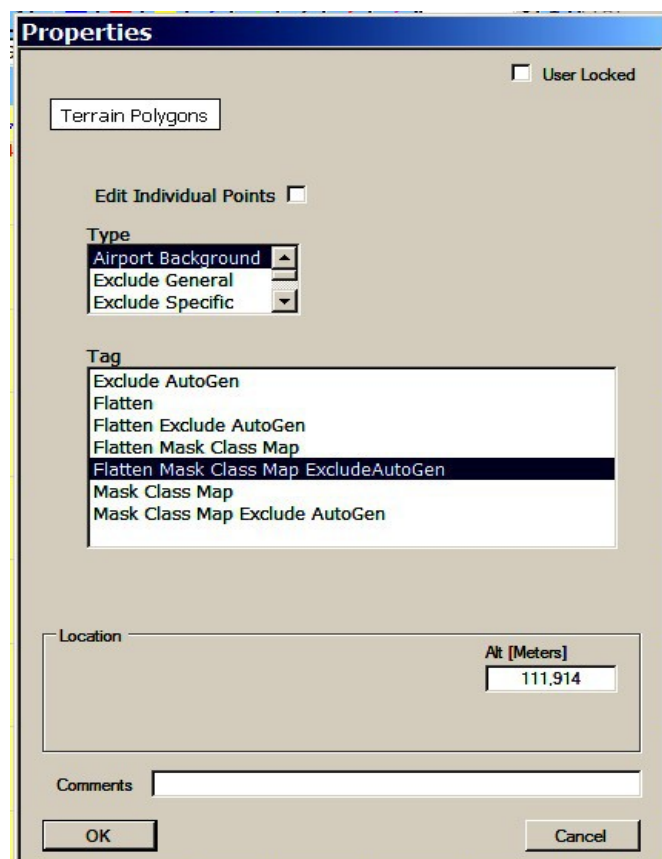


Figure 3-15: Properties of Terrain Polygons

"Type" and "Tag" indicate, that we have chosen a surface, which creates a background surface, which at the same time "flattens" the surface and "excludes" all autogen-objects, namely buildings, trees and other vegetation.

The properties window in both, FS9 and FSX/P3D offer the possibility to insert altitude data. In Figure 3-15 above one can see, that ADE uses automatically the value, which was transferred from FS in chapter 3.4.

- if you increase it, you would create a plateau rising above the surrounding surface.
- if you decrease it, you would create a flat trough below the surrounding surface.
- since most surfaces are not flat, this altitude value can be used to find an acceptable compromise between the two.

The drawing process and properties setting is concluded by clicking the "**OK**" button. You can now delete the Guide Lines - or leave them, they are not visible in FS.

3.7 A First Check of Results in FS

It is recommended to check the result of editing activities done in ADE also in FS, because the result is not always up to the expectations. This requires to transfer the editing results done in ADE over to the Flight Simulator.

This is not done automatically. To understand the reason, the user has to know a little bit about the way, how ADE and FS read and write their files.

- o **FS** - uses files in the so called "**BGL**"-format.
- o **ADE** - takes these files and converts (de-compiles) them to the "**AD4**"-project-file-format. All changing and editing work is stored in these ad4-files.
 - Before they can be used in FS, they have to be converted back (compiled) into the bgl-format again.
 - in addition - and that is very important - they have to be stored in such a way, that FS will use them instead of existing files (stock files) in FS for the same "stock"-airport.

Compiling is relatively simple.

- first store the actual flight (with our new airport) in FS in such a way that it starts automatically with this airport and it's settings, when you open FS again.
- close down FS, because ADE can't compile to a file which is running in FS.
- next roll down the "**File**" menu and select the entry "**Compile Airport**".

This opens the "**Compile Options**" dialog.

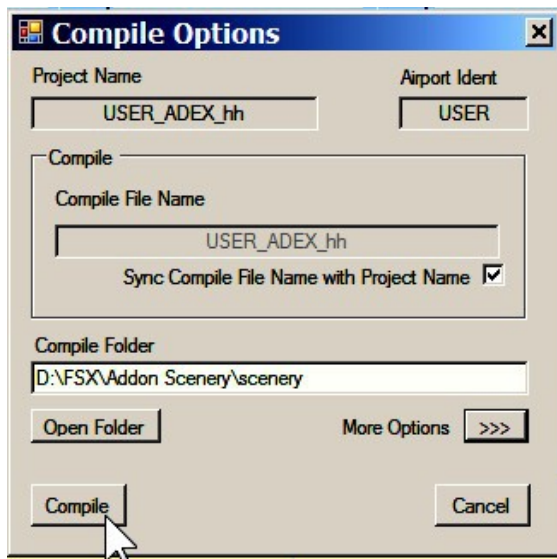


Figure 3-16: Start of Compiling

A few things in the dialog window are worth explaining, although they are ADE defaults.

- o **Project** (ad4-file) **Name** - is "Airport Name" + "ADE-type" + "users initials"
- o **Airport Ident** - is user defined (see [chapter 3.5 Creating a New Airport](#))
- o **Compile** (bgl-) **File Name** - is identical with project name except the extension.
- o **Compile Folder** - is the place ,where the bgl-file will be stored

The Compile Folder is the default folder, where in FS the scenery add-ons are located. You better check in the FS "Scenery Library", whether this is the case. It must be "activated" there. In case that you are not yet familiar with this, see [chapter 14.13.3 Compiling and Installing an ADE Airport](#) for a detailed explanation.

Everything can be left as is (defaults).

- clicking the "compile"-button will execute this. There will be a note whether the compile was successful or not.
- Now we can check the result in the FS.
- start the FS, go to "our" airport "USER", switch to "slew"-mode and raise the aircraft. You will see this:

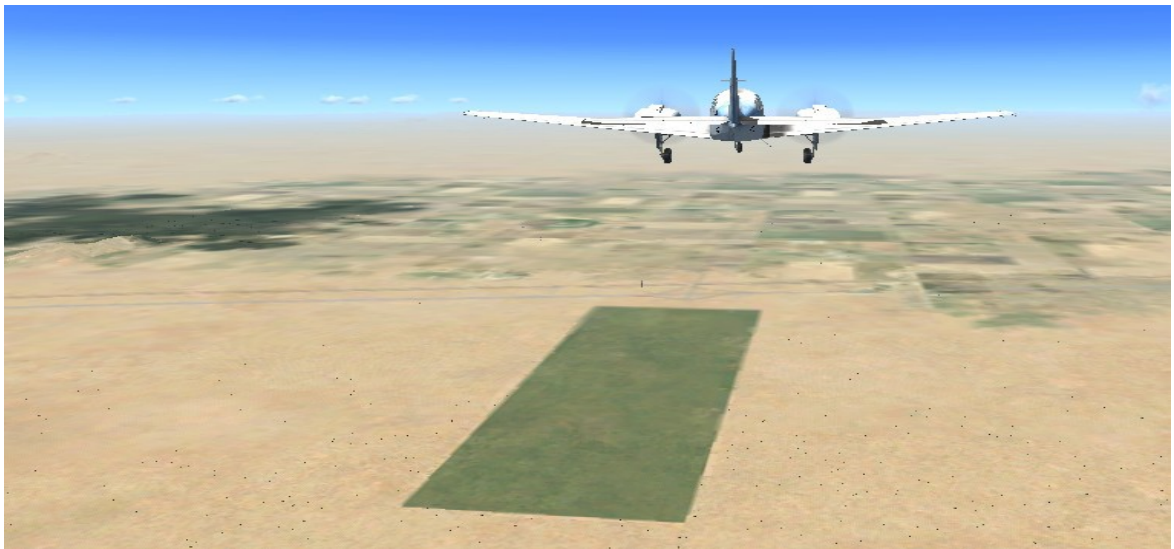


Figure 3-17: View to North



Figure 3-18: View to South

The airport ground is there.

When flying closer over the ground one can see, that all vegetation is gone.

Also the altitude is not bad. in the North close to the highway, the surface is smooth. In the South there is some troughing effect. But we can leave it.

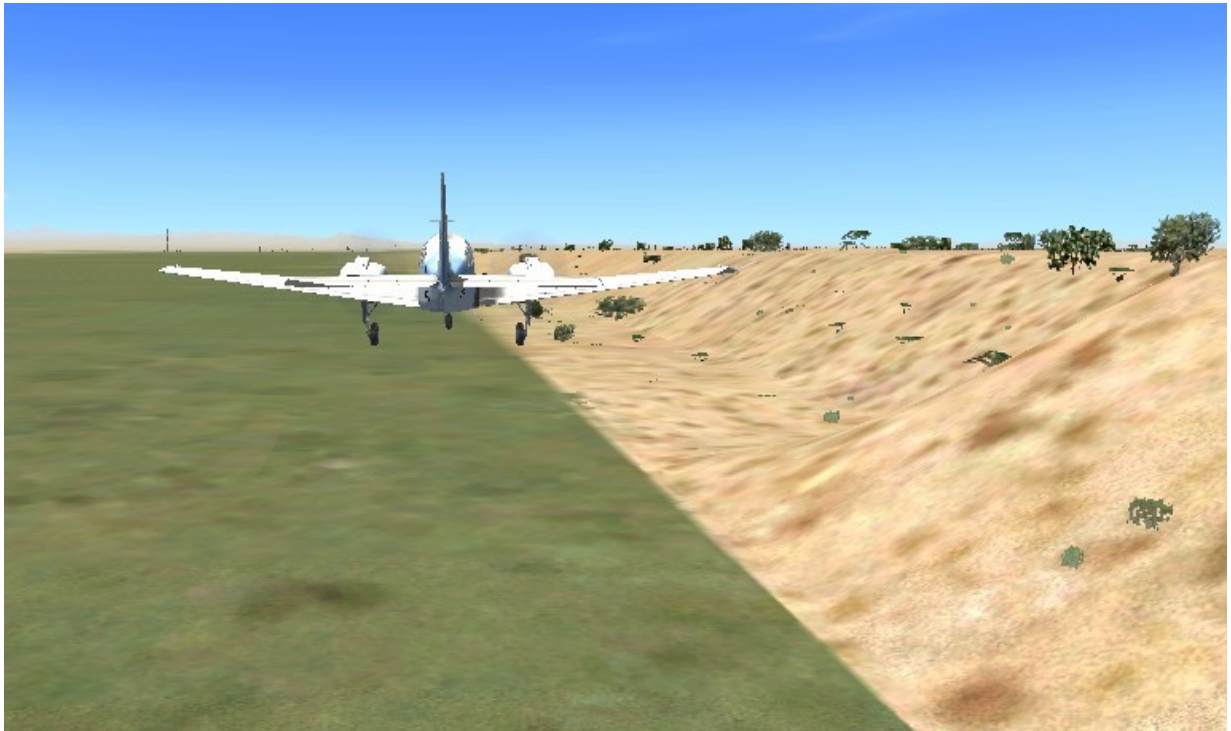


Figure 3-19: Close to the Ground

3.8 Adding a Runway

Back to ADE.

- Right-click on the ADE display, choose "Add" and then the entry "Runway".

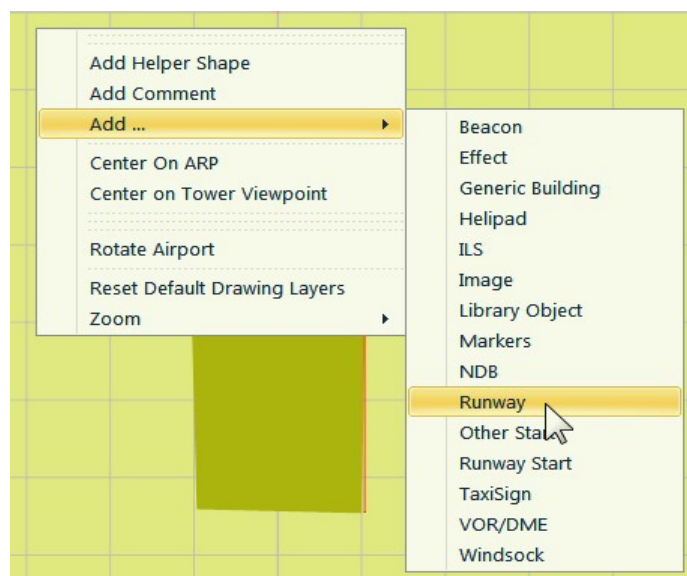


Figure 3-20: Add a Runway

This opens the "Properties" window of Runways.

Here we choose all relevant properties of the runway.

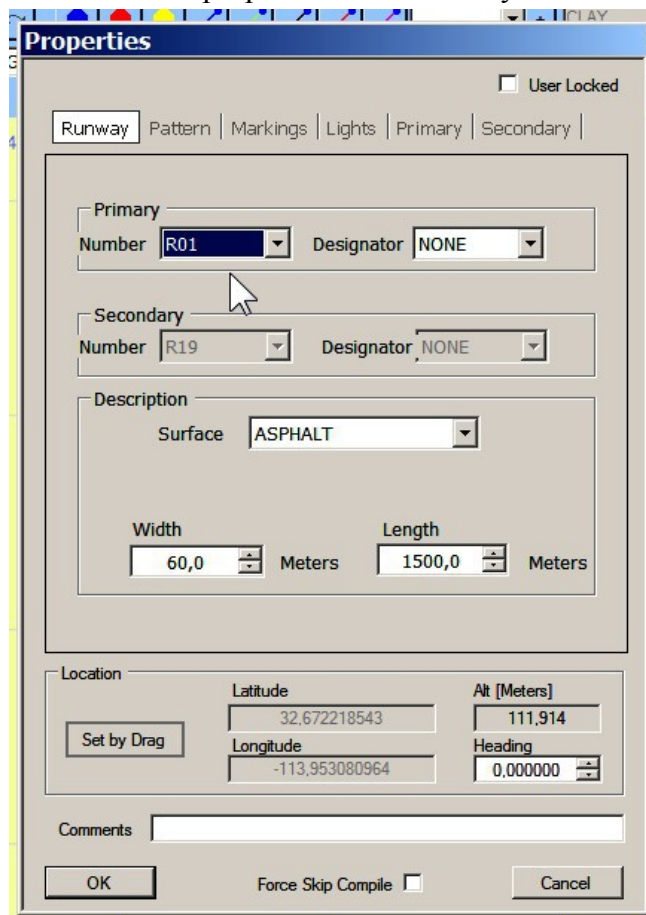
The image shows a 'Properties' dialog box for a runway. It has six tabs: 'Runway', 'Pattern', 'Markings', 'Lights', 'Primary', and 'Secondary'. The 'Runway' tab is selected. Inside the tab, there are sections for 'Primary', 'Secondary', 'Description', 'Location', and 'Comments'. The 'Primary' section has 'Number' set to 'R01' and 'Designator' set to 'NONE'. The 'Secondary' section has 'Number' set to 'R19' and 'Designator' set to 'NONE'. The 'Description' section has 'Surface' set to 'ASPHALT', 'Width' set to '60,0 Meters', and 'Length' set to '1500,0 Meters'. The 'Location' section has 'Latitude' set to '32.672218543', 'Alt [Meters]' set to '111.914', 'Longitude' set to '-113.953080964', and 'Heading' set to '0.000000'. There is a 'Set by Drag' button and a 'Comments' text box. At the bottom are 'OK', 'Force Skip Compile', and 'Cancel' buttons.

Figure 3-21: Runway Properties

This window has six tabs.

- In the tab "Runway" we give the runway under "Primary" the number "01". We leave the Surface, the Width, the Length and the Heading as is.
- In the tab "Markings" we check six boxes as shown in Figure 3-22:

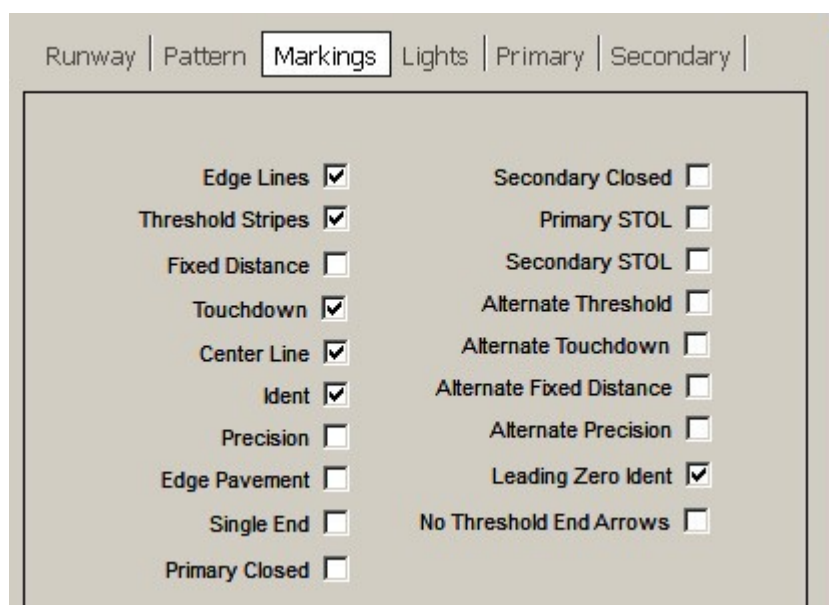
The image shows the 'Markings' tab of the 'Runway Properties' dialog box. It contains a list of checkboxes for various runway markings. The 'Markings' tab is selected. The checkboxes are: 'Edge Lines' (checked), 'Threshold Stripes' (checked), 'Fixed Distance' (unchecked), 'Touchdown' (checked), 'Center Line' (checked), 'Ident' (checked), 'Precision' (unchecked), 'Edge Pavement' (unchecked), 'Single End' (unchecked), 'Primary Closed' (unchecked), 'Secondary Closed' (unchecked), 'Primary STOL' (unchecked), 'Secondary STOL' (unchecked), 'Alternate Threshold' (unchecked), 'Alternate Touchdown' (unchecked), 'Alternate Fixed Distance' (unchecked), 'Alternate Precision' (unchecked), 'Leading Zero Ident' (checked), and 'No Threshold End Arrows' (unchecked).

Figure 3-22: Special Markings for the Runway

- With a click on the button "OK" the runway is generated.
- It's orange color indicates, that it is "selected", that means it is ready for actions.
Keeping the left mouse button pressed down one can "drag" it to the desired location within the airport background area.
- Another left click "un-selects" it

The North-South-orientation of airport ground plus runway makes it a bit cumbersome for further edition. We can rotate the whole display by 90° without changing anything.

- The "**Page Down**"-key and the "**End**"-key rotate the display around the cursor point.
Or you hold down the "**Ctrl**"- or "**Shift**"-key while you rotate the mouse wheel.

The Apron is next.

3.9 Adding an Apron

Aprons are polygons and are produced with the same method as terrain polygons.

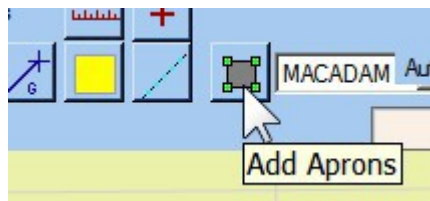


Figure 3-23: Add Apron Icon

- Click on the "Add Aprons" icon and the cursor changes to a black crosshair.
- Move the crosshair to the first corner-point of your apron, press the left mouse button and draw the first line.
- Release the button, press again and draw the next section.
- Continue this process and close the polygon at the starting point. A double-click terminates the action and gives the apron the color of the default surface.



Figure 3-24: The Apron

ADE offers a choice for the apron surface.

- Select the apron by left-clicking on it - the edges turn orange
- A subsequent double-click opens the Property window of the apron (Figure 3-25).

For "Surface" the window offers 21 types, for better visibility here the type "Brick" is chosen. "OK" closes the window and the apron color in ADE is changed (see figure 3-30).

Note: The three elements "Background", "Runway" and "Apron" obscure each other, where they overlap. This obscuring is not random. ADE mimics, how FS does this - this is a rather complex system. In our case runway covers everything, background is covered by the others.

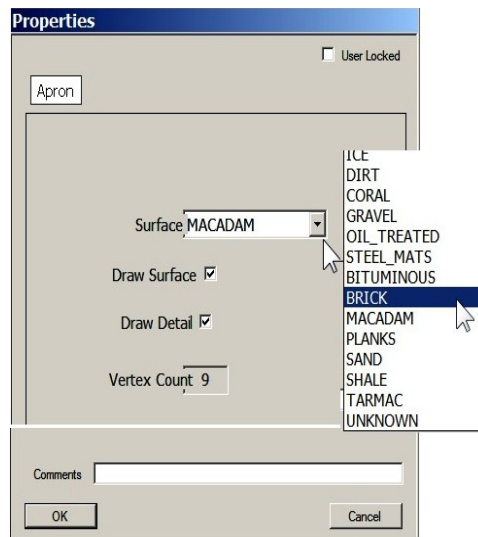


Figure 3-25: Properties of Aprons

3.10 Adding Taxiways

Taxiways are assisting pilots when rolling on the ground, but they are mandatory for directing AI-traffic on an airport. Taxiways consist of single "links" of variable length, connected via "taxiway points". There are six different types of links, which are explained in detail in the Manual. Here we use first the most common type : "Taxi Link".

Links are created via the icon "Add Taxi Link" (figure 3-26).

o Adding a Taxi Link

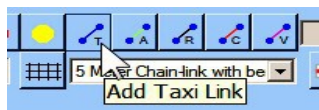


Figure 3-26: Add Taxi Link Icon

- click the icon "Add Taxi Link". The cursor changes to a blue crosshair.
- the links are drawn the same way as the polygon sides, i.e. drawing with the left mouse button pressed down. Upon release the line is finished and the next can be added.
- Curves consist of short links with changing directions.

o Connecting Links

Care must be taken, that links are properly connected.

- Drawing a link to another, the connection is correct, when the "target"-link - being touched - lights up in yellow. Figure 3-27 shows the good and bad results.

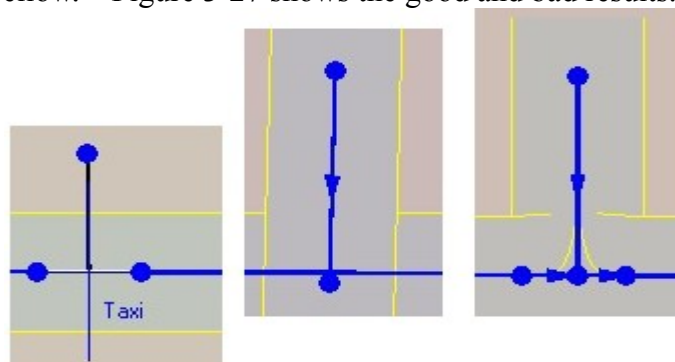


Figure 3-27: Crosshair "touches" **Bad connection** Correct connection

o Adding Runway Links-property

We need a link for the runway. The runway has a center line, but that is only a marking - good for flying. But it is useless for AI traffic.



Figure 3-28: Icon for Runway Link

- click the icon "Add Runway Link". The cursor changes to a black crosshair
- draw the link over the centerline of the runway, but in such a way, that it connects to the taxi links.

You can see on the markings, while you draw, when it is not correct.

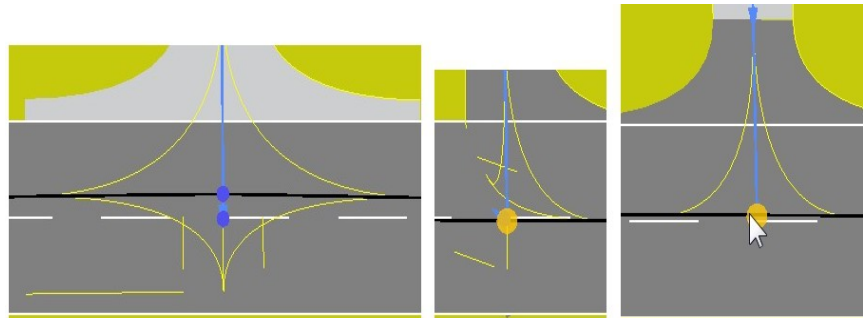


Figure 3-29:

Bad Markings

Correct Markings

The final Taxiway Network is shown in Figure 3-30.

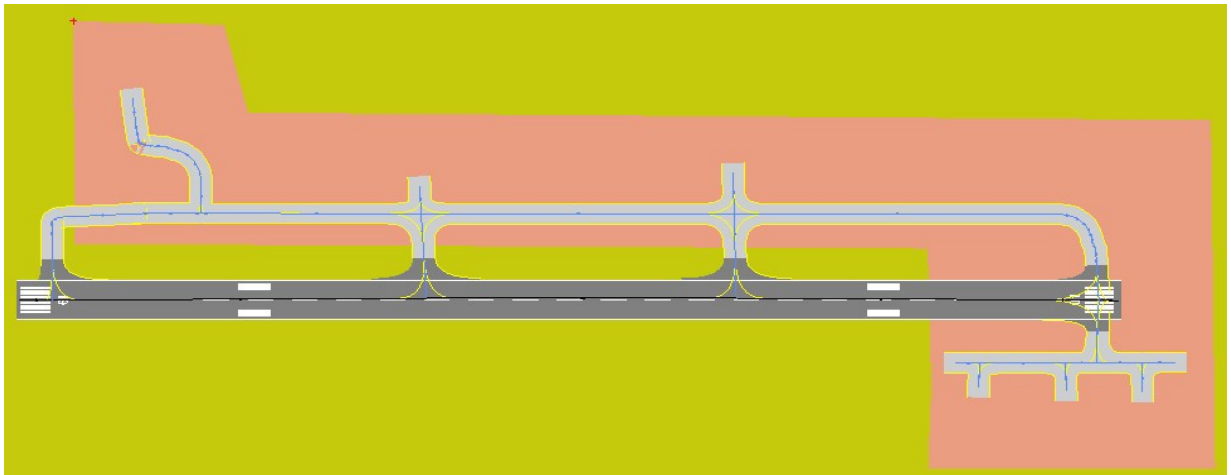


Figure 3-30: Taxiways

3.11 Adding Aircraft Parking Spots

AI aircraft need defined parking spots. They are added with the icon "Add Gate".

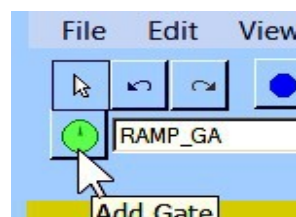


Figure 3-31: Icon for Parking Spots

- Left-click the icon "Add Gate", the cursor changes to a crossed circle.
- Move the circle to the location, where the parking spot should be and click.
This will place a green parking symbol, which is not visible in FS.
- Select "Add Taxi Link" and draw a line from the closest taxi link to the parking spot.
This will connect the parking spot to the taxiway network.
- The arrow-symbol in the parking spot circle points in the direction an aircraft will point when it starts there. You can change the direction by "selecting" the parking spot symbol and grabbing the rotate handle (dot) that appears at the top of the symbol.

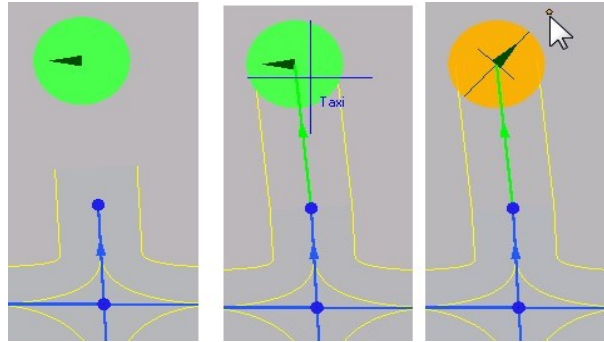


Figure 3-32: Parking Spot Editing

The ADE-display is now looking like this:

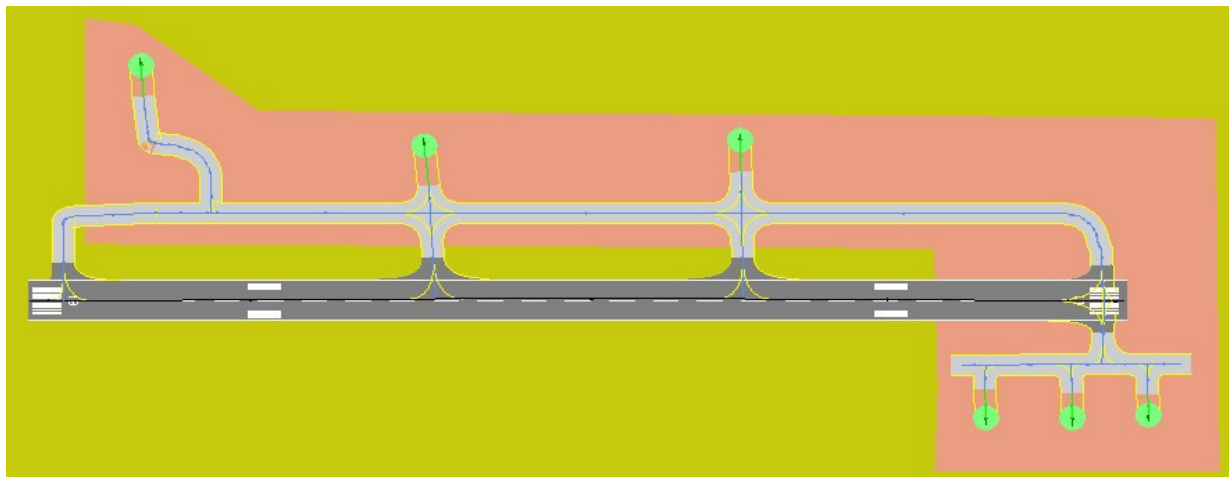


Figure 3-33: Parking Spot Display in ADE

3.12 Adding Start- and Hold-Short Points

- o **Start-Points** - determine the starting position of an aircraft at an airport. They are also displayed in FS9/FSX in the window "Select Airport" under "Choose runway/starting position". They are located at the end of runways
- To add a runway start, right-click on the ADE display, select "Add" and then "Runway Start". A simple dialog box will open where you can select the runway end.

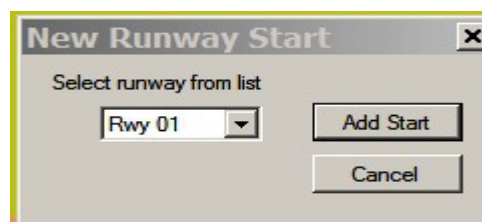


Figure 3-34: Select Runway for Start Point

- With click on the button "Add Start" the start-point will be placed on runway 01.
- This action should be repeated for the runway end 19.

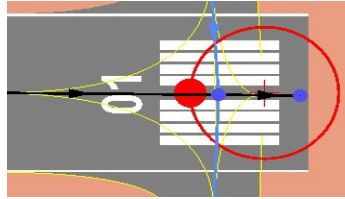


Figure 3-35: Display of Runway Start-Point

- o **Hold-Short taxiway points** - create visible hold-short bars on the taxiway. ATC also uses these taxiway points as checkpoints for takeoff clearance. They are created via the red "Add Hold Short Taxi Point" icon (figure 3-36, left).
- A click on the icon changes the cursor to a red Crosshair. One moves it to a place on a taxiway which leads to the runway. The crosshair must "touch" the link, a subsequent click places the Hold-Short Point.

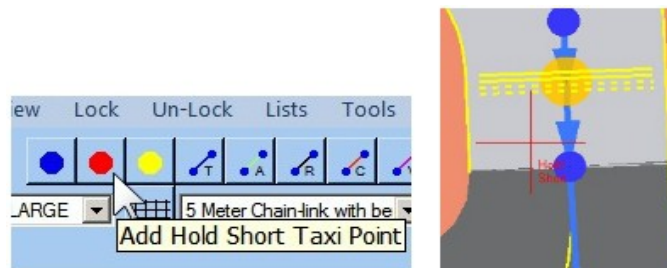


Figure 3-36: Adding a Short Hold Point

- The same can be done at the other taxiway - runway junctions

The airport - being equipped now with all essential elements - is basically finished.

It needs to be compiled in exactly the same way described in chapter 3.7 above.

The name for the bgl-airport-file should stay the same. The old one will be overwritten, ensuring that this airport is stored only once in the Flight Simulator.

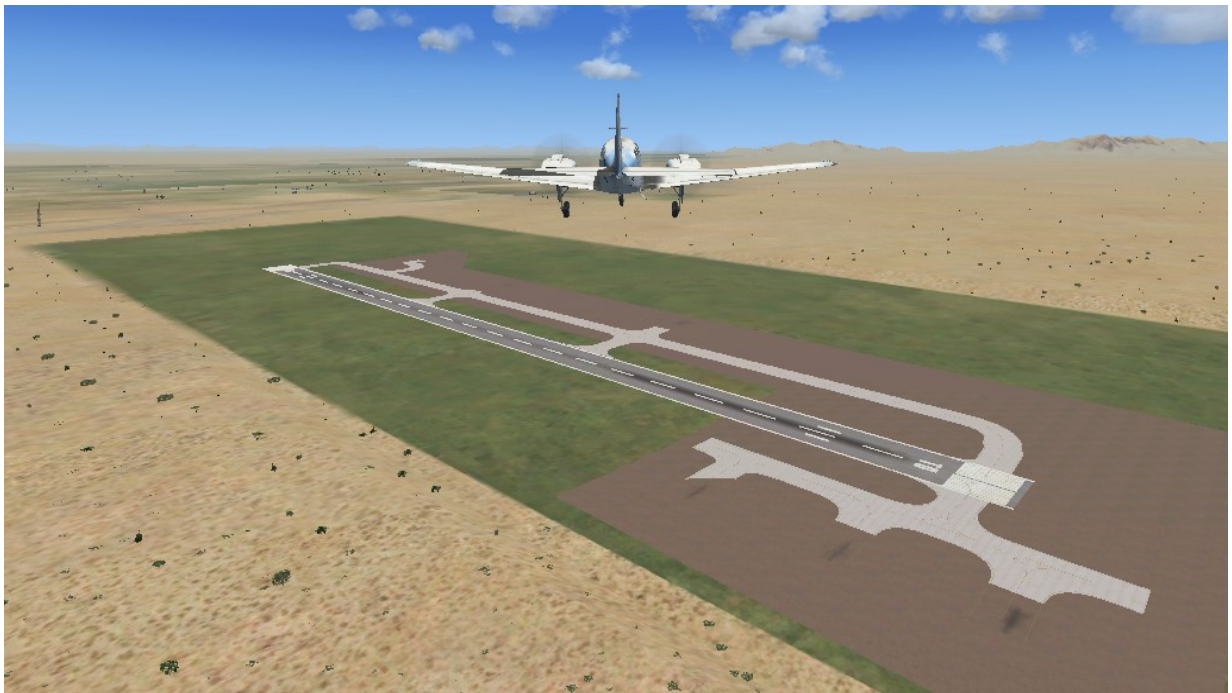


Figure 3-37: Finished Airport in FS



Figure 3-38: Landing View

The following picture demonstrates, what can be done with ADE to improve the airport.

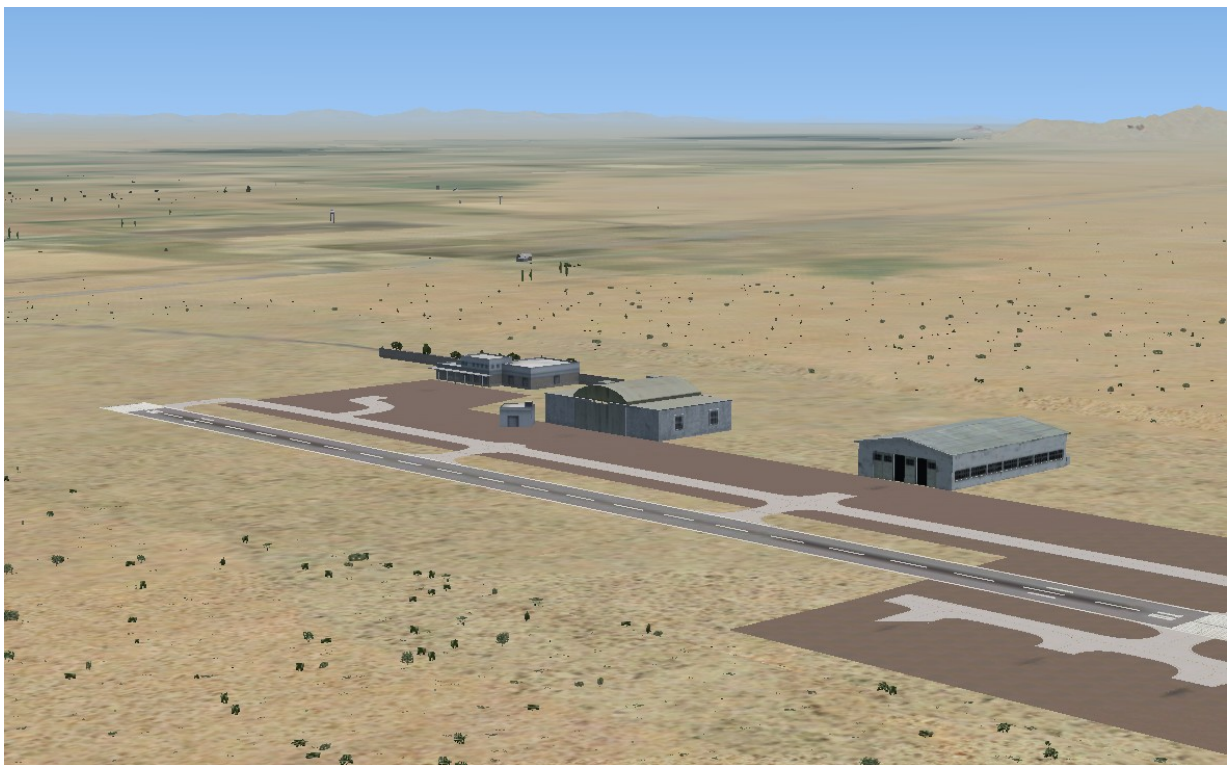


Figure 3-39

Buildings have been added, a road is connecting the airport with the highway and an additional terrain polygon is blending the surface of the airport background with the surrounding scenery.

How to do this and many other things is described in the ADE Manual.

PART 2

Elements Of Airport Design

4.0 Basic Airport Elements in ADE

ADE can handle, process, edit, modify more than 50 elements, which make up an airport.

Some of them are "basic", that means that they are mandatory.

The use of others depend on the size of an airport, its purpose and of course also its location.

4.1 Airport Reference Point (ARP)

The Airport Reference Point (ARP) specifies the location and elevation of the airport for flight planning, GPS navigation, and other purposes. By default, ADE shows it as a purple circle with a cross behind it



Figure 4-1: Display of the ARP

In the tooltip ADE displays among others the airport code, the name of the airport, the location of the airport and the directory- and file-location of the ARP.

When working on your airport project, you can easily reset the ADE display to the ARP by selecting "Center on ARP" from the Rightclick Menu.

4.1.1 Airport Properties

To edit airport properties, you can either double-click the ARP or select Edit Object from the Rightclick Menu. The airport properties dialog box will open allowing you to make changes to the airport properties. The window has two tabs "Airport" and "Services".

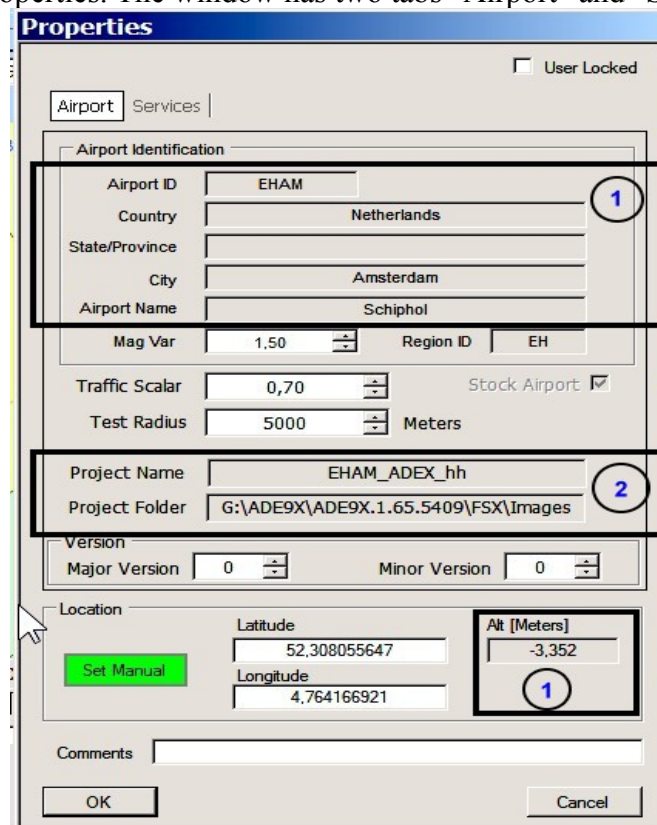


Figure 4-2
Airport Properties

The purpose of this window is really to display the properties settings of the currently opened airport project. The only editable items here are Magnetic Variation, Traffic Scalar, Test Radius and Version. For the others the user is referred to other places as indicated below.

- o **Magnetic Variation** – The magnetic variation for the airport can be found from published airport or aviation charts. This value is used for runways and navaids at the airport and it will appear on the GPS display and Map View for the airport. It is unknown what additional use FS makes of this parameter but it is unlikely that it is applied to your aircraft compass, as deviation data for that comes from a general magnetic map. By default, Auto Set Mag Var is checked, which means ADE will determine the new airport's magnetic variation automatically based on the latitude / longitude you entered. If you know the magnetic variation, you may deselect Auto Set Mag Var, and enter it in manually.

- for FSX/P3D only

- o **Traffic Scalar** – The Traffic Scalar is a “throttle valve” for AI Planes only. Its purpose is to avoid traffic jams, which could develop when the ratio of parking spots to a minimal taxiway infrastructure or what is called choke points is too low. FS9 used a hardcoded throttle valve ratio of parking spots to the amount of AI traffic at any given airport. For FSX/P3D we exposed a scalar to allow throttling AI Traffic at certain airports. The TrafficScalar set to a default in the Airport record and the TrafficDatabase compiler (0.70 percent) is supposed to help eliminate this problem.
- o **Test Radius** – ADE displays this parameter as a red circle around the airport reference point.

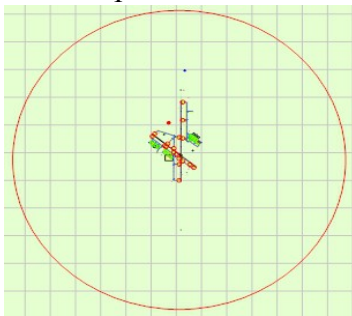


Figure 4-3: Test Radius

By default, ADE sets the test radius at 5,000m. The BglComp compiler uses this value to issue a warning if objects associated with the airport (taxi signs, etc.) are located outside the test radius. It does not affect compilation.

- o **Version** – Some developers find it useful to maintain a version number for their airport project. Set the major and minor version numbers to enable this.

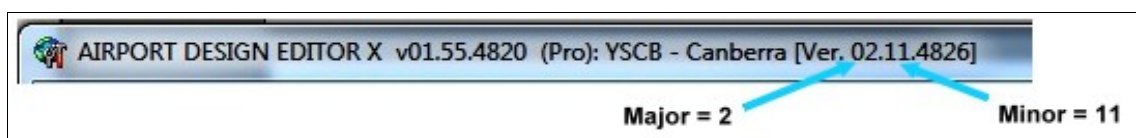


Figure 4-4: Version

In this example, the major version is the first group of digits, or 02. The minor version is the second group of digits, or 11. The last four digits are a day counter beginning at January 1, 2000. Therefore, 3489 represents July 20, 2009. The version number is only stored in the ADE project file and not in the .BGL or XML files.

- o **Comments** – Similar to the Comment field in the Service Tab, each object in ADE can have a comment that you can use for whatever might be helpful.

The following parameters can be edited only at other places:

- o **Airport Identification and Altitude (1)** - in chapter 12.6.1 Change Airport Reference Data (Tools Menu),
- o **Project Name (2)** - in chapter 12.1.13 Save Airport As (File Menu)

4.1.2 Services Tab

Properties

☒ User Locked

Airport Services

AV073 NO JET NO

AV087 NO JETA NO

AV100 NO JETA1 NO

AV130 YES JETAP NO

AV145 NO JETB NO

MOGAS NO JET4 NO

JET5 NO

Location Latitude 25.79225 Alt [Meters] 2428

Figure 4-5: Airport Properties, Service Tab

These settings indicate what fuel services will appear for the airport in the GPS display. They do not create an actual fuel trigger at pumps at the airport.

4.2 Runways

When it comes to designing airports, the most important element is the runway.

4.2.1 Runway List

ADE provides a list of all runways of an opened airport under the List Menu.

Runways

List Selector: Runways Drag/Drop Allowed Multi Edit Allowed Filter List Layout Save Reset

ID	Heading	Length Meters	Width Meters	Surface	Cross Wind	Comments	Lock	Custom Hide	Force Skip	Compile
09R/27L	089,7	3650,9	50,0	ASPHALT	No		None	No	No	
23/05	222,0	1962,0	45,1	ASPHALT	No		None	No	No	
36W/18W	000,0	1,0	1,0	WATER	No	Rwy For Orphan ILS	None	No	No	

Count: 3

Zoom % 200 Center on Object

Select All Clear All Export Preview Print Add XWind Edit Close

Figure 4-6: Runways List

The Runway List contains the ID (or runway identifier), runway heading, runway length and width, runway surface, lock status, hidden status, skip compile status and whether it is a crosswind runway.

For more information about adding a crosswind runway, see [chapter 4.2.10 Crosswind Runways](#)

If you select a runway in the list, ADE will re-center the display on that runway.

4.2.2 Creating Runways

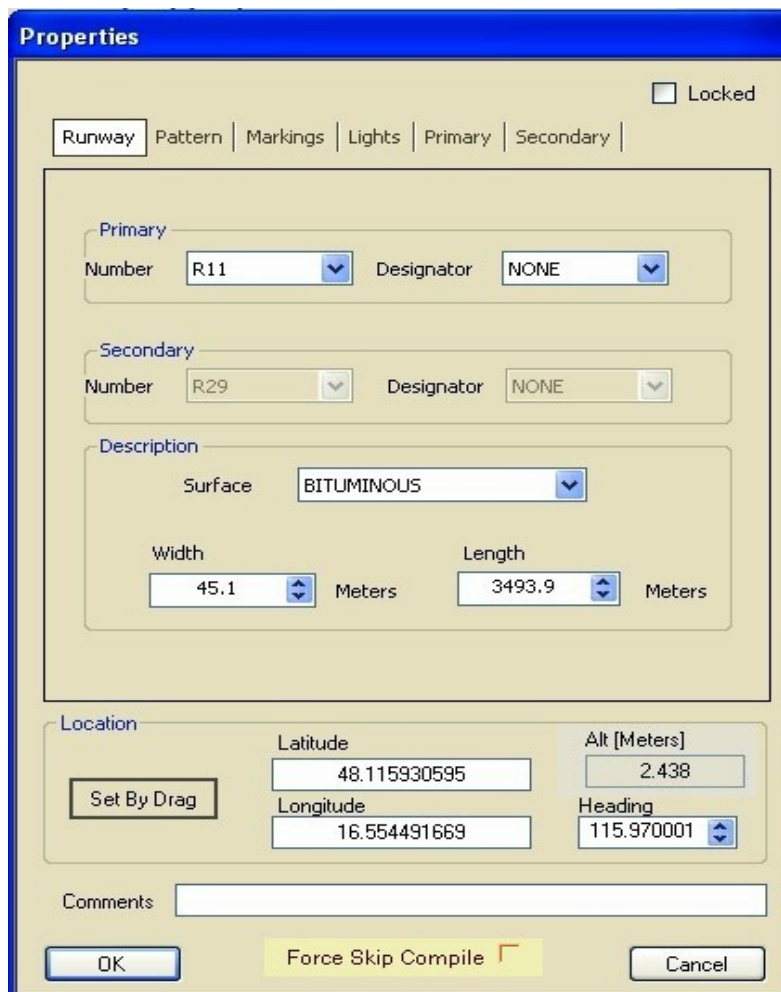
To create a runway in ADE, select "Add" and then "Runway" from the Rightclick Menu. The runway will be centered on the mouse pointer. The property dialog will appear to allow you to set all the runway parameters before you save it.

4.2.3 Runway Properties

The runway tab is the main properties tab, and it is from here where you can select the runway number and designator for the primary and secondary ends as well as the runway surface, dimensions, location, and heading.

Once you assign the primary runway number and designation, ADE will determine the reciprocal value for the secondary runway automatically.

Also, be aware that changing the runway number and designator does not change the actual runway heading.



The image shows a "Properties" dialog window for a runway. It has a blue title bar and a "Locked" checkbox in the top right. Below the title bar are tabs: "Runway", "Pattern", "Markings", "Lights", "Primary", and "Secondary". The "Runway" tab is selected. The dialog is divided into several sections: "Primary" with "Number" (R11) and "Designator" (NONE); "Secondary" with "Number" (R29) and "Designator" (NONE); "Description" with "Surface" (BITUMINOUS), "Width" (45.1 Meters), and "Length" (3493.9 Meters); "Location" with "Set By Drag" button, "Latitude" (48.115930595), "Longitude" (16.554491669), "Alt [Meters]" (2.438), and "Heading" (115.970001); and a "Comments" text area. At the bottom are "OK", "Force Skip Compile" (with a red flag icon), and "Cancel" buttons.

Primary	
Number	R11
Designator	NONE

Secondary	
Number	R29
Designator	NONE

Description	
Surface	BITUMINOUS
Width	45.1 Meters
Length	3493.9 Meters

Location	
Latitude	48.115930595
Longitude	16.554491669
Alt [Meters]	2.438
Heading	115.970001

Comments:

Buttons: OK, Force Skip Compile, Cancel

Figure 4-7: Runway Properties Dialog Window

- o **Primary/Secondary Number** - the primary side of a runway is numbered normally from "01" to "18" (1° to 180°) and is shown first, for example "04/22".
The input window accepts numbers from 01 (also 0) to 36 and eight directions from the compass rose.
The primary number is the only one required, the corresponding secondary number is automatically offset by 18 (180°).
When the runway is rotated, either by changing the value in "Heading" or by rotation in the ADE display, the number is not changed automatically, but must be adapted manually.
- o **Designator** - the primary/secondary numbers have additions, when there are several runways on the airport. Permitted designators are
NONE, C, CENTER, L, LEFT, R, RIGHT, W, WATER, A, B,
(L, R, C for Left, Right, Center and W for Water-Runways.)
- o **Surface** - are identical with the surfaces of aprons and taxiways.
- o **Width** - the values are in Meter or as set by the user in "Settings" Menu under "Options => Units"
- o **Length** - are also in Meter or as set in "Settings" Menu
- o **Location** - the parameters in this block are the standard in all properties windows.

4.2.4 Delete A Runway

To delete a runway, select it and press the "Del" key.
ADE deletes the runway so it is gone.

FS allows the deletion of runways. However it does not allow the deletion of stock ILS. Therefore removing a runway leaves the stock ILS behind as an "orphan ILS". How these are treated is explained in [chapter 8.3.3 Deleting \(Orphaning\) ILS](#)

To emphasize this point: if you delete a stock runway, the associated stock localizers/navaids will not and cannot be deleted from FS9 or FSX/P3D. They will remain visible on the FS map and GPS screens even though the runway is gone.

Therefore a warning will be issued by ADE, that you should not delete a stock runway with an associated ILS or navaid.



Figure 4-8: Delete Warning

4.2.5 Runway Patterns

The runway pattern tab in the properties window allows you to control whether your runways are closed/open for takeoffs and landings, and to select the pattern direction and altitude at your airport.

- o **Takeoff/Landing** - There are four values you can select from under both takeoff and landing: - Yes - No - True - False.

Note: In FS9/FSX, Yes = True and No = False.

Therefore, if you want to close an end of your runway for takeoffs/landings, you can select either No or False.

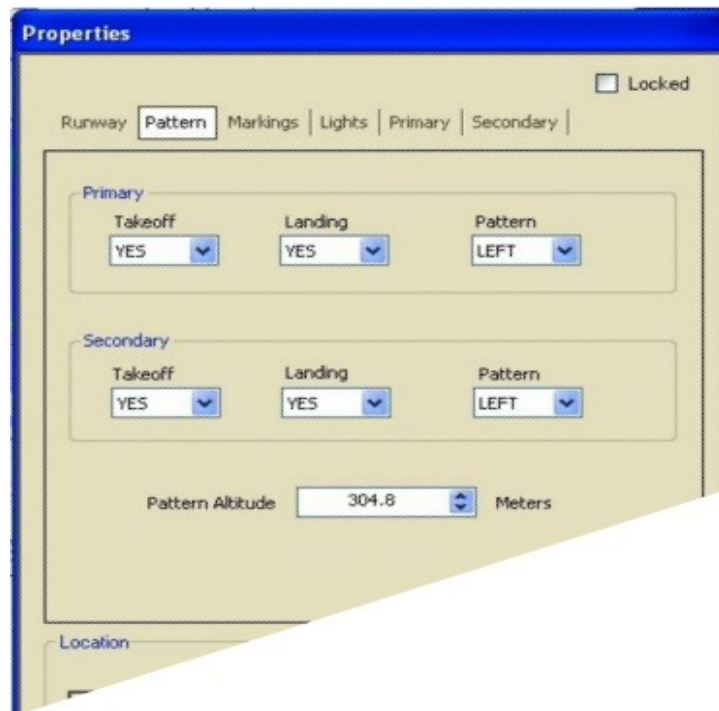


Figure 4-9: Runway Properties, Pattern Tab

- o **Pattern** - is the direction for the flight pattern, indicating either LEFT or RIGHT.
- o **Pattern Altitude** - the altitude you select is based on the height above ground level, or AGL, not the distance above mean sea level, or AMSL. FS uses this value for smaller AI GA aircraft during VFR touch-and-go procedures; however, the pattern altitude will differ for larger AI aircraft or aircraft flying a predetermined flight plan altitude.

4.2.6 Runway Markings

Use the markings tab to set the markings that you want to see on the runway.

ADE displays the main markings such as numbers, thresholds, overruns, offset thresholds, lines and aiming bars.

Other markings are not displayed in the current version.

These various markings available in the Properties window (Figure 4.9) are described briefly below:

- **Edge Lines** – Adds white lights along both edges of the runway
- **Threshold Stripes** – Adds white parallel stripes at both ends of the runway
- **Fixed Distance** – Adds aiming point bars to the runway at a predetermined distance
- **Touchdown** – Checking this box adds two or more parallel stripes on the runway's touchdown zone
- **Center Line** – Provides a line in the center of the runway that runs the length of the runway
- **Ident** – Adds the runway numbers at each end of the runway

- **Precision** – Selecting precision causes the centerline to be drawn wider and the last 2,000ft of edge lights to be yellow

Properties

☐ Locked

Runway | Pattern | **Markings** | Lights | Primary | Secondary

Edge Lines <input checked="" type="checkbox"/>	Secondary Closed <input type="checkbox"/>
Threshold Stripes <input checked="" type="checkbox"/>	Primary STOL <input type="checkbox"/>
Fixed Distance <input checked="" type="checkbox"/>	Secondary STOL <input type="checkbox"/>
Touchdown <input checked="" type="checkbox"/>	Alternate Threshold <input type="checkbox"/>
Center Line <input checked="" type="checkbox"/>	Alternate Touchdown <input type="checkbox"/>
Ident <input checked="" type="checkbox"/>	Alternate Fixed Distance <input type="checkbox"/>
Precision <input checked="" type="checkbox"/>	Alternate Precision <input type="checkbox"/>
Edge Pavement <input checked="" type="checkbox"/>	Leading Zero Ident <input type="checkbox"/>
Single End <input type="checkbox"/>	No Threshold End Arrows <input type="checkbox"/>
Primary Closed <input type="checkbox"/>	

not available in FS9

Location

Latitude: 38.939543031 Alt [Meters]: 2.438

Longitude: -77.436215132 Heading: 0.660000

Set by Drag

Comments

OK Force Skip Compile Cancel

Figure 4-10: Runway Properties, Markings Tab

- **Edge Pavement** – Adds a strip of runway surface outside of the runway edge lines
- **Single End** – If you select this option, runway markings will only appear on the primary end of the runway
- **Primary/Secondary Closed** – Draws an X in place of threshold stripes, but does not actually close the runway to AI. FAA rules state that a runway cannot be closed at just one end; it must be closed at both ends, which would require both the primary and secondary closed marks to be checked. This may also apply in other countries.
- **Primary/Secondary STOL** – Adds "STOL" (Short Takeoff and Landing) in place of the threshold stripes.
- **Alternate (Threshold, Touchdown, Fixed Distance, Precision)** – These first four markings replace US markings with international markings of the same name
- **Leading Zero Ident** – Selecting this box adds a "0" in front of single-digit runway numbers (e.g. runway 9 would become runway 09)
- **No Threshold End Arrows** – Suppresses the arrows at the runway threshold

FSX/P3D only

Here are two illustrations that show how the various runway markings appear:

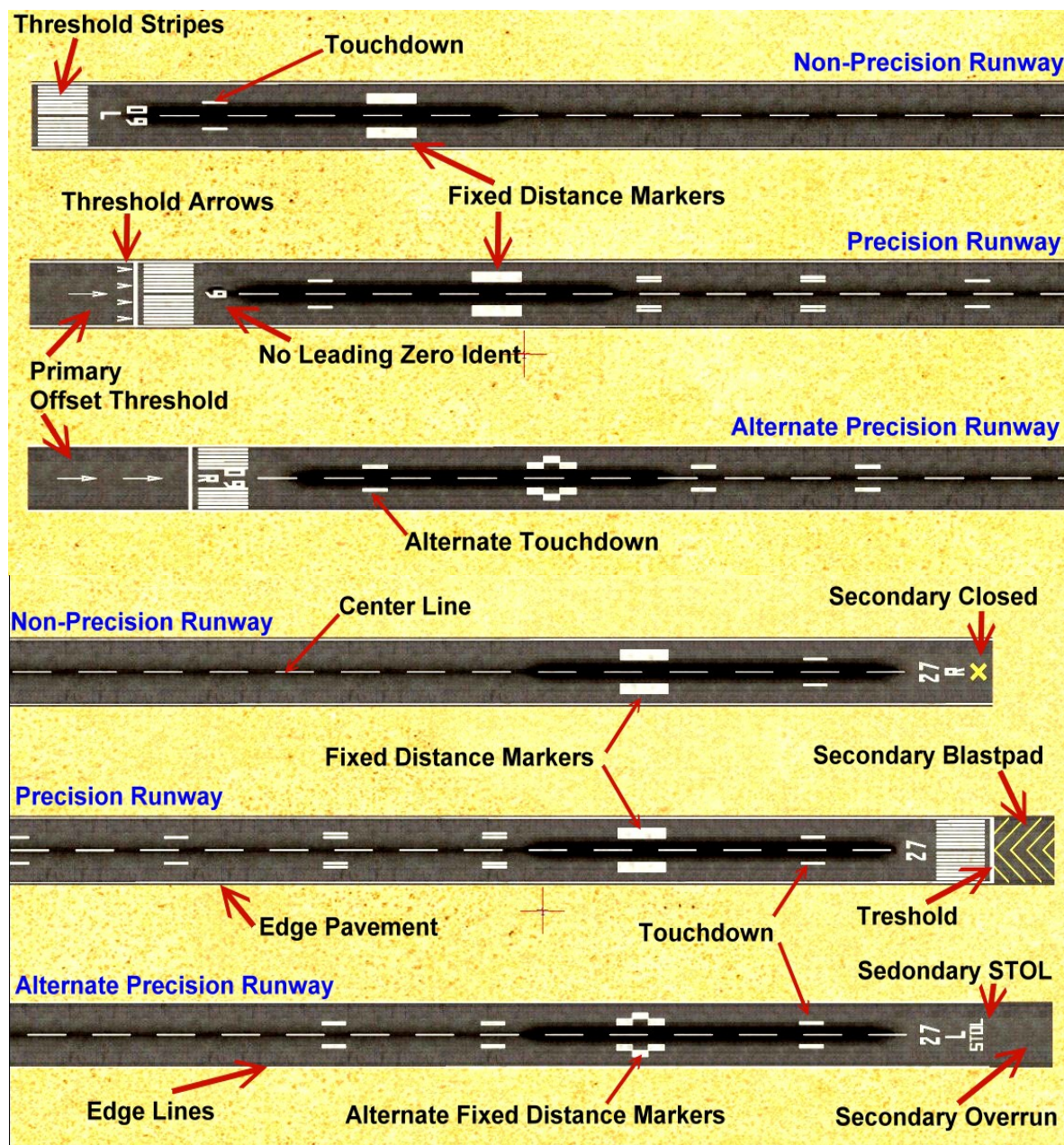


Figure 4-11: Markings of a runway as drawn By FS9/FSX

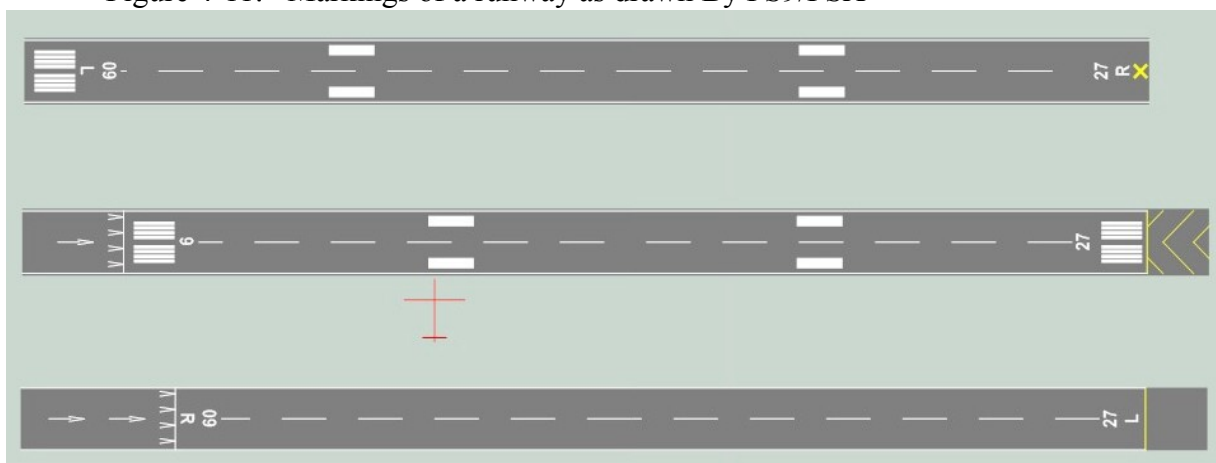


Figure 4-12: Markings of a runway as drawn by ADE

Please **NOTE** that the Flight Simulators will not display some of these markings if the runway is shorter than 2,000m / 6,500ft. Also, there are several interdependencies in the Flight Simulators between the various markings and runway properties:

- If you add an Offset Threshold (see Primary / Secondary Tab below) and de-select the No Threshold End Arrows marking, only the arrows at the runway threshold will show
- If you add an Overrun (see Primary / Secondary Tab below), Edge Pavement markings will not appear
- When using either the Primary/Secondary Closed or Primary/Secondary STOL markings, the Threshold Stripes marking will not appear
- FS9/FSX will not draw Precision and Alternate Precision markings correctly if the runway is shorter than 2,000m / 6,500ft.

4.2.7 Runway Lights

You can set the runway lights arrangement for the runway in the lights tab of the runway properties window. This includes runway lighting and the approach lighting for each end of the runway. Runway Lighting is visible also in ADE's day mode.

Properties

Runway | Pattern | Markings | **Lights** | Primary | Secondary

☐ Locked

☒ Secondary Approach Lights

Type: ALSF2
Strobes: 15

End Lights ☒
REIL ☒
Touchdown ☒

Runway

Edge Lights: HIGH
Center Lights: HIGH

Center Red ☒

☒ Primary Approach Lights

Type: ALSF2
Strobes: 15

End Lights ☒
REIL ☐
Touchdown ☐

Location

Set By Drag

Latitude: 48.115929253
Longitude: 16.55449301

Alt [Meters]: 2.438
Heading: 115.970001

Comments:

OK Force Skip Compile ☐ Cancel

Figure 4-13: Runway Properties, Lights Tab

There are 13 types of approach lights from which to choose:

- **ODALS (Omni-Directional Approach Light System)** – Provides a circle guidance and visual identification of the approach end of the runway for landing aircraft and to further enhance the operational safety of large and small airports
- **MALS (Medium intensity Approach Lighting System)** – Provides a visual lighting path for landing aircraft. This system may be used where a precision approach is not available or justified.
- **MALSF (Medium Intensity Approach Lighting System with Sequenced Flashers)** – Same as MALS but equipped with three sequenced flashers co-located with the outer three light bars of the system. This system is used at locations where approach area identification problems exist.
- **MALSR (Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights [RAIL])** – An economy type system used for precision instrument approaches of a Category I Configuration (an ILS approach procedure which provides for approach to a decision height of not less than 200ft).
- **SSALF (Simplified Short Approach Lighting System with Sequenced Flashers)** – A system of medium-intensity lights marking the extended runway centerline for 1,400ft. The system presents to the pilot the illusion of a ball of light travelling from the outer end of the system (1,400ft) to a point 1,000ft from the end of the runway. A special indicator marks a point 1,000ft from the end of the runway. A row of green lights indicates the threshold runway.
- **SSALR (Simplified Short Approach Lighting System with Runway Alignment Indicator Lights [RAIL])** – A SSALS facility with sequence flashers installed from 1,600 to 2,400ft from the runway threshold. Normal spacing between lights is 200ft. This system assists pilots in transitioning from precision approach Instrument Flight Rules (IFR) to Visual Flight Rules (VFR) for landing.
- **ALSF1 (High Intensity Approach Lighting System with Sequenced Flashers)** – Provides visual information on runway alignment, height perception, roll guidance, and horizontal references for Category I instrument approach. ALS are a configuration of signal lights starting at the landing threshold and extending into the approach area a distance of 2,400-3,000ft for precision instrument runways.
- **ALSF2 (High Intensity Approach Lighting System with Sequenced Flashers)** – Provides visual information on runway alignment, height perception, roll guidance, and horizontal references for Category II/III instrument approaches.
- **RAIL (Runway Alignment Indicator Lights)** – Sequenced flashers located on the extended runway centerline, the first being located 200ft beyond the approach end of the MALS with successive units located at each 200ft interval out to 2400ft (3000ft for ILS glide slope angles less than 2.75) from the runway threshold.
- **CALVERT 1 & 2 (Calvert Cross Bar Approach Lighting System)** – An approach lighting pattern that consists of a center line of light with horizontal bars of light running transversely across it at even intervals. This pattern consists of two basic elements - a line of lights leading to the runway threshold, and horizontal lights to define the attitude of the aircraft. The Calvert system does not indicate a defined glide path, but the widths of the horizon bars are such that, if a pilot maintains a glide that will take him to the correct touch down point, each bar will appear to be the same width as the previous one as it disappears under the nose of the aircraft. Distance is indicated by using single lights in the centre line to indicate 1,000ft or less from the threshold, double lights for 1,000ft - 2,000ft and triple lights for 2,000ft - 3,000ft.

- **SALS (Short Approach Lighting System)** – An array of high-intensity lights marking the extended runway centerline for 2,400 to 3,000ft from the runway threshold. The system presents to the pilot the illusion of a ball of light travelling from the outer end of the system to a point 1,000ft from the end of the runway. Two additional rows of lights indicate the edges of the runway for the last 1,000ft with special indicators placed 1,000ft, 500ft, and at the runway threshold.
- **SSALS (Simplified Short Approach Lighting System)** – An array of medium-intensity lights marking the extended runway centerline for 1,400ft. A special indicator marks a point 1,000ft from the end of the runway. A row of green lights indicates the threshold runway.

The below illustration from the FAA Aeronautical Information Manual depicts several types of approach configurations:

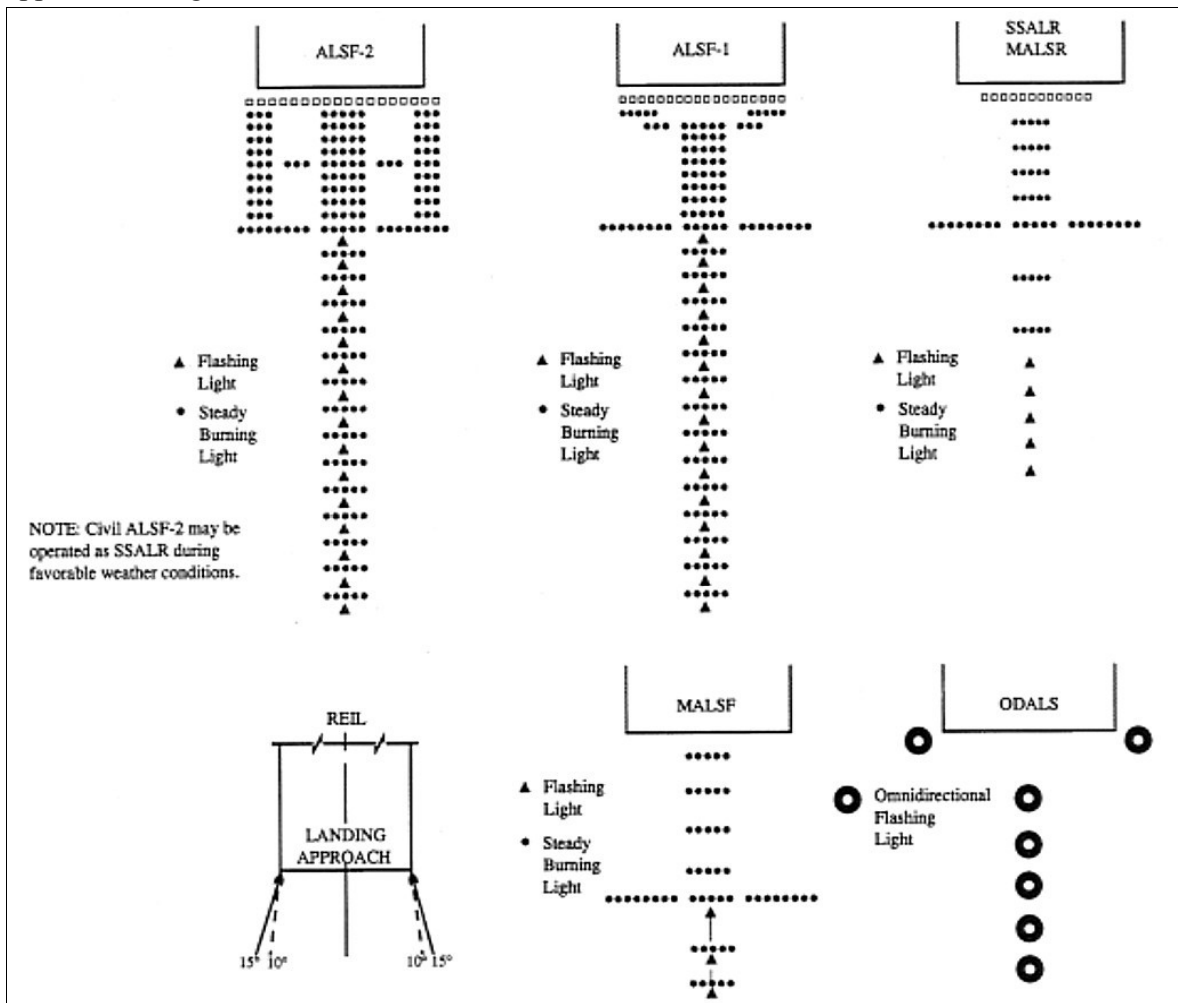


Figure 4-14: Precision & Non-Precision Approach Configurations (FAA AIM Manual 2-1-1)

Approach Strobes are a line of “running” strobes used in front of some approach light systems (ODALS, MALSF, SSALF, etc). This value sets the number of strobes in the sequence.

In addition to the 13 types of approach lighting, you can select additional runway lighting options:

- **End Lights** – Define the beginning of the runway pavement suitable for aircraft operation. This lighting is normally uni-directional red, visible from the direction of the runway.

- **REIL (Runway End Identifier Lights)** – Provide rapid and positive identification of the approach end of a particular runway. The system consists of a pair of synchronized flashing lights located laterally on each side of the runway threshold. REILs may be either omnidirectional or unidirectional facing the approach area.
- **Touchdown Zone Lights (TDZL)** – Indicate the touchdown zone when landing under adverse visibility conditions. They consist of two rows of transverse light bars disposed symmetrically about the runway centerline. The system consists of steady-burning white lights which start 100ft beyond the landing threshold and extend to 3,000ft beyond the landing threshold or to the midpoint of the runway, whichever is less.

Along with approach and runway lighting, you can select whether you want runway center and edge lights and can choose their intensity (low, medium, or high). You also have the option between white or red center lights.

4.2.8 Blast Pads / Offset Thresholds / VASI

The primary and secondary runway tabs allow you to place blastpads, overruns, VASI, PAPI, and offset thresholds at either end of your runway.

Properties

☐ User Locked

Runway | Pattern | Markings | Lights | **Primary** | Secondary

☒ Blastpad/Overrun

☒ Blastpad ☐ Overrun

Length: 304,8 Meters

☒ Left Vasi

Type: VASI22

>Edge: 6,1

>THold: 274,5

Spacing: 91,4

Pitch: 3,00

☒ Right Vasi

Type: PAPI4

>Edge: 10,0

>THold: 300,0

Spacing: 100,0

Pitch: 3,00

☒ Offset Threshold

Length: 152,4 Meters

Location

Latitude: 39,842302836

Longitude: -83,838384748

Alt [Meters]: 320,344

Heading: 54,119999

Comments:

☐ Force Skip Compile

Figure 4-15: Runway Properties, Primary Tab

- **Blastpad** – A runway extension that protects the ground and runway from the jet blast produced by large planes during the takeoff roll. Blast pads are often not as strong as the main paved surface of the runway and are marked with yellow chevrons. To see an example of a blastpad, refer to Section 11.11 Runway Markings.
- **Overrun** – A runway extension used as an emergency space to slowly stop planes that overrun the runway on a landing gone wrong, or to slowly stop a plane on an aborted take-off or a take-off gone wrong. For an illustration of an overrun, refer to Section 11.11 Runway Markings. **(FSX only)**
- **Left/Right VASI** – Provides visual descent guidance information during the approach to a runway using various light configurations. These lights are usually visible from 3-5 miles during the day and up to 20 miles or more at night.
- **Offset Threshold** – A threshold located at a point on the runway other than the designated beginning of the runway which reduces the length of runway available for landings. A white threshold bar is located across the width of the runway at the offset threshold. White arrows are located along the centerline in the area between the beginning of the runway and offset threshold. White arrow heads are located across the width of the runway just prior to the threshold bar. Refer to Section 11.11 Runway Markings for an illustration of an offset threshold.
- **Edge** – sets the distance of the VASI/PAPI from the runway edge
- **Thold** – sets the distance of the VASI/VAPI from the runway threshold
- **Spacing** - this value determines the distance between the VASI bars (usually between 500ft and 1,000ft)
- **Pitch** – this value determines the glide slope

In ADE, you can select one of thirteen different VASI/PAPI configurations:

1. **VASI (21, 31, 22, 32, 23, 33)** – Visual approach slope indicators (VASI) installations may consist of either 2, 4, 6, 12, or 16 light units arranged in bars referred to as near, middle, and far bars. Most VASI installations consist of 2 bars, near and far, and may consist of 2, 4, or 12 light units. Some VASIs consist of three bars, near, middle, and far, which provide an additional visual glide path to accommodate high cockpit aircraft. This installation may consist of either 6 or 16 light units. VASI installations consisting of 2, 4, or 6 light units are located on one side of the runway, usually the left. Where the installation consists of 12 or 16 light units, the units are located on both sides of the runway.

In ADE, the first number of the VASI system (21, 31, 22, etc.) refers to the number of bars in the lighting system. The second number of the VASI system (21, 31, 22, etc.) refers to the number of lights per bar. The VASI 33 system is different in that it has three bars but only two lights on the far bar. You would use this system on both sides of the runway to create a 16-light VASI.
2. **PAPI (2, 4)** – The precision approach path indicator (PAPI) uses light units similar to the VASI but are installed in a single row of either two or four light units. The row of light units is normally installed on the left side of the runway.

3. **Tri-Color** – Tri-color visual approach slope indicators normally consist of a single light unit projecting a three-color visual approach path into the final approach area of the runway upon which the indicator is installed. The below glide path indication is red, the above glide path indication is amber, and the on glide path indication is green.
4. **PVASI** – Pulsating visual approach slope indicators (PVASI) normally consist of a single light unit projecting a two-color visual approach path into the final approach area of the runway upon which the indicator is installed. The on glide path indication is a steady white light. The slightly below glide path indication is a steady red light. If the aircraft descends further below the glide path, the red light starts to pulsate. The above glide path indication is a pulsating white light. The pulsating rate increases as the aircraft gets further above or below the desired glide slope.
5. **TVASI** – This indicator consists of a white crossbar on both sides of the runway. On the correct glide slope, only the crossbar is visible. If the crossbar appears upright like the letter T, that is a fly-up or below glidepath indication, inverted T is vice versa. Gross undershoot is indicated by all lights becoming a red upright T indication (severe below glidepath).
6. **BALL** – FS remaps this lighting system to an PVASI
7. **APAP** – Approach Path Alignment Panels (APAP) are installed on some small general aviation airports and are a low-cost system consisting of painted plywood panels, normally black and white or fluorescent orange.

The below illustrations depict several types of visual descent indicators:

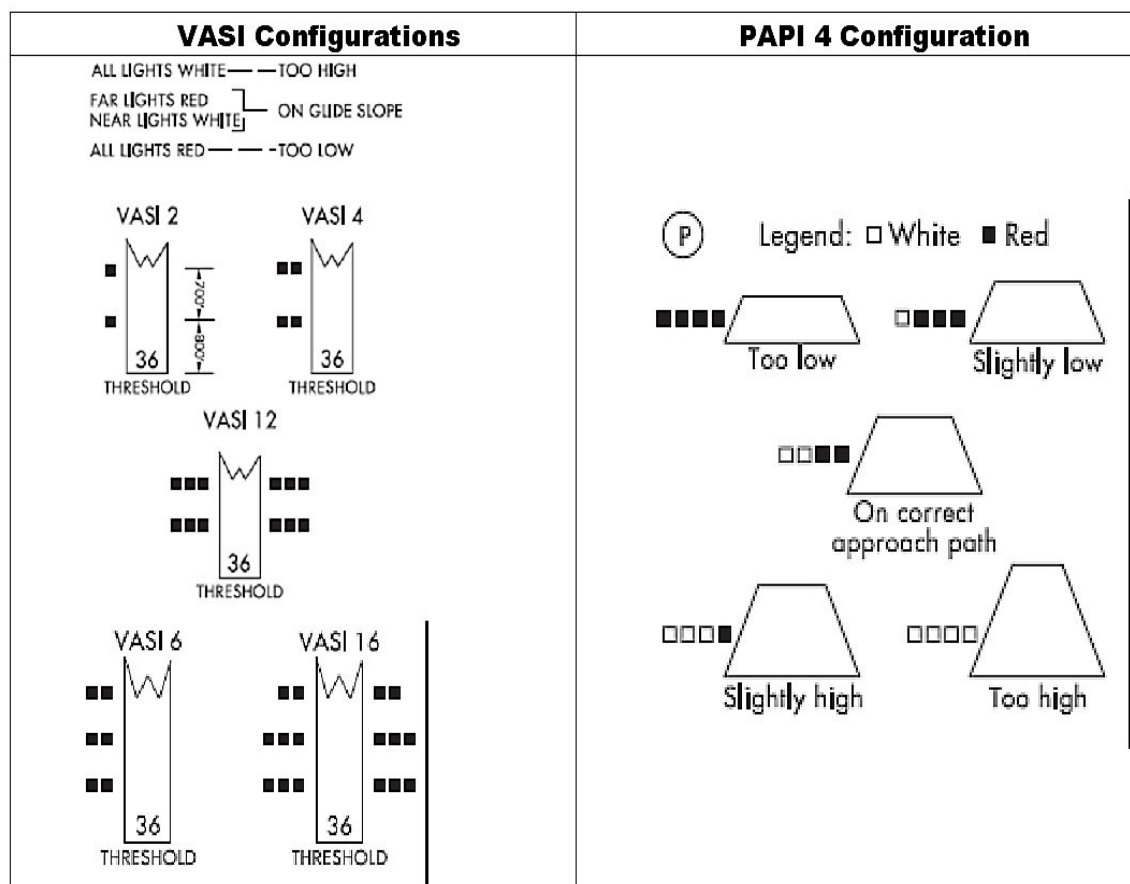


Figure 4-16: Visual Descent Indicators

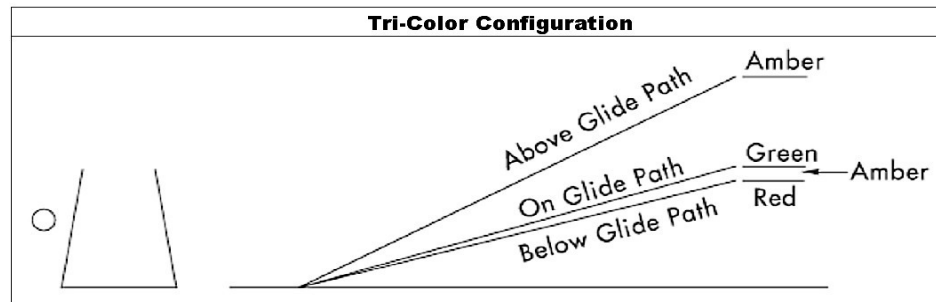


Figure 4-17: Tri-Color Configuration

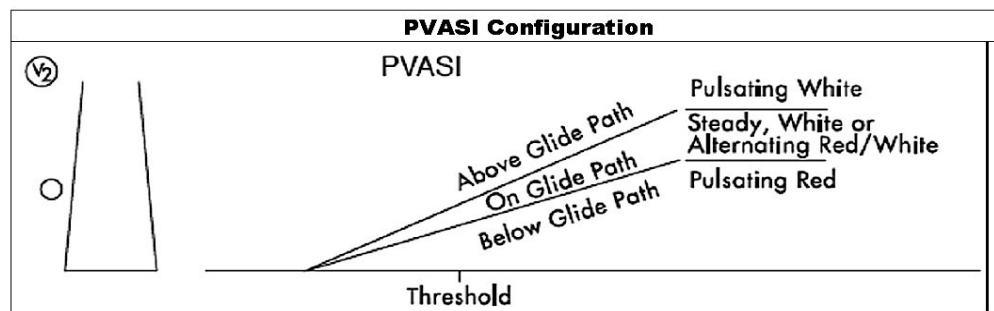


Figure 4-18: PVASI Configuration

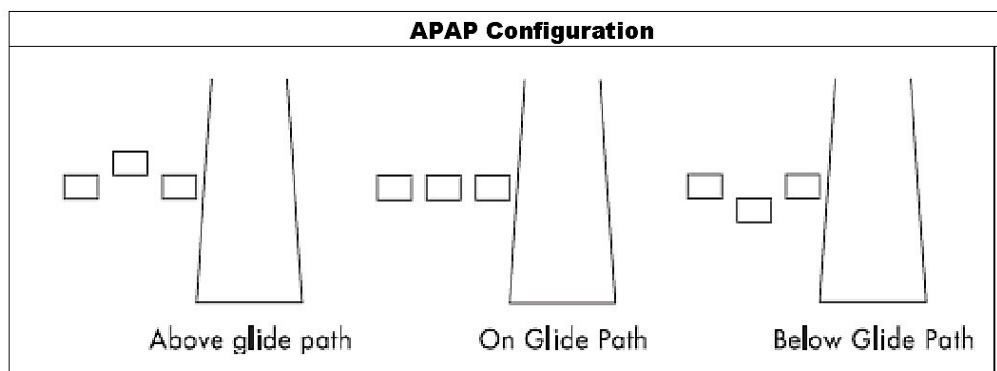


Figure 4-19: APAP Configuration


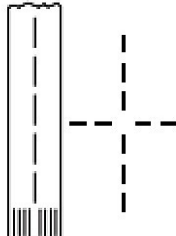
TVASI Configuration	BALL Configuration
 <p>"T" ON BOTH SIDES OF RWY ALL LIGHTS VARIABLE WHITE. CORRECT APPROACH SLOPE- ONLY CROSS BAR VISIBLE. UPRIGHT "T"- FLY UP, INVERTED "T"- FLY DOWN. RED "T"- GROSS UNDERSHOOT.</p> 	<p>FSX remaps this selection to an PVASI configuration.</p>

Figure 4-20: TVASI and Ball Configuration

Below the diagram shows how the various VASI lighting systems appear in FS:

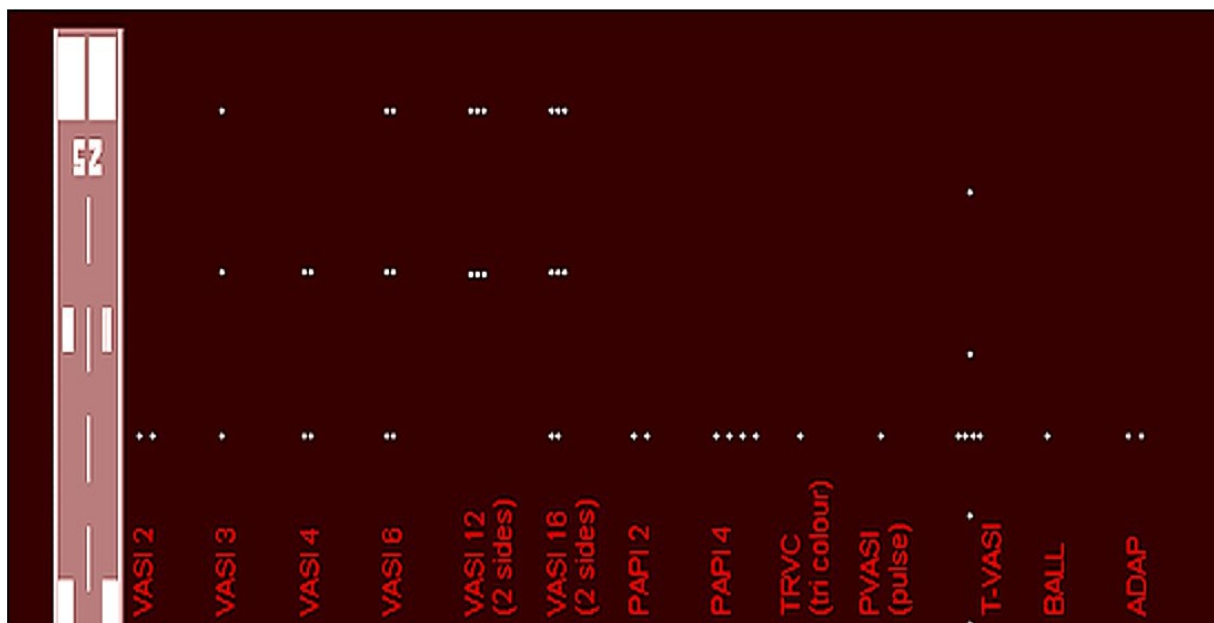


Figure 4-21: VASI Lighting System

4.2.9 Transparent Runway (for FSX-Acceleration/P3Dv.2 only)

Thanks to some recent work by Jim Vile and others there is a way to do it .

IMPORTANT : This will only be available in ADE if you have the Acceleration Pack SDK installed. SDK versions SP1a and SP2 do not support this and ADE will not offer the transparent property if you have one of these installed.

Figure 4-22: Transparent Runway Properties

Please also **NOTE** that if you create an airport with transparent runways using the XPack then these will only appear transparent on FSX with the XPack. In all other versions of FSX only the standard runway surface will be visible.
 If your version of the SDK support compiling the transparent flag then the "Transparent" checkbox will be available in the Runway Properties Window.
 Check it to make the runway surface transparent.

4.2.10 Crosswind Runways

Creating crosswind runways is an advanced technique. Jim Vile has pioneered a technique to create cross wind runways in FS9/FSX. To find out more about this, go to the following site

<http://www.downloadcenter.scruffyduck.org.uk/?nav=display&file=98>

and download Jim's tutorial "Xwind Runway tutorial.zip".

Basically the user creates a number of dummy runways with slightly different headings. The runways are placed well away from the airport at a pole. ADE now automates the process of creating these dummy runways except for determining the number needed and the heading.

To create a dummy runway, select the Runways list from the List Menu.

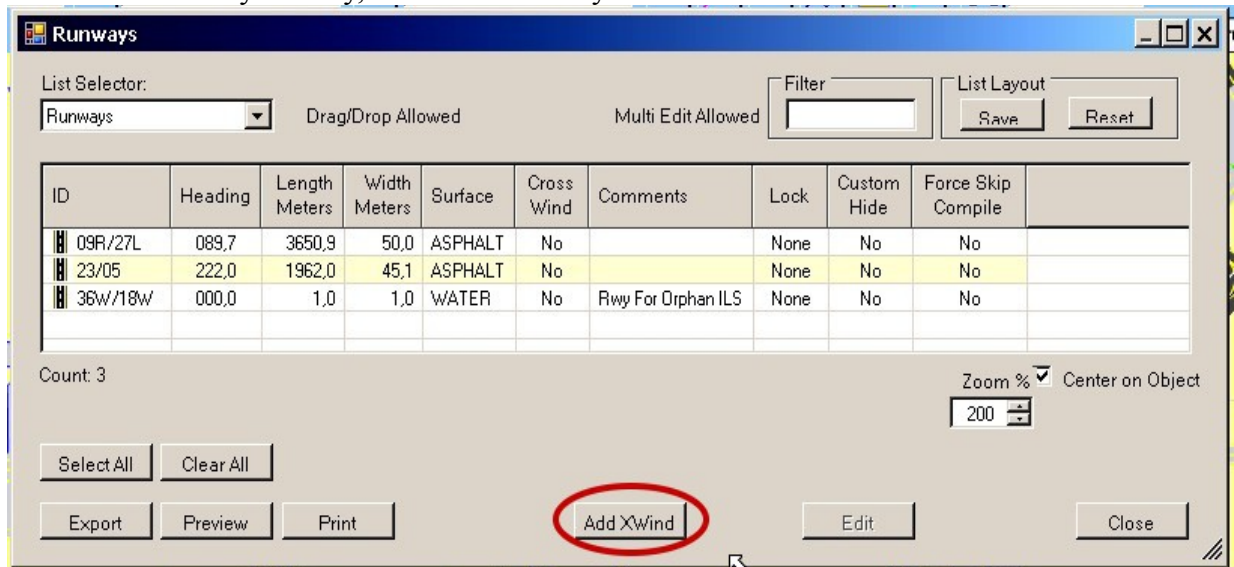


Figure 4-23: Runways List Before Crosswind Runways Added

Click the "Add XWind" button



Figure 4-24: Cross Wind Runway Properties

The Cross Wind Runway Properties Dialog will open. Select your runway number and heading and then Save. ADE automatically creates the information needed to generate a postage stamp dummy runway near the North Pole.

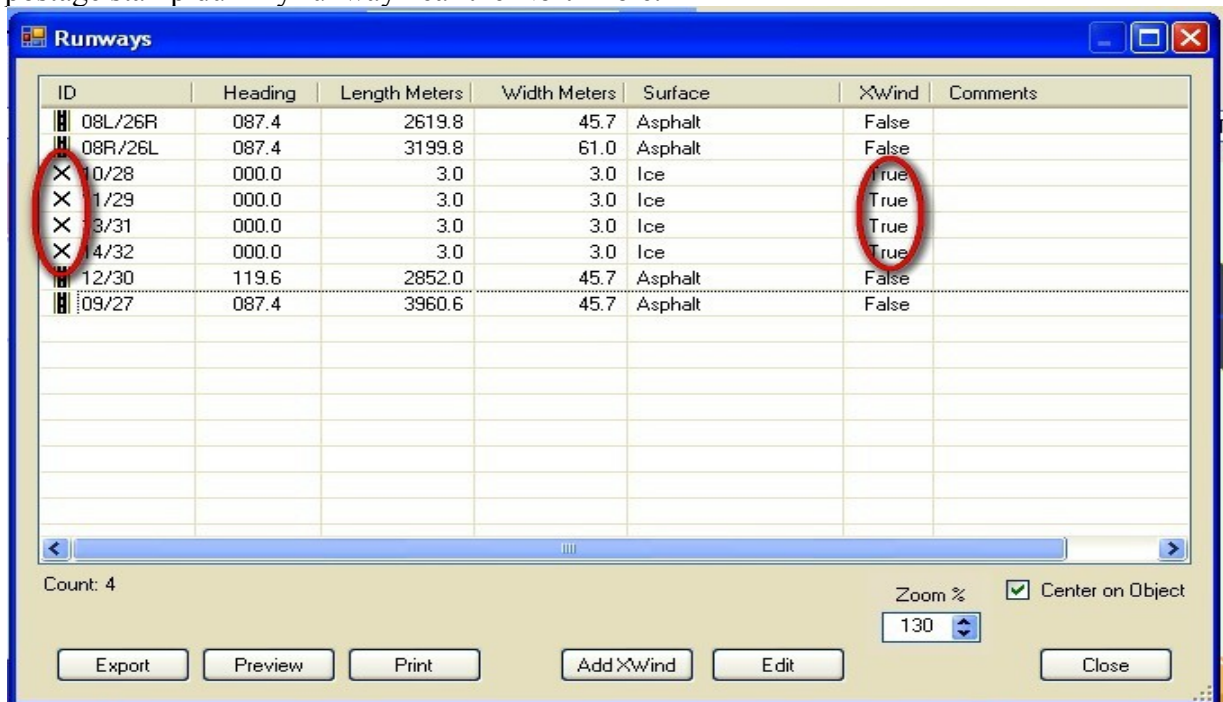


Figure 4-25: Runways List After Crosswind Runways Added

Crosswind runways have an 'X' for the icon and their size is 3m x 3m with an ice surface. Also notice that crosswind runways are identified by 'True' under the XWind column.

NOTE: You may re-order the sequence of runways by selecting and dragging to the new location. ADE remembers the new order and this is the order in which they are compiled. After you add crosswind runways to your airport, every time you compile your airport you will receive the following compilation message

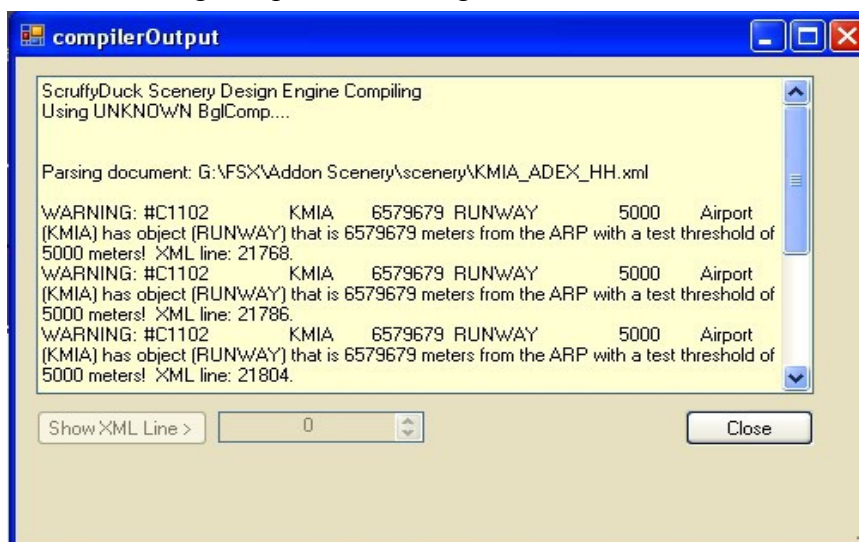


Figure 4-26: Compiler Warning with Crosswind Runways

The compiler generates this warning message because the dummy crosswind runways ADE creates are located outside of the test radius (i.e. they are located at the North Pole). Despite this compiler warning, BglComp will still compile your airport project.

4.3 Aprons

Aprons are expanses of concrete or other material that aircraft can park on or taxi over.

Apron surfaces are not just used for parking areas, they can be used anywhere at an airport that extra pieces of pavement are needed, such as to widen a taxiway for a waiting area, or turn-around bays on runways, or for enlarging junctions.

When moving the cursor (pointer) over an apron, its outlines are shown as a yellow line. This function can be switched off under the menu "Settings".

Aprons are made of polygons formed from straight line segments. A polygon must have at least three segments but can have potentially hundreds of segments. Apron polygons will always be drawn underneath taxiways and runways in FS9/FSX/P3D, and there is no way to make them appear on top of such objects.

Aprons do not have markings of their own but taxiway markings will appear on top of aprons. An apron can be essentially any shape or complexity as long as it has only one enclosed area.

If any of a apron's segments cross over each other, thus forming two ore more separate enclosed areas, only one of the enclosed areas will be filled in and the actual shape of the apron surface will be unpredictable.

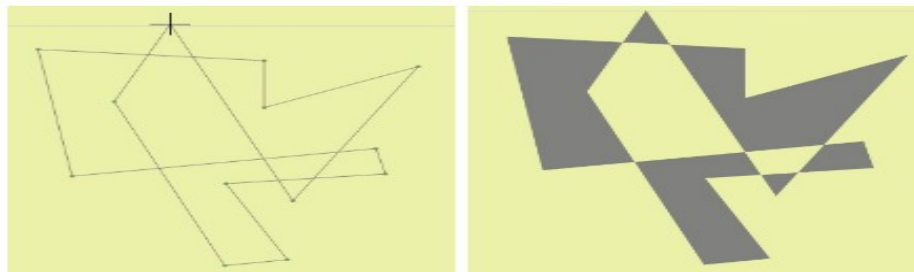


Figure 4-27: Overlapping Apron

4.3.1 Creating Aprons

To draw an apron polygon select the "Add Aprons" icon from the Toolbar. The mouse pointer will change to the apron drawing symbol.

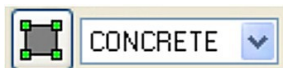


Figure 4-28: Add Aprons Icon

Click on the window where you want to create the initial vertex; this will start the polygon drawing mode and a line will follow your mouse pointer.

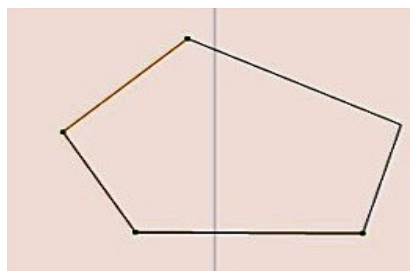


Figure 4-29: Apron Polygon

You can either click and drag or just click and move to the next spot and click again. To terminate drawing an apron polygon you can use one of three methods:

- You can move the cursor over the first taxiway point – make sure that the Tooltip shows Vertex indicating that you are indeed over the vertex – and then click.
- Double click for the last vertex of the apron. In this case you do not need to close the polygon.

- Alternatively if the last vertex is clicked with the "Alt" key down then the apron or poly will be closed.

The preferred method is to click the vertex positions one at a time without dragging and then double click for the last one. Once completed the apron will fill with the color representing the default surface as set in the list to the right of the apron icon

4.3.2 Using Helper Shapes

You can use helper shapes to create basic apron structures. For helper Shapes refer to [Section 14.10 Helper Shapes](#) for more information.

Once you have added a helper shape, you can turn it into an apron. To do so, select the helper shape, right click, and select Make Apron.

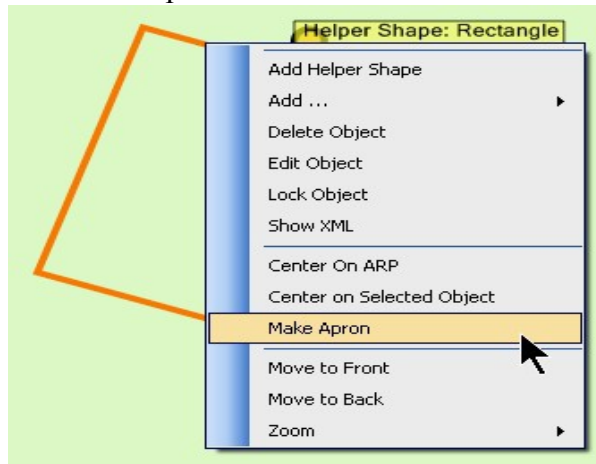


Figure 4-30: Make Apron with Helper Shapes

After ADE creates the apron from the helper shape, you can move it to another location and make additional aprons, or if you are finished with it, just delete it.

The number of vertices used when converting a circle or ellipse Helper Shape to an Apron can now be user defined (requires ProKey). The minimum is 36, the maximum 200.

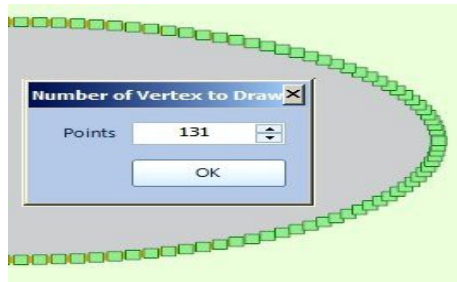


Figure 4-31: Change of Vertices Number

4.3.3 Selecting Aprons

To select a whole apron move the cursor over the apron.

If you have apron outlines and/or tooltips turned on then the selection can be made by leftclick.



Figure 4-32: Unselected/Selected Apron

Instead of Leftclick you can also use “Ctrl-A” once the tooltip is visible.
 For multiple selection you may use Ctrl+Shift+A. This works the same as Shift+Left Click.
 To select an individual vertex, select the apron and then click the vertex when the Tool Tip shows Vertex

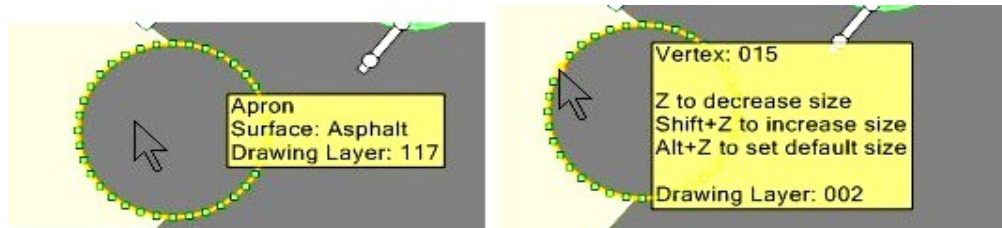


Figure 4-33: Selection of Vertices

4.3.4 Inserting Vertices

To add a new vertex, place the cursor (in Pointer Mode) over the selected (orange) edge where you want to put the new vertex. When you see the ToolTip line "Ctrl+Click to Add Vertex" use Ctrl-Click to add.



Figure 4-34: Adding Vertices

If the vertex is not quite in the right place, then you can drag it as long as it is selected. It is also possible to edit the location of a vertex for specific placement via the Property window

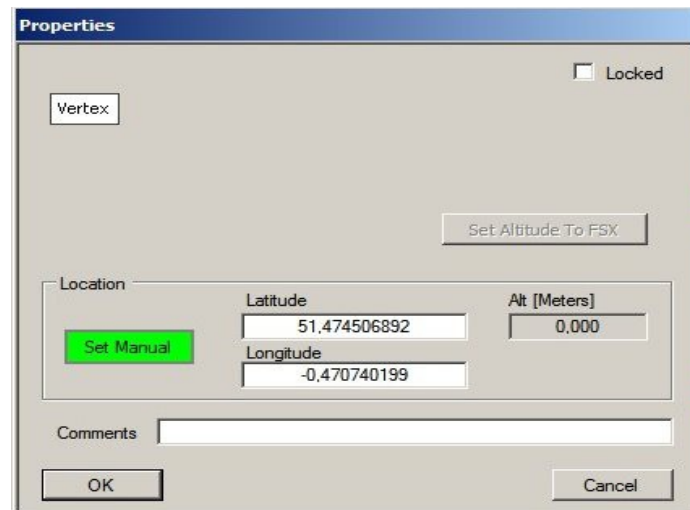


Figure 4-35: Properties of Vertices

4.3.5 Changing Size of Vertices

Vertex display size can be changed. The value set will also control the width of the edges drawn between vertices. Making the line width smaller can help in working with vertices when zoom levels are high. ADE will remember the setting until you change it again.

- Select a vertex and open the Rightclick Menu (Right Click with the vertex selected).
- Click Display Options to show the dialog

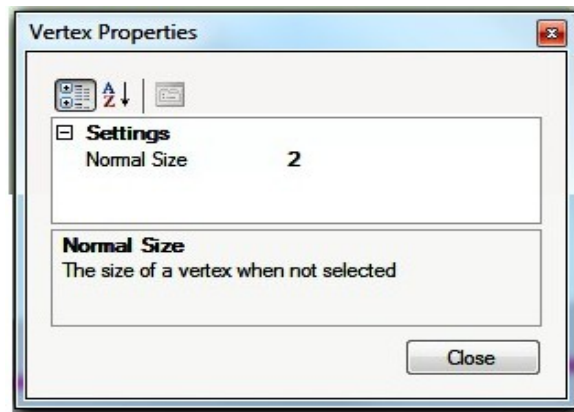


Figure 4-36 Display Properties

- Change the size to another value (in the figure below a value of 8 was chosen)

The vertices are now drawn with a larger border and the edge lines for the selected apron are also increased in size

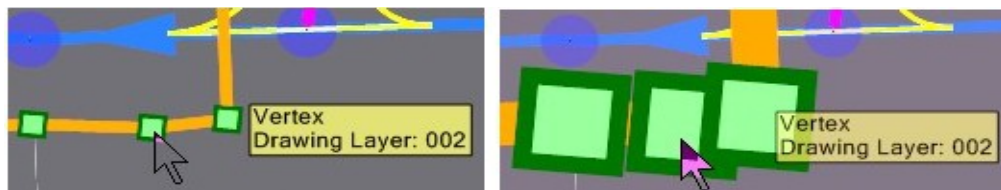


Figure 4-37: Size Increase of Vertices

4.3.6 Transparent Aprons

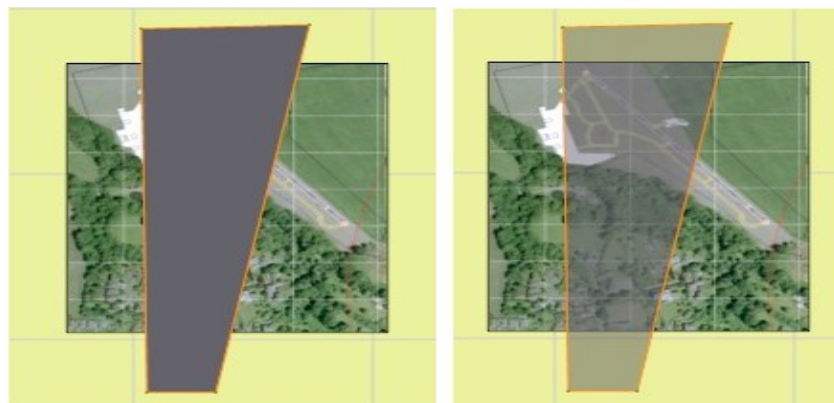


Figure 4-38: Transparent Apron

Aprons (and ground polys) can hide what is beneath them and that can be an issue if you are using a background image. It is possible to change the transparency of aprons and polys, hence be able to see beneath them. The level of transparency is set per object and is remembers between sessions.

To change the transparency of an apron or poly select the apron, press "**Shift + O**" to increase the transparency of the apron or press "**O**" to reduce the transparency
Each key press will change the transparency by around 10%

4.3.7 Apron Properties

To view an apron's properties, either double-click on the apron or select the apron, and select Edit Object from the Rightclick Menu.

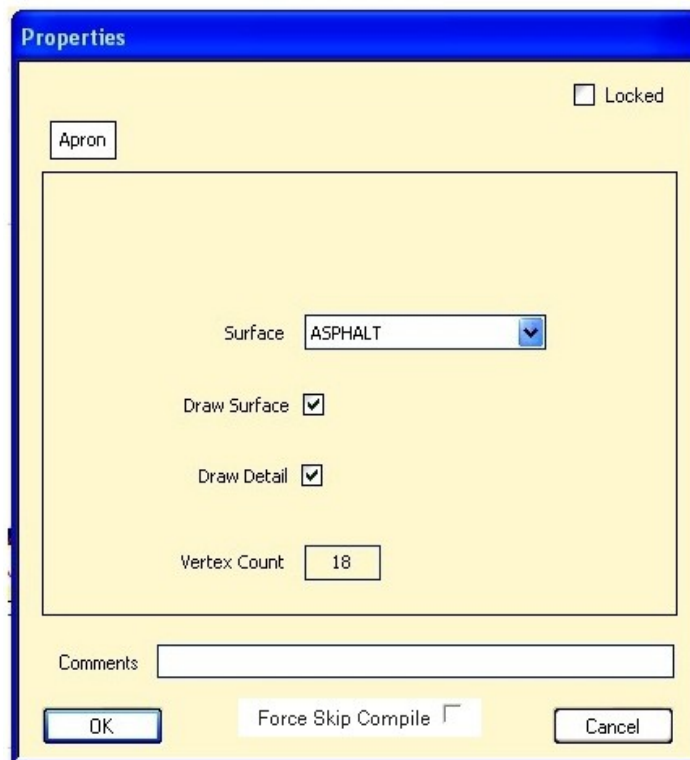


Figure 4-39: Apron Properties

The apron properties dialog box contains four apron properties, three of which are editable:

- o **Surface** – This property specifies the surface texture of the apron
- o **Draw Surface** – this property is used only by **FS9**
Its function is to exchange the current (solid) surface texture of an apron to a semi-transparent texture. This makes the underlying airport scenery slightly visible. In particular when it is using satellite photo images this semi-transparency brings the airport more to life.

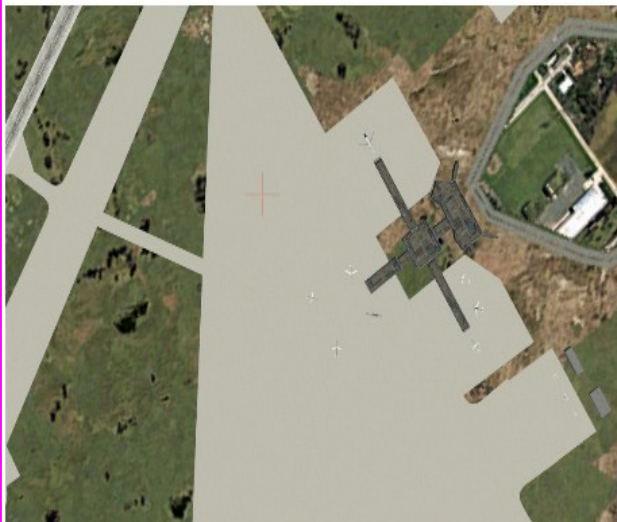


Figure 4-40: "Draw Surface" is checked



Figure 4-41: "Draw Surface" is unchecked

- o **Draw Detail** – is not used..
- o **Vertex Count** – The number of apron vertices

4.3.8 Apron List

The "Draw Surface" and "Draw Detail" functions can be accessed also via the Apron List

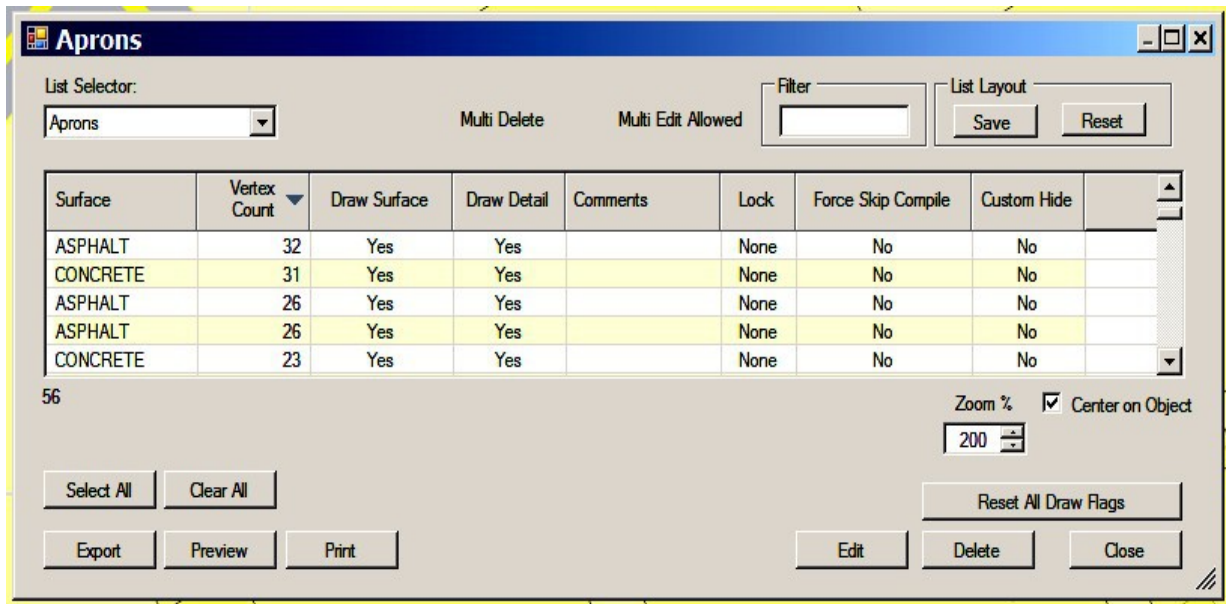


Figure 4-42: Apron List

The other parameters and command buttons are the standard ones to be found also in all other lists.

4.3.9 Deleting Aprons

Select the apron and then either use the "**Del**" key or select "Delete Object" from the Rightclick Menu.

To delete a vertex, just select it and delete it. The apron edge will heal itself. If you delete a vertex from an apron that contains only three vertices then you will delete the aprons. You will not be able to undo the lost apron in this case.

4.3.10 Moving Aprons

To move the entire apron, select the apron, hold the left mouse button down and drag the apron.

To move apron vertices, select a vertex, hold down the left mouse button, and drag the vertex. The shape of the apron will change as you drag.

Although aprons are vertex based objects, they may be rotated. Rotation is currently available via the keyboard only - Mouse Wheel + Alt for fine steps and Mouse Wheel + Ctrl + Alt for coarse steps

4.4 Apron Edge Lights

Add lights around aprons using apron edge lights. Edge lights are laid-down in strips, and unlike the aprons themselves, these strips do not have to form enclosed polygons.

4.4.1 Create Edge Lights



Figure 4-43: Edge Light Icon

To draw edge lights, select the edge light icon from the Toolbar. The mouse pointer will change to a drawing symbol.

Use the same technique as for creating an apron except that you will not generally enclose the lights. Be sure to double click at the end point to create the edge lights.

In ADE, they appear as a blue line.

The lights themselves are only visible in "Night Lighting" view, which can be switched on by the "L"-key or by checking/unchecking the entry "Night Lighting" in the View Menu.

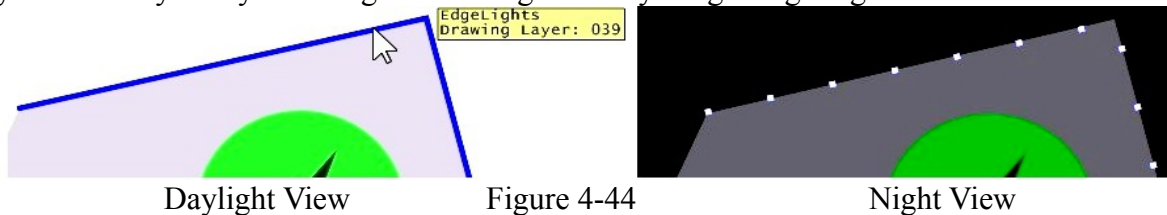


Figure 4-44

4.4.2 Edge Lights Properties

The properties window is opened by selecting and double clicking the blue edge lights line.

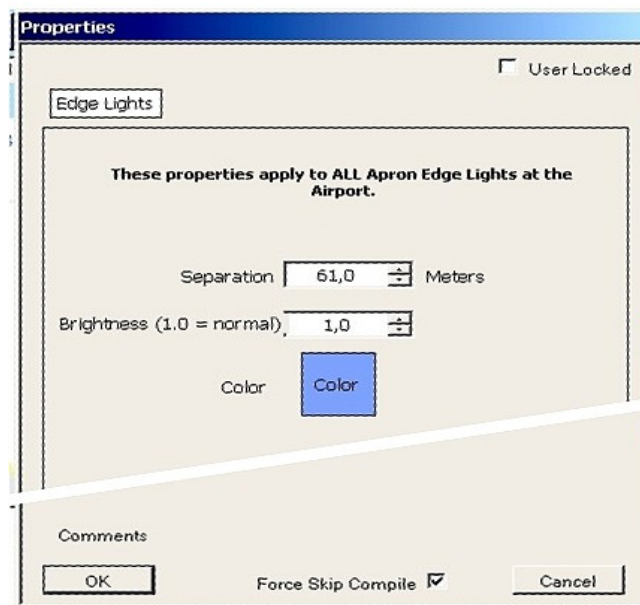


Figure 4-45: Apron Edge Light Properties Dialog Window

In the properties window there are only three parameters, which can be edited:

- **Separation** – Separation is the distance between lights in a string of lights. The maximum (default) separation distance for all stock airports is 200ft (60.96m).
- **Brightness** – Brightness is how bright the lights appear. 1.0 is the default brightness. Increase the value for brighter lights and decrease it for dimmer lights.
- **Color** – Click the colored area to open a color picker and select the new color. The default color is Blue.

Note: Any change of these properties is valid for all apron edge lights at an airport. It is not possible to change them individually.

4.4.3 Separation and Edgelight Line Length

The rule is, that the "separation" distance must be smaller than the total length of the edge light line, regardless how many vertices are placed in between. If the separation is larger, then only one single light will be visible at the start of the edge light line.

Edge light property values are saved in the ADE file. ADE will read values for color and brightness from a .BGL file but will always default the separation to 200ft. ADE does not read the separation information from the .BGL file because of the way that ADE calculates separations.

Values for each string can be slightly different and are generally slightly less than the specified separation. Repeated loading and saving of the airport project would soon result in edge light separation of only a few feet!

4.5 Parking

This element is used to add a parking spot to the taxiway network. Taxiway parking spots can have preferred airline designations. Since the network will contain many taxiway points (and possibly parking spots), each of these locations need to have an 'index' that uniquely identifies a point when building the network.

You can place any number of parking ramps or gates at an airport. Parking spots cause no perceivable performance problems by themselves, but if you load them up with dozens of AI aircraft, especially detailed add-on aircraft, you will observe a frame rate drop when you go to that airport.

You can place parking spots anywhere you want, but you must connect them to the taxiway system or AI aircraft and airport vehicles (in FSX/P3D only) will not function properly at your airport. Also in FSX they must not be too far away from an animated jetway.

4.5.1 Creating Parking

Click the Parking Tool button on the Toolbar.

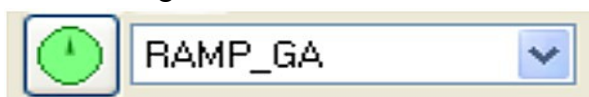


Figure 4-46: Parking Spot Icon

The pointer will change to a parking tool symbol "add Gate". You can preselect the parking type from the drop-down lists beside the Parking Tool button or you can create the parking spots first and set the types and codes later.

You can place a parking spot by just clicking on the airport schematic while the parking tool is active. If you need to precisely place parking spots in the visual scenery, at boarding bridges (jetways) for example, you can use the aircraft position on the Flight Simulator window as a reference. Slew the aircraft until it is positioned where you want to put a parking spot, and then place the center of the parking tool over the aircraft indicator.

In this Add Gate mode the circle cursor is sized to the working size of the parking type being added. This also means that the cursor effectively gets bigger when the user zooms in. This Zoom is limited by ADE to the value 5

It is usually easier to create all the parking spots first then link them to the taxiway network afterwards. To facilitate this process, you can copy and paste ramps and gates as needed.

4.5.2 Parking Properties

To view or modify a parking spot's properties, double click a parking spot to bring up the Properties window.

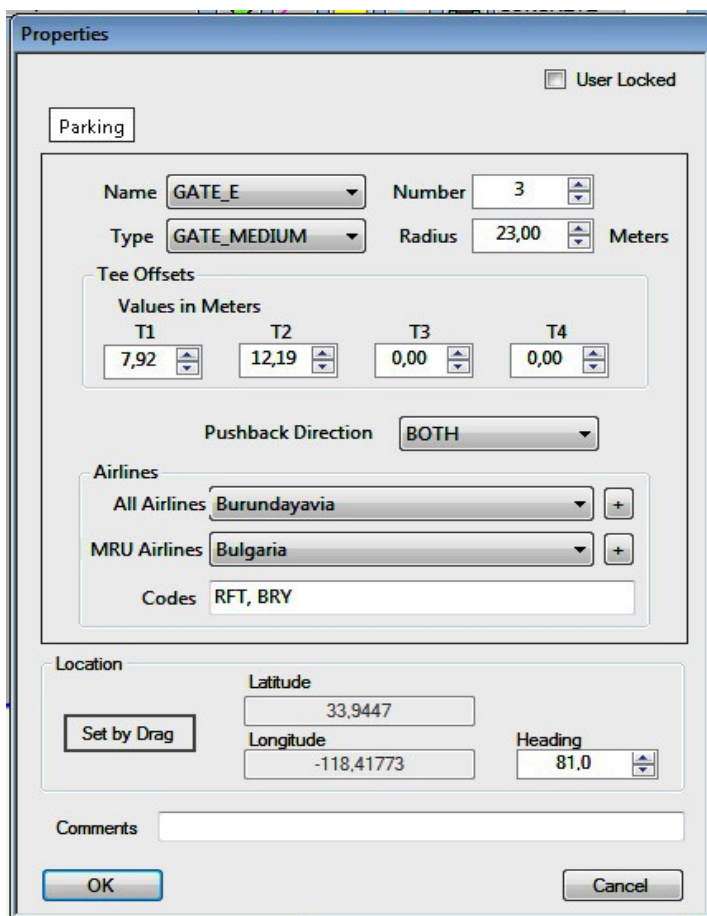


Figure 4-47: Parking Properties Dialog Box

- **Name** – This is the part of the airport (e.g. NW Parking) or the gate group (e.g. Gate A) for this parking spot. A gate group is usually a separate terminal or concourse. Smaller airports may just have 'Gate.' This parameter, along with the number parameter below, determines how the parking spot will be labelled in the FS9/FSX/P3D Start Positions list and in the ATC "taxing to parking" menu.
- **Number** – This designates the individual gate or parking spot. This number goes along with the Name field, for example "Parking 14" or "Gate 12" or "Gate B5." Note that FS does not permit letters after the number, for example "Gate 12B."

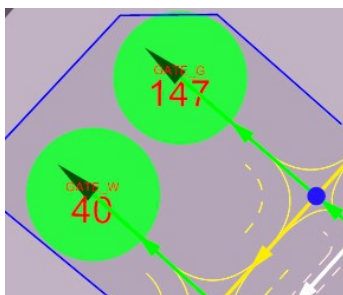


Figure 4-48: Numbered Parking Spots

The display of **Number** can be switched on/of via an option in the Rightclick Menu. When a Parking Spot is selected, it's Rightclick Menu contains the option "Display Options". This will open a small properties window.



Figure 4-49: Display of Parking Number

A click on the status will provide the choices "True" and "False"

- **Parking Type** – Parking types have labels like "Ramp GA small" and "Gate Medium." These appear in the Start Positions list for your own reference, but they can also be used to direct classes of AI aircraft to matching classes of parking. In FS9 there are 11 types available, in FSX 13 types.

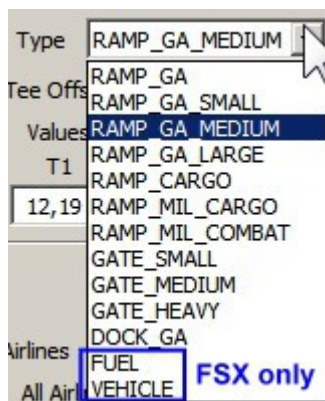


Figure 4-50: Types of Parking Spots

The parking Types "Fuel" and "Vehicle" are special.

- a Fuel Parking Spot is the prerequisite for the placement of a "Fuel Trigger" (see [chapter 6.8 Fuel Triggers](#))
- a Vehicle Parking Spot provides special services for aircraft, which are permitted to park there, for example calling the Fuel Truck or opening the fuel window.
- in default both parking types are displayed in different colors:

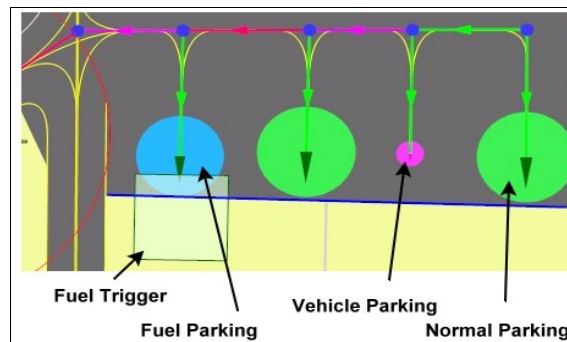


Figure 4-51: Fuel and Vehicle Parking

- The Parking Types “**Gate**” and “**Ramp_Cargo**” is in FSX a special case, since FSX places there and only there a “Pushback Tug”, a “Baggage Loader” and a “Baggage Cart”. The Parking Type “Ramp_Cargo” only places a “Pushback Tug”



Figure 4-52: Aircraft with Pushback Tug

ADE does not show the Pushback Tug. But by using the parking spot radius and a simple calculation, Jim Vile (jvile) has shown in a little tutorial how to define the pushbacks position. It can be found in a contribution at :

<http://www.fsdeveloper.com/forum/showthread.php?t=425192>

- **Radius** – This determines what size of aircraft can use a parking spot. Every aircraft has a wingspan, which should fit into the parking spot. An AI aircraft will not park in a spot that has a smaller radius than the aircraft.
The measurement units for parking radius can be set to either feet or meters depending on your preference settings.

Note for FS9:

FS9 uses the radius value defined in the "model.mdl"-file to match up to a parking spot. The parking spot should be slightly larger then the model.mdl radius.

Note for FSX:

FSX uses the half wingspan value converted to meters then finds a parking spot slightly larger for the airplane to fit.

- **Tee Offsets** – Both FS9 and FSX have a "Parking Tee", which is used to position aircraft when they park.

In ADE the default position of the Tee can be brought forward and 3 additional Tees can be added. **(for FSX only)**



Figure 4-53: Parking Tee in FSX

FS9 displays the parking tee in the center ramps and gates.

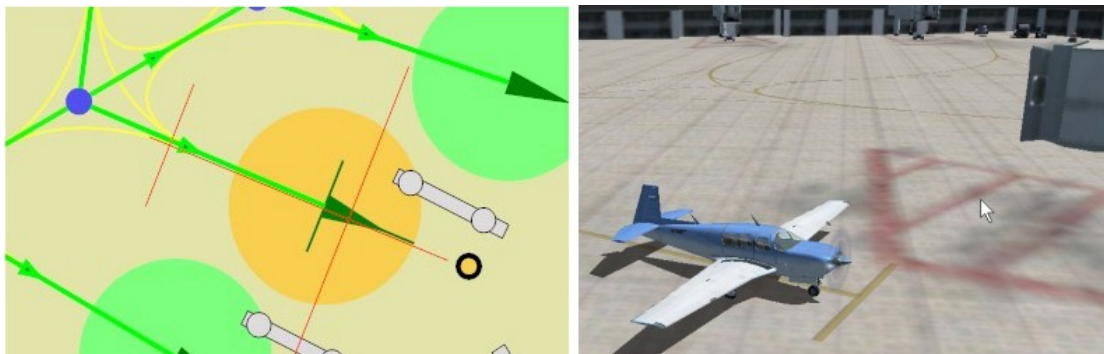


Figure 4-54: Parking Tee in FS9

For the AI traffic, tee offsets have virtually no impact, because the planes have different reference points and are not always the front wheel.

- **Pushback Direction** – This property of parking spots was always present in FS9 and FSX but Microsoft never implemented it. It is included now in ADE because some 3rd party payware add-on's do use it.
- **All Airlines/MRU Airlines** – This is a look up table for airlines and other aviation classes. When you select an entry from the list, for example a particular airline, and click the "+"-button, the ICAO code for that airline will be inserted in the Parking Codes field. You can repeat this to insert additional codes if needed.
- **Codes** – are Parking codes which allow you to assign gates to specific airlines or other designated aircraft. This requires matching codes to be entered in the aircraft.cfg file for the aircraft you want parking at those gates.
Multiple codes can be entered in this field separated by commas or spaces to specify other airlines that may also use the parking space if it is available. You can type codes directly into this box, if you know them already, or you can use the All Airline List to look up a code holder by name and insert the code.
The code must not exceed four characters, five and more will cause the compile to fail. Therefore it is best to use ICAO airline codes where possible to maintain a common standard.

4.5.3 Rotating a Parking Spot

The aircraft stick-symbol in the parking spot circle points in the direction aircraft will point when they start there. You can change the direction by selecting the parking spot symbol and grabbing the rotate handle (dot) that appears at the top of the symbol.

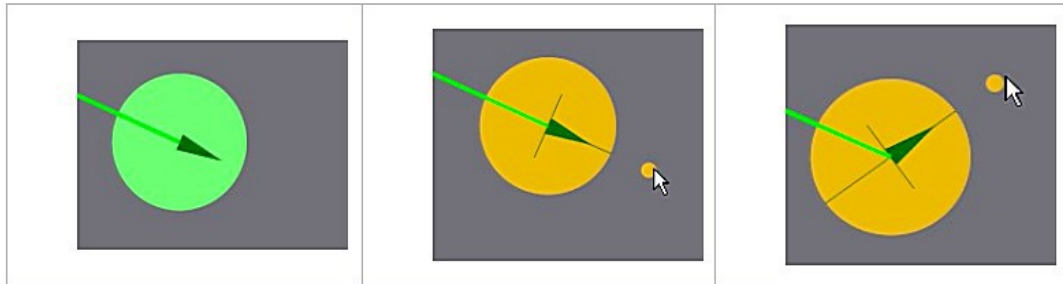


Figure 4-55: Use of the Rotate Handle

The symbol will rotate around to follow the mouse pointer until you release the mouse button. Provided you keep the mouse pointer over the rotate handle, the current heading of the parking spot will be shown in the Tool Tip. You can also rotate a parking spot by changing the heading in the Parking Properties window.

A quick way to adjust the heading of a parking spot is using the "Alt" Key and mouse wheel. Use "Alt + Ctrl" with the mouse wheel to rotate more quickly.

As mentioned before, aircraft will start at a parking spot aligned with the heading of the parking circle. However, when an aircraft taxis into a parking spot it will not turn to that heading, but instead will remain at the heading of the parking connector when it stops. If you want the aircraft to both start and stop at the same heading (essential for jetway parking) then ensure the parking connector is in-line with the aircraft symbol. This may require inserting a taxiway point close to the parking spot to allow the aircraft to turn to the desired final heading.

4.5.4 Deleting Parking Spots

To delete a ramp or gate, select a parking spot with the mouse and press the "Del" key.

4.5.5 Parking List

A list of parking ramps and gates is available under the menu **Lists > Parking**.

Type	Name	Number	Index	Radius Meters	Heading	Airlines	Jetways	Lock	Custom Hide
GATE_SMALL	GATE_D	92	060	18.00	005.0		No	None	No
GATE_SMALL	GATE_D	94	061	18.00	005.0		No	None	No
GATE_MEDIUM	GATE_E	75	062	23.00	185.0		No	None	No
GATE_MEDIUM	GATE_E	77	063	23.00	185.0		No	None	No
RAMP_CARGO	PARKING	25	064	50.00	060.8		No	None	No
RAMP_CARGO	PARKING	26	065	50.00	240.0		No	None	No
FUEL	PARKING	27	066	16.00	148.3		No	None	No
GATE_SMALL	GATE_B	19	067	18.00	260.7		Yes	None	No
RAMP_CARGO	PARKING	28	068	50.00	240.0		No	None	No
RAMP_CARGO	PARKING	29	069	50.00	062.2	ITO, CLP	No	None	No
VEHICLE	PARKING	30	070	5.00	236.4		No	None	No
VEHICLE	PARKING	31	071	5.00	270.0		No	None	No
RAMP_GA_LARGE	PARKING	32	072	18.00	131.6		No	None	No
GATE_MEDIUM	GATE_G	9	073	23.00	097.1		Yes	None	No
GATE_SMALL	GATE_F	7	074	18.00	112.6		Yes	None	No
GATE_SMALL	GATE_G	53	075	18.00	268.8		Yes	None	No
GATE_SMALL	GATE_G	55	076	18.00	269.0		Yes	None	No
GATE_SMALL	GATE_G	3	077	18.00	090.0		Yes	None	No

Figure 4-56: Parking List

Note: The parking spots can be moved in the list to another level by simply dragging the entry to another place. After closing and re-opening the list, the moved parking spot will have the new index number.

In the Parking List one parameter is shown, which is not in the Properties window, namely "Index". This parameter plays an essential role in defining the parking network of an airport, together with "Airline Code", "Type", "Name" and "Radius", which are explained above.

They form the essential elements for the assignment of parking for the AI aircraft.

4.5.6 Assigned Parking Spots

A parking spot is called "assigned", when one or several codes have been inserted in its properties window under "Airlines => Codes" (see figure 4-47).

An assigned parking spot changes its color from green to a color, which must be defined in the "parkingSpec.dat"-file in either the FS9-folder or in the FSX-folder of ADE. The four numbers are for Transparency, Red, Green, Blue. 255 means that there is no transparency.

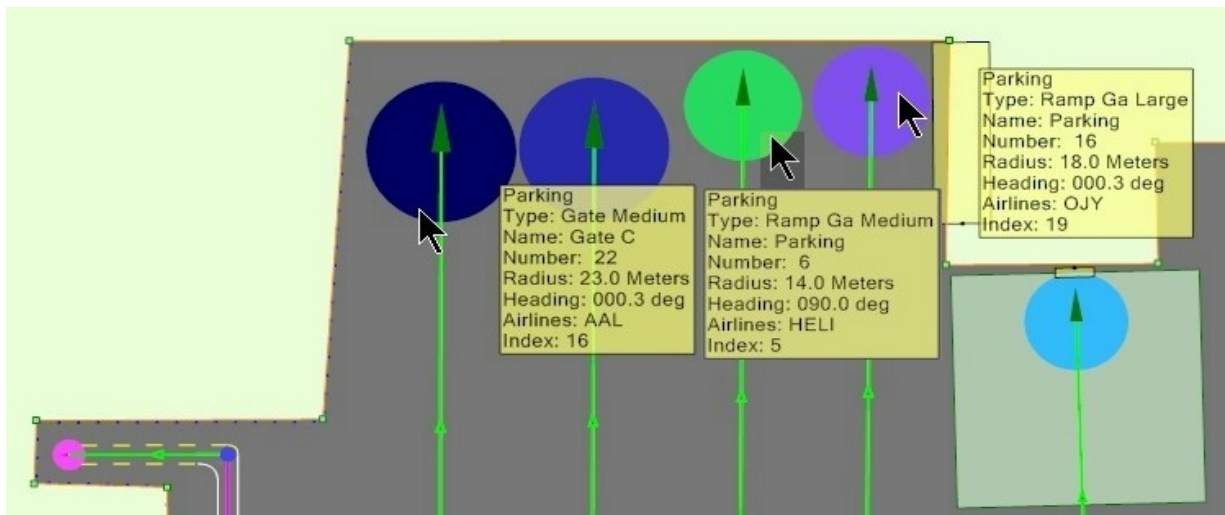


Figure 4-57: Assigned Parking Spots

The tooltips on this figure show two examples (AAL and OJY), whose colors are defined in the following lines:

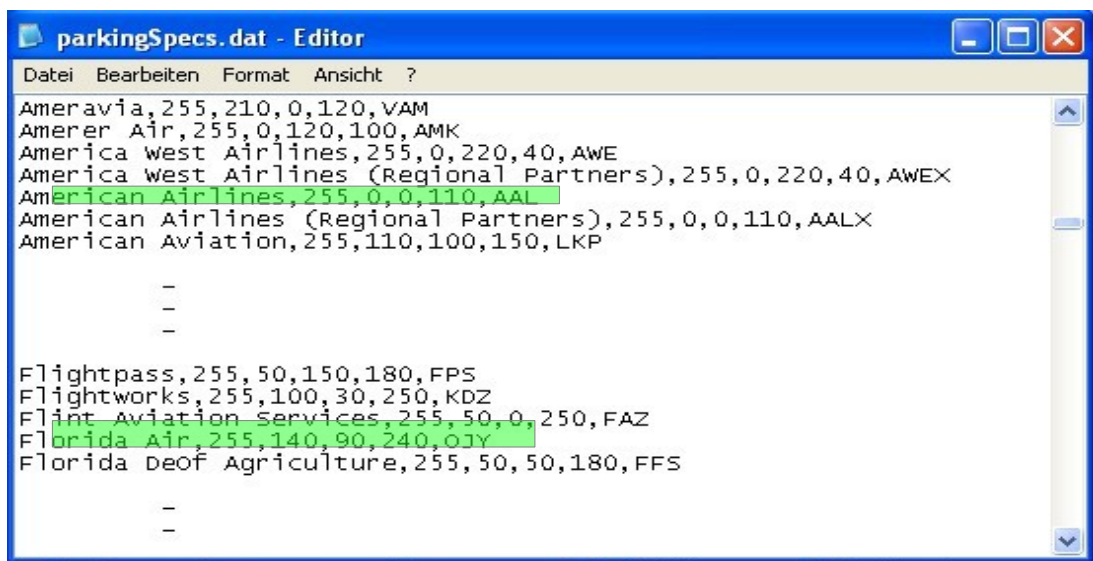


Figure 4-58: Color Definition in ParkingSpecs-dat

The third tooltip in the middle shows also an assigned spot (HELI), but since it was not inserted into the parkingSpec.dat-file (via a text processor), the color remains default green.

The colors are a help to show how many parking spots have a certain type airline or assign parking.

In order to make an aircraft compatible with allocated parking spots, two lines containing the "parking type" and "parking code" must be inserted in the "aircraft.cfg"-file:

Note:

FS did not assign any parking code in any parking spot nor in any aircraft.cfg for all the default airports and airplanes. A 3rd party airport designer must add assign parking manually first in the properties window, in the aircraft.cfg and then in the parkingSpec.dat-file

```
[fltsim.0]
title=Boeing 737-400 AI_USA_aia
sim=aia_737_400
model=
panel=
sound=
texture=USA
atc_id=N565US
atc_airline=US Air
atc_flight_number=9878
atc_parking_types=GATE <----- this line
atc_parking_codes=USA <----- this line
ui_manufacturer=Boeing
ui_type=737-400
ui_variation=US Air
description=AI Aardvark 737-400
atc_id_color=0000000000
visual_damage=1
atc_heavy=0

[fltsim.11]
```

Figure 4-59: Manual Assigning

4.5.7 Limitation of Parking Spots Assigned to Airlines in FS9

The "Index" number in the Parking List is not only a consecutive listing number of parking spots, but also one of several decision qualifiers for the FS on the priority to chose a parking spot for an user or AI aircraft. The smaller the index, the higher the priority. The priority can be changed by moving a particular parking spot to an other level as described above.

There are parking spots, which have an airline code assigned to it, as explained above for the parameter "Airline" in the Parking Properties Window.

In FSX the number of parking spots with assigned airline codes does not have a limit.

In FS9 an airline code can be assigned only to a parking spot with an index number below 255. A higher number will be rejected by the compiler.

This seems to be straight forward but it is not!!

It is not the absolute number of "assigned" parking spots in the list which must be lower then 255, but it is their "Index" number.

A parking spot with assigned airline code, having the index number 255 (or higher) will prevent a successful compiling, even when there are in total only 15 parking spots with assigned airline codes.

That means, that parking spots with assigned airline codes should be located in the parking list from index number 000 to 254 only.

ADE meets this concern by issuing several warnings.

- The "Assigned Parking Status" in the Status Bar of the ADE-display will show an error message, if there are "assigned" parking spots with index values over 254.
- The offending parking spots themselves get a red edge.
- The tooltip, when touching an offending parking spot will also warn of the error situation

The Fault Finder (Tools menu) will find this fault under Parking

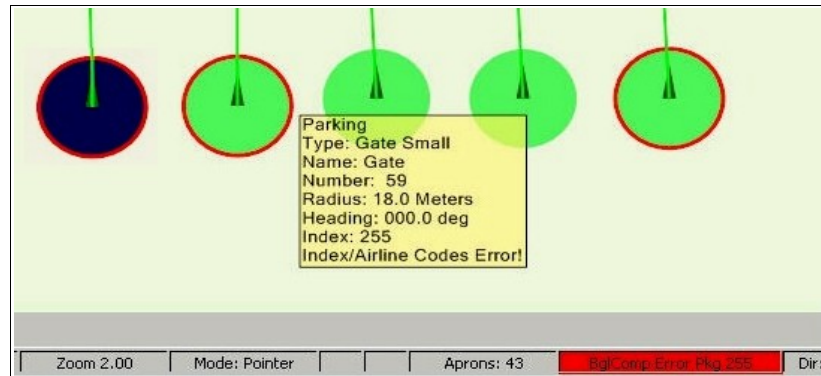


Figure 4-60: Index Value over the Limit of 254

4.5.8 Randomize Parking

ADE allows you to randomize parking at your airport to keep AI aircraft from bunching together at one terminal or in one area of a terminal. This bunching occurs due to how the FS determines where to park AI aircraft.

To randomize your airport parking, press the Randomize button on the parking list dialog box. You can press this button as many times as you want; however, if you want to return to the initial order, press the Original button. To manually select the order of parking, you can drag and drop the parking ramps and gates in the list as well.

For FS9 don't forget after randomizing to bring back any stray assigned parking spots back to the 000 - 254 index group.

4.6 Tower View

Most airports will have a tower viewpoint even if they do not have a physical tower. ADE will always create one when you make a new airport.



Figure 4-61: Tower View Symbol

If a tower viewpoint is not present and you want one, select "Add" and then "Tower" from the Rightclick Menu.

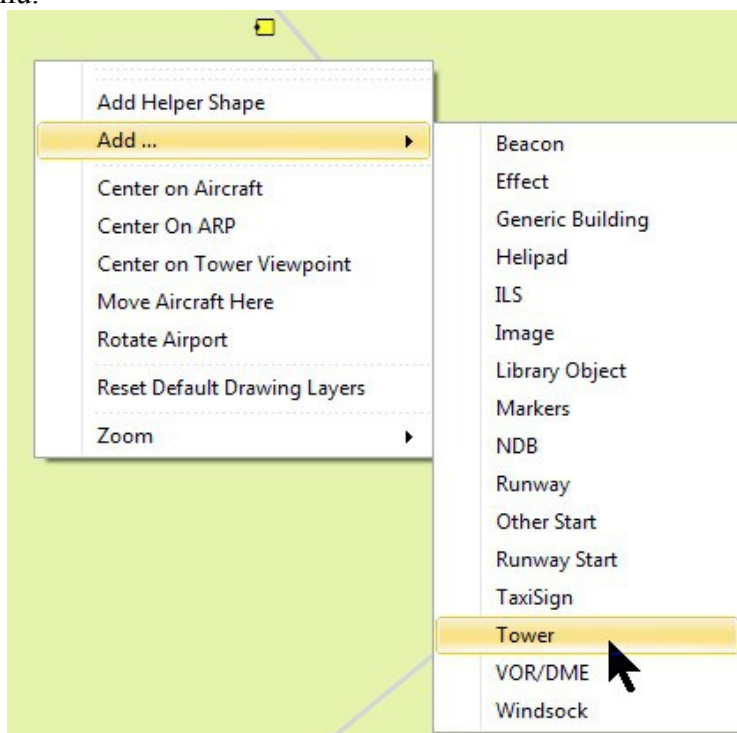


Figure 4-62: Add Tower from Rightclick menu

You will only see this option if a tower viewpoint is not present at the airport. The properties window will open so you can set some properties.

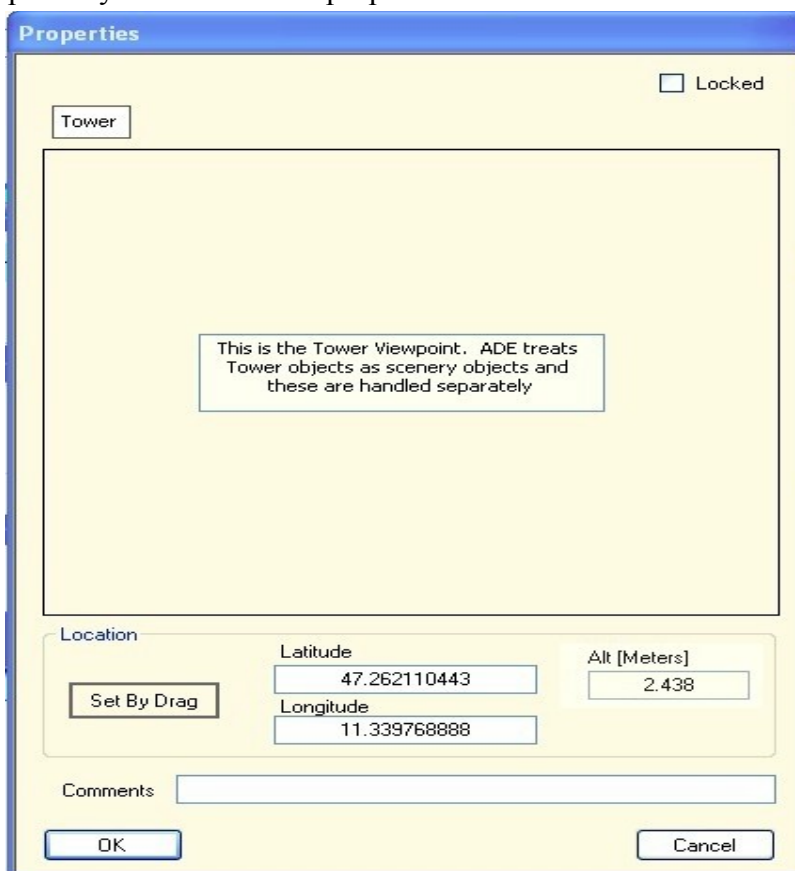


Figure 4-63: Tower Viewpoint Properties Dialog Box

Many FS stock airports have a tower object linked to the tower view. In some cases there may be several of these. This can give rise to all sorts of problems and cause buildings that look nothing like control towers to disappear from airports. ADE overcomes this issue by disassociating the tower object from the tower viewpoint and treating it like all other library objects.

The only properties you can edit for a tower object are the location and altitude of the tower viewpoint.

Note: While you can delete a tower viewpoint, it is generally not a good idea to have an airport without any tower viewpoint.

4.7 Start Locations

Start Locations determine the starting position of your aircraft at an airport and are displayed under “Choose runway/starting position” in FS9/FSX.

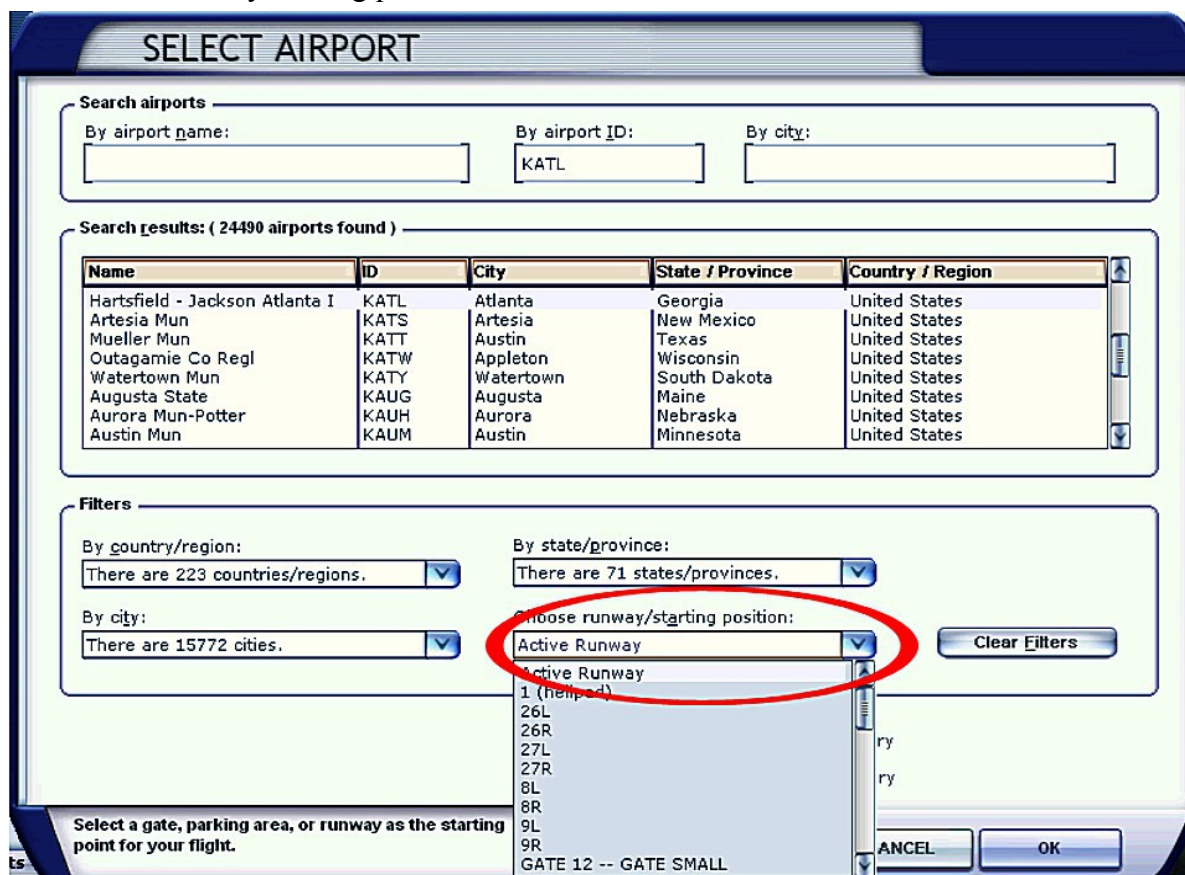


Figure 4-64: Start Position in Flight Simulator Settings

There are two types of start locations in ADE: Runway Starts and Other Starts. Runway starts are only located at the end of runways, but other starts can be located anywhere on your airport project (e.g. helipads).

To add a runway start, select "Add" and then "Runway Start" from the Rightclick Menu. A simple dialog box will open.

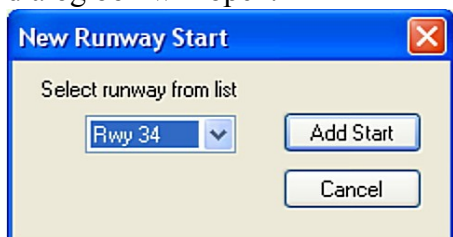


Figure 4-65: Add a Runway Start

Select the runway (only those without starts will be listed) and click "Add Start". ADE will automatically create the start and place it with the correct heading near the end of the appropriate runway. If it is not quite in the right place, you can drag it into place.

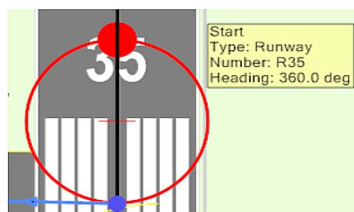


Figure 4-66: Symbol of Start Point

To add an Other Start, select "Add Other Start" from the Rightclick Menu

A different dialog box will open with additional start location properties

Figure 4-67: Other Start Location Properties Dialog Box

From this dialog box, you can choose the Start Type, Runway Number, and Runway Designator.

Regardless if the other start is a runway, you must assign a unique start type / runway number combination to it. For example, if you create a helipad and now want to add a start location at your new helipad, you should select start type Helipad, and assign it a runway number that is currently not in use with another Helipad start type.

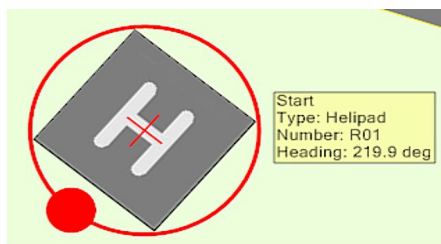


Figure 4-68: Other (Heliport) Start

Failure to assign a unique start type / runway number combination to each of your other starts will result in a compilation error.

You can reposition start locations simply by both selecting them and dragging them into position or by changing their location properties using Edit from the dialog box.

To delete start locations, select it with the mouse and press the "**Del**" key or choose Delete Object from the Rightclick Menu

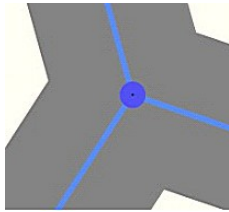
5.0 Taxiway Network

The network of taxiways on a large airport is a rather complex system. Therefore a whole chapter is devoted for this basic airport element

5.1 Taxiway Points

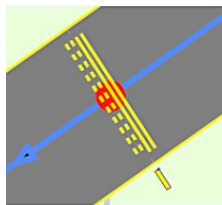
An airport needs for the movements of aircraft and vehicles a network of runways and taxiways. In the Flight Simulators this network is formed by several types of links, which are bounded by taxiway points.

Taxiway points are the points where links are joined. They can exist by themselves although they are useless in that form. There are three types of taxiway points:



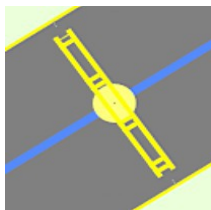
Normal taxiway points are used for the vast majority of link connections, including those on runways and aprons. Where links join at a taxiway point there will be a junction, and the Flight Simulator will automatically generate the curved fillets between adjacent link surfaces.

Figure 5-1



Hold-Short taxiway points create visible hold-short bars on the link. ATC also uses these taxiway points as checkpoints for takeoff clearance. If hold short taxiway points are too far from the runway it can cause AI aircraft to freeze at the runway. See Hold-Short Limits below.

Figure 5-2



ILS Hold-Short taxiway points also create visible markers. They are placed behind normal hold short markers on some runways to have aircraft hold further back during Instrument Meteorological Conditions (IMC). It does not appear that ATC or AI use this type of taxiway point for anything special.

Figure 5-3

5.1.1 Creating Taxiway Points



Figure 5-4: Taxiway Point Icons

Select the "Add Taxi Point" Icon on the Toolbar for the appropriate point type. The mouse pointer will change to a colored cross with the name of the type.

You seldom need to create taxiway points by themselves, when you use the link tool it will automatically create taxiway points where needed as you draw links; however, if you do need to draw individual taxiway points then you can use a couple of methods.

You can place taxiway points anywhere you want by clicking on the main ADE display while the taxiway point tool is active.

5.1.2 Properties of Taxiway Points

Taxiway points can be edited. When selected with a Left Click a subsequent rightclick opens the Rightclick Menu. There the entry "Edit Object" leads to the property window of the taxiway point.

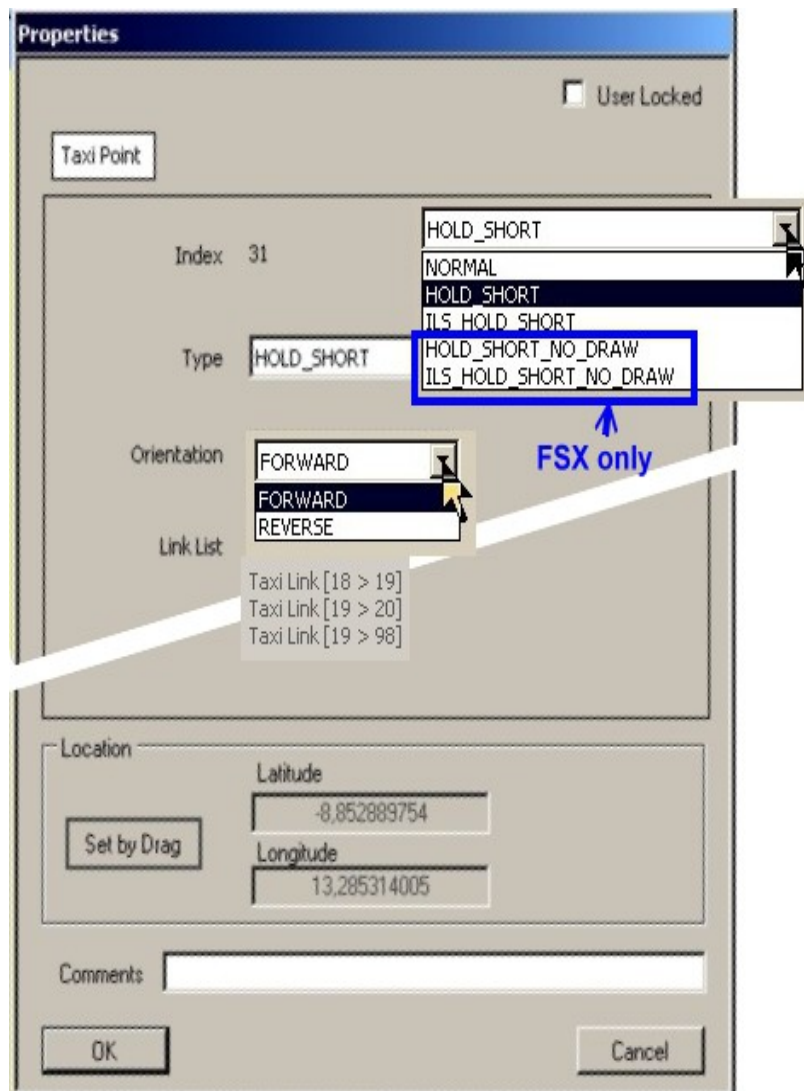


Figure 5-5: Properties of Taxiway Points

Here the user has the opportunity to edit the point, i.e. changing a parameter.

- o **Index** - a Taxiway network contains many taxiway points (and possibly parking spots), each of these locations need to have an 'index' that uniquely identifies a point when building the network.(see below [chapter 5.1.4 Taxi Points Index](#))
- o **Type** - the three standard types are described in the header of this chapter. In FSX there are two more (see figure 5-5 above). They inhibit the drawing of the lines while the points retain their properties.
- o **Orientation** - Forward and Reverse - valid only for Hold Short Points. It has a dashed and a solid line. If the lines are facing the wrong way we change their orientation.
- o **Link List** - a parking spot can be attached to several links. This little list shows them all.

- o **Standard parameters** - are those, which are common to all airport elements (such as "location"). They are explained in **chapter 14.6 Object Properties**

5.1.3 Display Options for Taxi Points

The Rightclick Menu option "Display Options" allows you to set the way that ADE displays Taxi Points. It opens the properties window with display options for taxi points

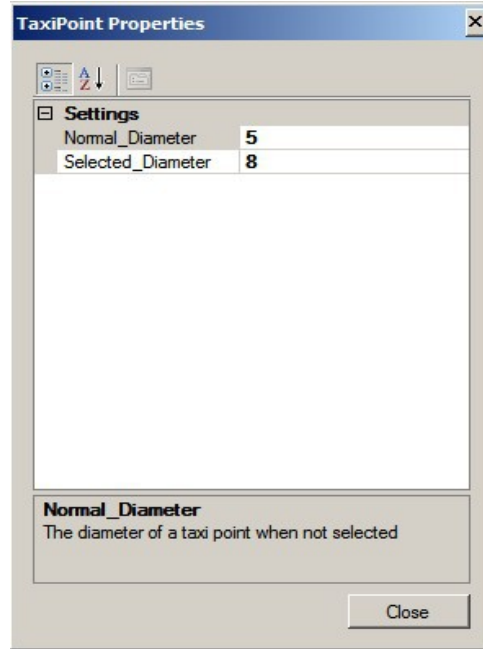


Figure 5-6: Taxiway Point Display

One can change the size of the normal (unselected) point and for the selected circle that represents the point.

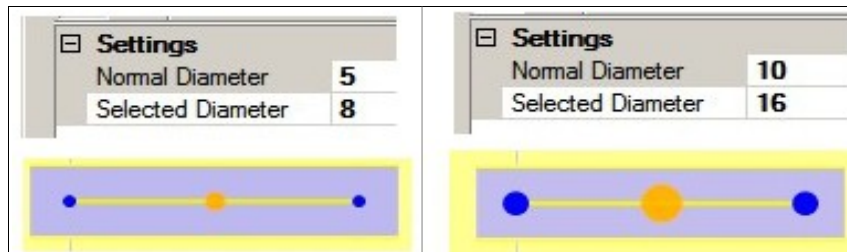


Figure 5-7: Effects of Display Settings-menu

To dismiss the dialog window click the "Close" button. Note that the changes are committed as soon as you make them in the property window. If you are not happy with the result then go back and change them again.

5.1.4 Taxi Points Index

When working on the taxi network you are most likely adding and deleting taxi points as you go along. The actual status of Taxi Points can be seen in the list under "Lists => Taxi Points". The adding and deleting actions can be undone. ADE provides unlimited undo levels. As a result you cannot re-use index numbers for deleted objects or undone added objects. If you did then there is a risk that the same index could be used twice. So after a session it is very likely that some index values will be unused and the numbers will not be sequential. ADE will re-use any available numbers as soon as it can.

There is a limit imposed by the Microsoft Compiler for the maximum taxi point index. This is 3999. Such a high number is unlikely to affect most users. However for large and complex airports it is possible to get close.

In the meantime if you reach a point where the largest index you have used is more than 2000 then ADE will offer you a chance to recover any spare index numbers. To do this it will clear your undo/redo history so you should only do this if you are really getting short of numbers!

If you do try to add a taxi point that would take you over the maximum of 3999 then ADE will tell you and will not add the point.

If the highest index number used exceeds 2000 then you can re-index. In this situation the Taxi Point List will show a button called "Re-Index".

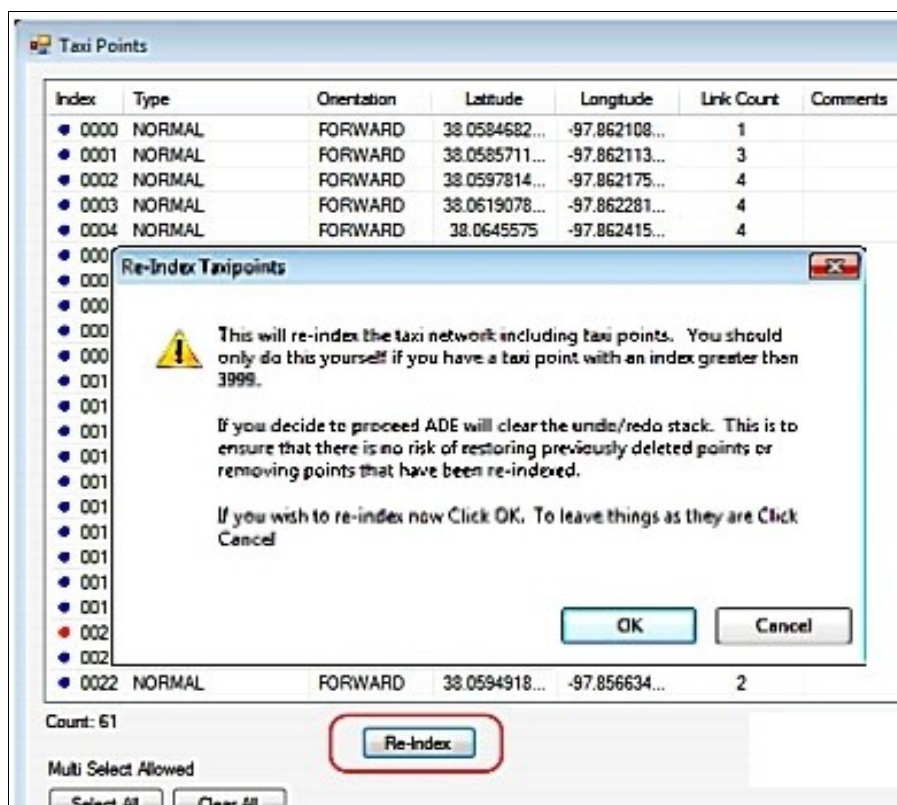


Figure 5-8: Re-Index in the Taxiway Points List

Clicking this button will display the warning message and remind you that you do not need to re-index if your highest index is less than 3999. The message also tells you that you will lose the ability to undo any previous actions. Click OK and ADE will re-index the taxi points and recover any unused numbers.

5.1.5 Hold-Short Taxiway Point Limits

A hold-short taxiway point on an entry to a runway will not work if it is too far from the edge of the runway. That will result in ATC never giving you takeoff clearance and AI aircraft will stop at the hold-short taxiway point and get stuck there.

ADE uses the same distance AFCAD used to draw the red circle which is about 235 ft.. Note that the maximum distance is from the edge of the runway, not the center line. FSX changed the holdshort distance from the runway edge.

If the taxiway is 90 degrees on to a runway the holdshort distance can be up to 300 ft. If the taxiway is at an angle to a runway the holdshort distance can be up to 600 ft.

This limit does not apply to exits and ILS hold-short taxiway points which are apparently not used by AI or ATC.

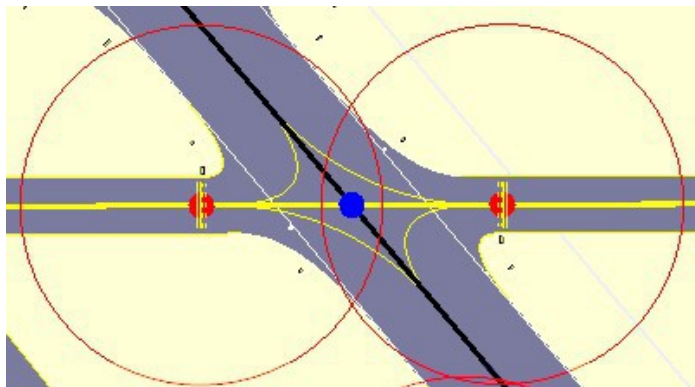


Figure 5-9: Limits of Hold Short Points

ADE will display 225 foot radius circles around all the hold-short taxiway points to show the maximum allowable distance. This can be enabled by checking the "Hold Short taxiway point Limits" entry under the View Menu (see chapter 12.3 View Menu).

Note that hold short distance limits are only crucial where AI aircraft actually enter the active runway for takeoff. AI aircraft enter a runway at the taxiway entrances closest to the ends of the runway.

Hold-short taxiway points at other locations along the runway will not normally be used for AI entry. Also, hold short taxiway points should only be used where taxiways enter or cross runways and not as 'stop signs' around the airport.

A problem can occur when two or more aircraft line up at a hold-short taxiway point for departure, the aircraft at the front of the line may get clearance and proceed to take off, but the aircraft behind him may become stuck. This problem is more likely to occur with smaller aircraft. This can be prevented by placing a normal (blue) taxiway point or an ILS hold-short taxiway point just behind the hold short taxiway point. Some experimenting has shown this second taxiway point should be no more that 70ft (21.3m) behind the hold-short taxiway point to work with all sizes of aircraft. As a rule of thumb, just place the taxiway points so they touch or overlap slightly.

5.2 Taxiway Links

A taxiway link connects two taxiway points or connects a taxiway point with a parking spot.

5.2.1 Link Types

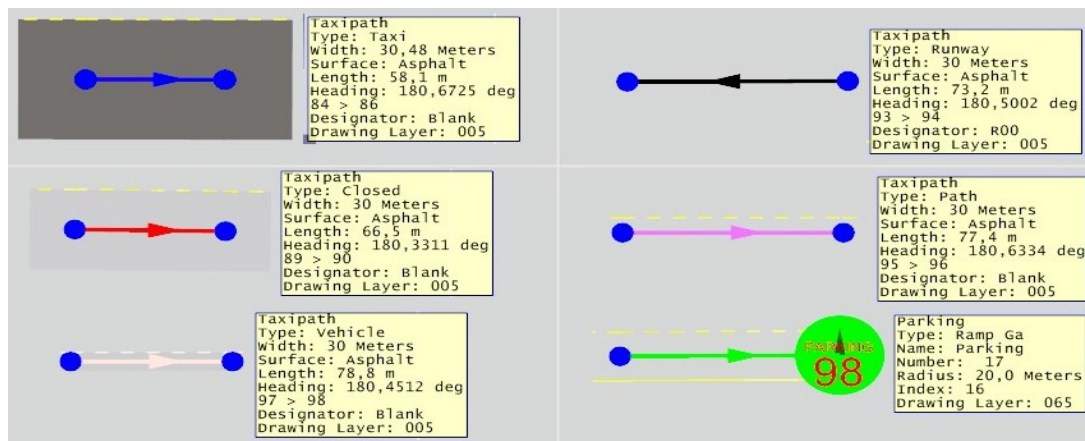


Figure 5-10: Taxiway Links

There are six types of links:

- o **Taxi Links** - are used for most taxiways. These create taxiway segments with the width, surface (e.g. pavement), markings, and lights specified in the Taxi Link Properties window. AI also follow these lines to get from parking to the runway or the other direction.
- o **Closed Links** - have the same characteristics as Taxi Links. Note that this does not close the taxiway to AI aircraft. It adds only yellow crosses to the markings.
- o **Runway Links** - run down the center of runways. A taxi line is needed on a runway to guide the AI while taxiing on or off the runway. ATC will avoid routing user and AI aircraft down black taxi links while moving around the airport unless there is no other available Taxi Link.
Runway Links are actually invisible in the Flight Simulator and will display no marking or lights, as they are only intended to coincide with runways that have their own surface textures, markings and lights. That implies that they are not attached to the runway.
However, runway links do have width. Runway Links should have the same width as the runway that it mates with so that the fillets, that are generated where taxiways join, will appear to merge onto the runway even though they really merge onto the invisible runway taxi line.
- o **Apron (Path) Links** - have no surface texture (e.g. pavement) of their own but can have markings and lights. These are intended to be used over aprons that have their own surface textures, although you can also use a Taxi Link if you want a separate surface.
It is unknown if apron lines have any special meaning to ATC or AI aircraft. It may be that AI aircraft avoid cutting-through aprons where they could otherwise use normal taxiways.
- o **Parking Links** - are similar to apron taxi links in that they have no surface texture but can have markings and lights. You don't need to select that link type when creating them, any link that connects to a parking spot will automatically become a parking link. Note that you can't connect two parking spots together with a single link.
- o **Vehicle Links** - are specifically used by airport traffic. If there are no vehicle links the vehicles will use the normal taxiway network and may come into contact with aircraft. Vehicle links are generally narrower than normal links. They are usually connected to a vehicle type parking spot. **(For FSX only).**

5.2.2 Drawing Links

To draw a link, select the "Link Drawing" Icon for the appropriate link type from the Toolbar.

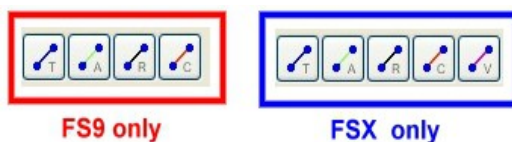


Figure 5-11 Link Icons

From left-to-right, these buttons allow you to create Taxi Links, Apron Links, Runway Links, Closed Links and Vehicle Links. The mouse pointer will change to the link drawing symbol, a colored cross with the link type name. Put the cross on the location where you want to start the link, press the left mouse button and leave it down while you pull the link line out to where you want it to end, then release the mouse button.

Before you begin to draw a new, unconnected link you have the chance to select one of 21 surfaces and the width of the surface in the following two input lines of the Tool bar.

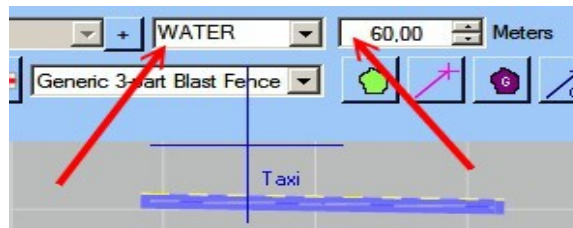


Figure 5-12: Surface Type and Surface Width

The values which are offered there are the default values stored by ADE. Each link type has its own default values.

They can be changed by the user only by selecting this link type again and choose another surface and /or width option. For a second method you need "ProKey", this is described in chapter 5.2.5.

5.2.3 Link Properties

You can change some of the properties of links. Bear in mind though that some changes do not make sense, and ADE will try to stop those happening. For example, changing a Parking Link to anything else is likely to cause your taxi network to become scrambled. As a result, ADE will not make certain choices available if they do not make sense.

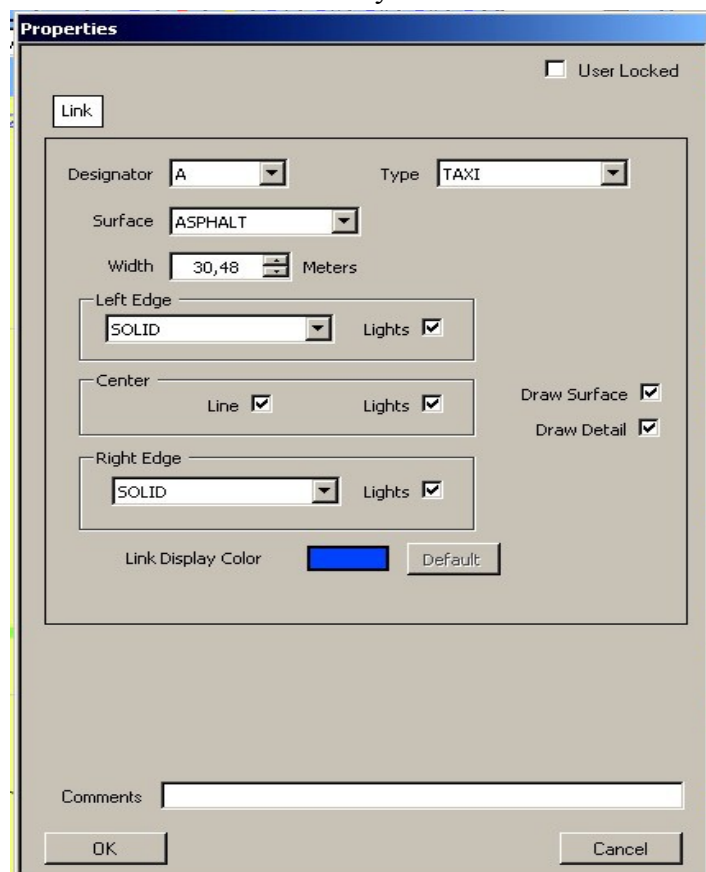


Figure 5-13: Link Property Dialog Window

Click on a link to select it, right click the selected link and select "Edit Object" from the Right Click Menu, or hit the "**Enter**" key when a link is selected to bring up the Properties window to examine or modify the settings which are offered there.

- **Designator** – Taxi-, Closed-, Apron- and Parking-Links can be assigned designators such as A, B1, C, etc. The designators are used by ATC when reading out taxiing instructions (see [chapter 5.2.8 Designators for Taxiways](#)).
- **Link Type** – You can either select the link type from the Toolbar Icons before creating the link or change it afterwards. Any link connecting to a parking spot will always be a parking connector and cannot be changed.
- **Surface** – The "pavement" of taxilinks is not available or visible for all link types. Runway-, Apron- and Parking-Links do not have a visible surface.
Note: Manual setting of runway link surfaces is possible in FS9

Taxi-links, Vehicle-links and Closed Links have a surface of their own, which can be chosen in their Properties window, as well as the line color.

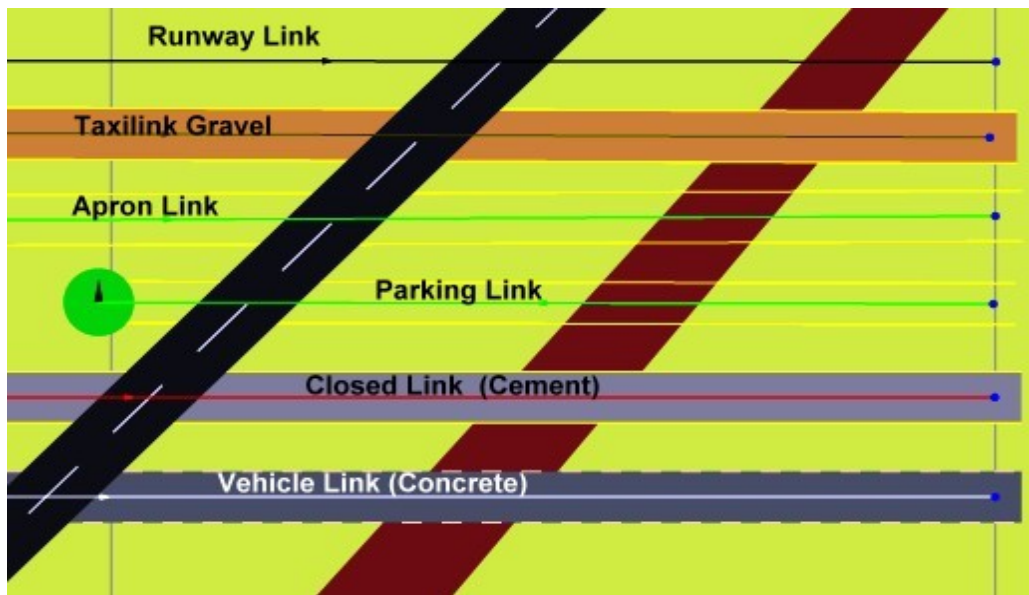


Figure 5-14: Surfaces of Link Types

Auto Set Link Surfaces – Parking & Apron Links should not show a surface type, but there is a bug in FSX that will allow this to happen.

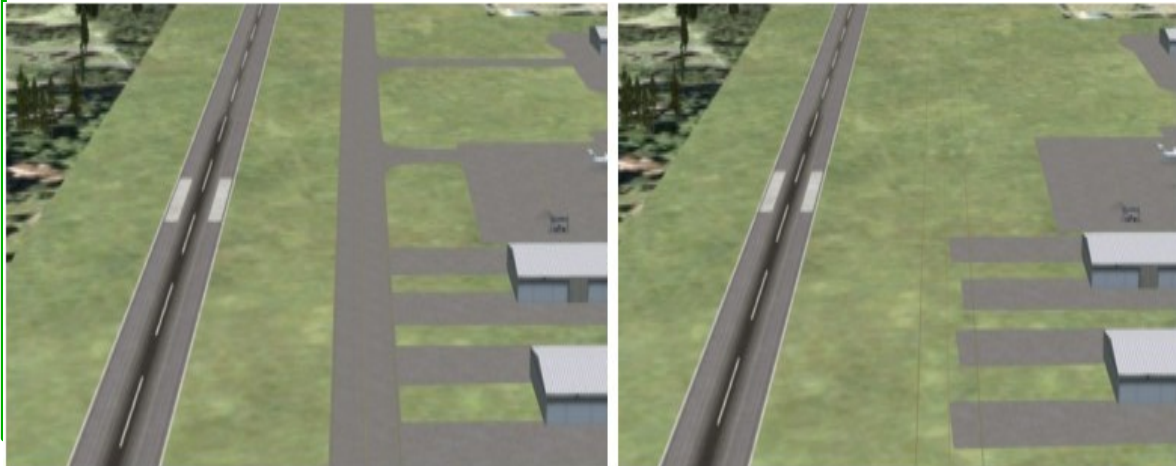
In the window "Program Options of "Settings Menu => Options => General" (see [chapter 12.8.1.1 General](#)) there is a selection box "Auto Set Link Surfaces".

By selecting this option, ADE will manage Parking and Apron Link surfaces to ensure that the surface type for these links matches the underlying aprons or Parking Spots.

Unchecking this gives you more control over the sometimes unexpected surfaces that can appear at certain intersections. Unless you want to handle these surface assignments yourself, you should leave this checked. **FSX only**

- **Width** – Specifies the width of the taxiway surface for normal links.
 For Runway Links this should match the width of the runway or it can be slightly smaller so there are no gaps where fillets meet the runway.
 For apron links there is no visible surface, but this will set the spacing for the yellow edge lines and lights.
- **Edge Lines and Lights** – All taxi link types except runway links can have lights and yellow lines. Left / Right mean the left or right side of the taxiway segment if you were standing at the taxiway point where the link was started from looking in the direction the link was drawn. To facilitate this, in the entry "Display Options" in the Rightclick Menu (see below) one has the choice of direction arrows included in a link-line

- **Link Display Color** – In this box the color of a link can be changed.
ADE now checks whether a taxi link color is default or not. If the user changes the type of a link with the default color then the link color is changed to the new default. If the link color is custom then it is retained
- **Draw Surface** - is not used
- **Draw Detail** – is only used by **P3Dv2**. The box must be checked or the taxiway will be invisible



"Draw Detail" is checked

Figure 5-15:

"Draw Detail" is unchecked

5.2.4 Display Options for Links

This feature offers three more parameters for editing taxiway links.

It is accessed by selecting a link, right-clicking it and choosing the entry "Display Options".

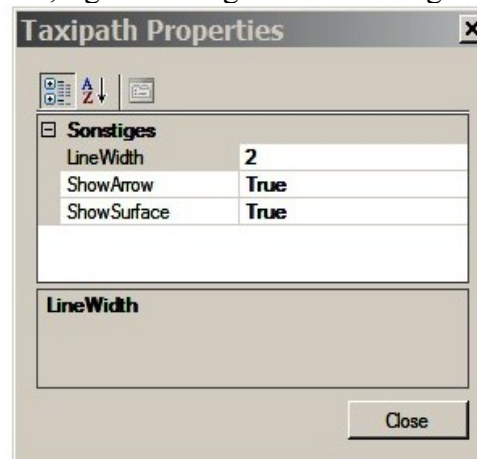


Figure 5-16: Display of Links

- **Line Width** - defines the width of the taxiway line in ADE, (not to be confused with the "Surface Width")
- **Show Arrow** - Links are sensitive to the direction in which they were drawn. The left and right edge markings depend on the "Link Direction" and also the allocation of surfaces (see below). To facilitate these operations, links have direction arrows as shown in figure 5-17.
In the line "Show Arrow" their display can be switched on and off.

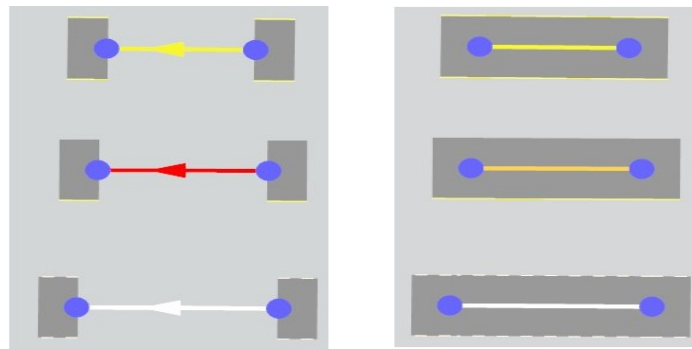


Figure 5-17:

Arrow "true"
Surface "false"

Arrow "false"
Surface "true"

- **Show Surface** - switch the display of surface on and off.

5.2.5 Default Settings (needs ProKey)

Taxi Links are the only airport element, which have two property windows, where parameters can be edited.

This option here, which needs ProKey, opens a dialogue window with the current default settings for Center Line, Lights, Markings, Surface Type and Width.

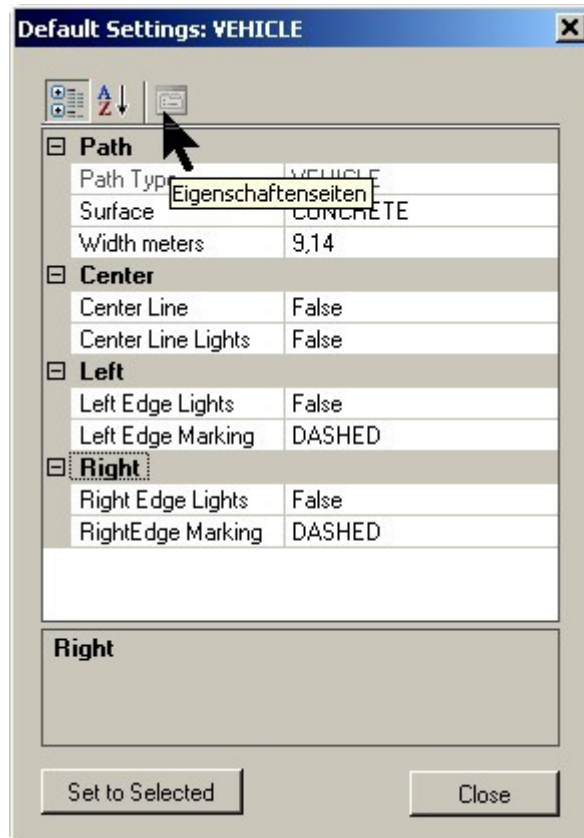


Figure 5-18: Default Settings for Links

All of them can be edited here.

Note that under "Left/Right => Edge Marking" there is an option "SOLID_DASHED". This was foreseen by Microsoft but never implemented. It does not work.

On top of the window are three buttons for selection of Category Display and Sorting. The third button has a tooltip but is not used.

5.2.6 Link Editing

o Moving Links

To change the location of a link select a link and drag it.

You can also move the taxiway points at either end until your link is correctly placed.

o Deleting Links

Select a link with the mouse and press the "Del" key.

o Reverse Direction

Taxiway paths have a left and right side which is defined when looking from the start taxi point to the end taxi point. This may sometimes matter especially if you have different markings on each side. If you have the directions arrows turned on for taxiway paths (see [chapter 5.2.4 Display Options for Links](#)) then you can see visually the direction of the link.

To reverse the direction, select the link with leftclick, then with rightclick you get several options, among them the entry "Reverse Direction". Clicking this entry will change the direction of the arrow.

o Automatic Link Splitting

Links cannot actually have taxiway points in the middle of the line. Taxiway points (or parking spots) can only be at the ends of a link. For this reason, if you connect a new link to an existing link, ADE will automatically break the existing link into two separate links. Although they will still look like a single line you can treat the links separately. If the cursor for the start or end of a new link is over an existing link, (tool tip visible for the link), a new taxiway point will be created in the existing link breaking it into two. Your new link will now connect to the existing one.

o Link Snapping

To ensure links snap to taxiway points or parking spots make sure that the taxiway point or parking spot tool tip is visible. ADE will snap a taxiway point into a taxi link to ensure that the link does not get kinked. You need to be close to the link to ensure this happens.

o Straightening Links

This function is available from the Right Click Menu.

There may be cases where you want a chain of links to be drawn exactly in line. This can be important when there is a change of surface or perhaps where a link needs to follow an exact straight path. Drawing a long link and then inserting taxiway points along it should ensure that everything is in line. However if you move something slightly or in your work want to make sure that links are in line, it is very easy to arrange.

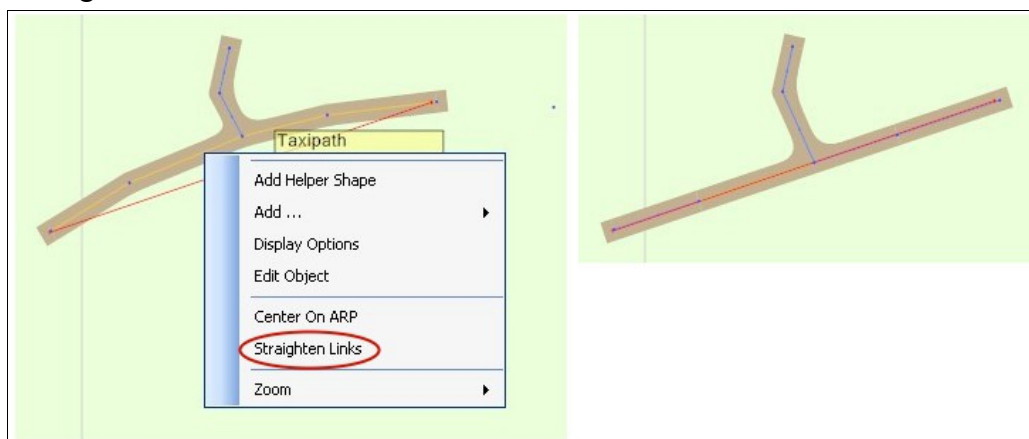


Figure 5-19: Straighten Link

To straighten a chain of links make sure the following criteria are met:

- Links need to be selected in sequence from one end to the other thus each link in the chain will have a common taxiway point with previous and next links
- The variation in heading between any two links at the common taxiway point must be less than plus or minus 10 deg.

If these criteria are not met then the option to Straighten Links will not be available on the Rightclick Menu. If the straighten option doesn't appear, the most likely cause will be the angle between two links.

In the example below we have drawn a guideline to make the small angle of difference between the links easier to see. First, select the two links to be straightened (left picture below):

If they meet the criteria set out above then when you right click you should see the option to Straighten Links. If this is not visible then check that the offset of the links is small (must be less than 10 deg) – drag the common taxiway point a bit to straighten things and try again. If you change your mind then you can just undo it using the Undo command.

5.2.7 Link List

All parameters of links are also shown in the list for links (from "Lists Menu"). Here links can be selected (single or as group) and edited.

The entries in the list can be edited, sorted and manipulated the same way as in all other List windows.

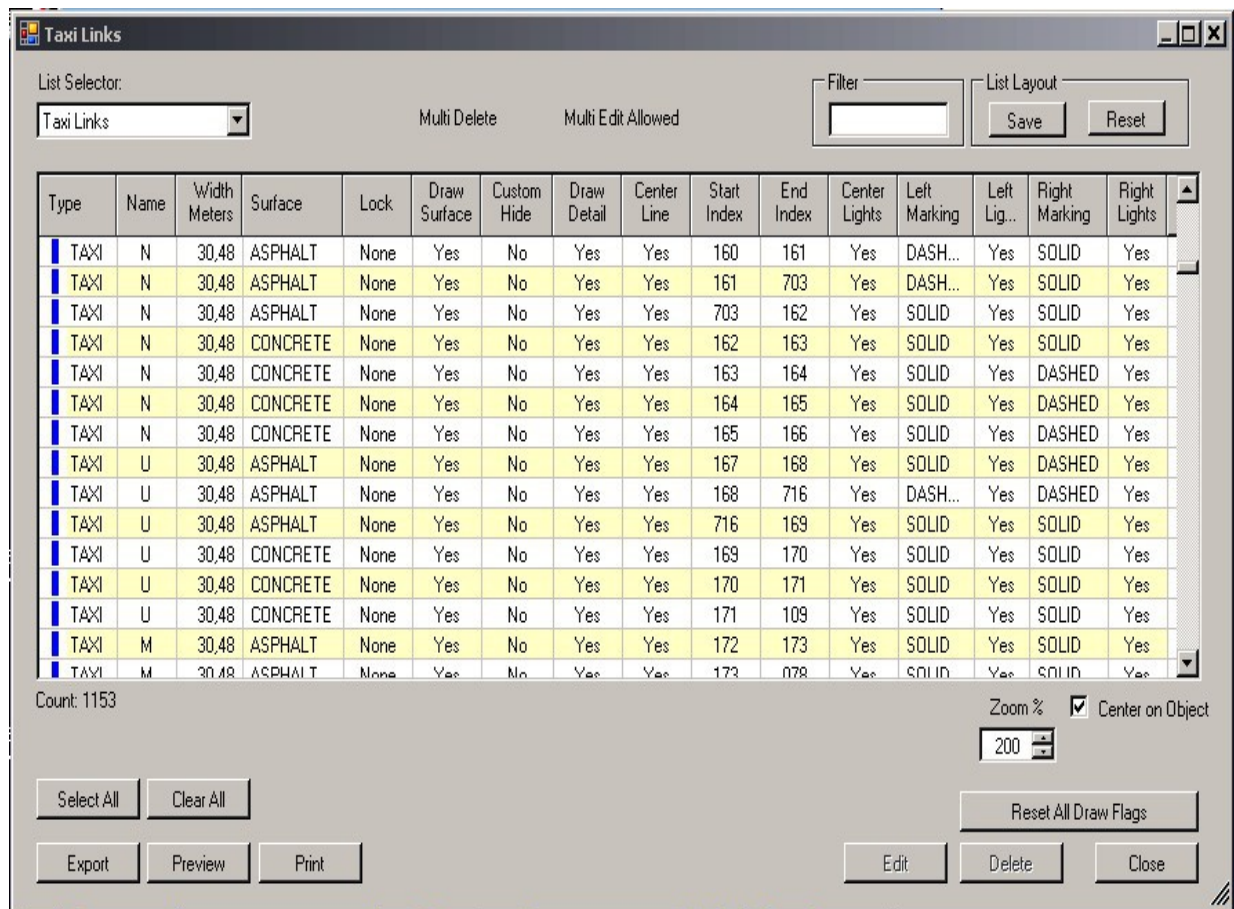


Figure 5-20; Links in List Window

5.2.8 Designators for Taxiways

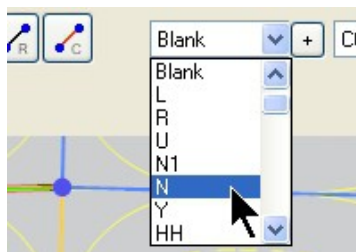


Figure 5-21: Designators

There are two types of designators:

- **Taxiway Designators** – For example, A, B, B2, are used with Taxi Links, Apron Links, and Closed Links.
Vehicle Links. (only in FSX) always have a designator of “BLANK”
- **Runway Designators** – For example, "Rwy 12/30," "Rwy 26R/8L," are used only with black Runway Links.

Runway Links will always have a runway designator. Taxi and Apron Links can have either a taxiway designator or can be left blank. Parking Links are always blank.

All designators that have been created for the current airport are shown in the drop-down Designator List on the Toolbar. The names are presented in alphabetically order.

o Creating a New Designator

You can create a new designator by clicking the small '+' to the right of the box and entering the new designator

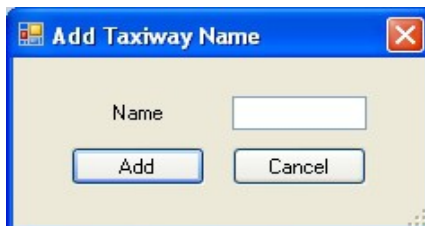


Figure 5-22: Adding Taxiway Name

This can also be done using the Taxi Designator List via the Lists Menu.

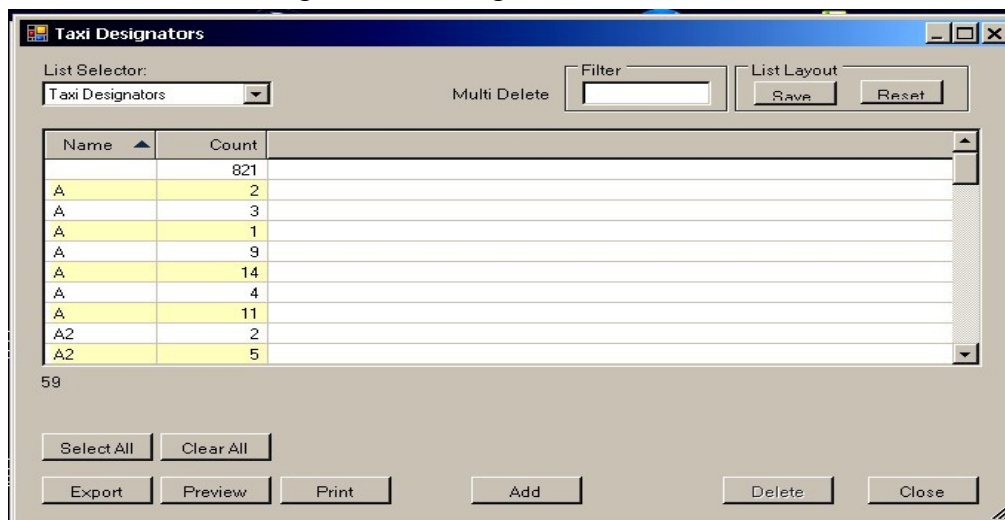


Figure 5-23 Taxiway Designator List

Designators are usually single letters or letter and number pairs.

You can create designators up to seven characters long, but ATC will spell them out phonetically. It is unknown if there are any actual words that ATC will recognize as a designator. You cannot enter new runway designators; that can only be done by creating new runways.

o Highlighting Designators

When you select a designator from the drop-down list, all taxi links that have been assigned that designator will be shown in red. For example, Taxiway 'A' at EGGW Luton is shown highlighted in the picture below.

You can use this to verify that a taxiway is unbroken, and to verify taxiway routes match the routes in published maps of the airport you are working on.



Figure 5-24: Highlighted Taxiway

The first designator entry in the rolldown list is always empty and if you leave that empty entry selected then no taxiway designators will be highlighted. The second entry in the list is the word "Blank." When you select that entry ADE will highlight all blank designators, including all parking links.

Note that if a link has an incorrect designator or is blank, that will not prevent AI aircraft from using it, but ATC may give you strange or incorrect directions when you ask for taxi clearance.

Many of the stock airports have duplicate entries in the designator list. For example, there may be three entries for taxiway "B" representing three different sections of taxiway B. ADE allows you to enter multiple designators with the same name.

o Scanning Designators

You can flip through the whole lot of designators, highlighting each taxiway, by pressing the "T" Key or flip backward by pressing "Shift" + "T"

o Changing Designators

You can select the designator before you start drawing links, but if you are making large changes or building a new airport it may be easier to leave them blank as you create them. You can then select all the links that constitute a particular taxiway, holding down the "Shift" Key to select more than one object at a time, and then choose the designator to assign to that taxiway from the list.

The selected taxiway will be shown highlighted in red after you do this.

Note that you do not have to select taxiway points when you assign designators, taxiway points do not have designators, but it won't hurt if you do. You can also use this method to change individual links.

Runway designators are automatically assigned when you draw a runway-type taxi link on a runway.

o Deleting Designators

To delete a designator you must open the Taxi Designators List from the Lists Menu. Select the designator you want to delete and click the Delete button. Any links that use that designator will be changed to 'Blank.'

5.2.9 Link Colors

The surfaces and links lines of taxiways are displayed by ADE in colors, which can be chosen by the user individually for each link type. However the choice is applied to all links of the same type within the current airport.

- **Surface Colors** - can be selected in the "Settings" Menu under "Colors => Color Picker" (see [chapter 12.8.2 Colors](#)). The chosen color is applied to all surfaces of the identical type within the current airport.
- **Line Colors** - can also be selected in the "Color Picker" for all lines of the same type. A second option for individual link line colors is available in the taxi link properties window (see [chapter 5.2.3 Link Properties](#))

5.3 Link Junctions

Taxiways, which are placed isolated in the landscape of an airport, do not make much sense. The normal case is, that they are part of a whole network being connected to runways, aprons and other taxi links.

Such a connection of two links is not trivial, because in order to be effective for a functioning AI aircraft traffic they must form a "junction".

5.3.1 Geometry of a Junction

Figure 5-25 below is not a junction. It is just a crossover of two unconnected links.

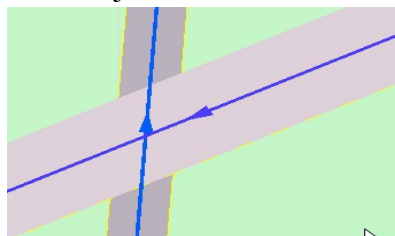


Figure 5-25: Crossover of two Links

A junction is formed when the link drawing tool (crosshair) touches the other link and this changes his color (Figure 5-26 left).

When the draw is finished the junction is displayed in ADE and also in the Flight Simulator with automatically generated curved edges and "fillets"

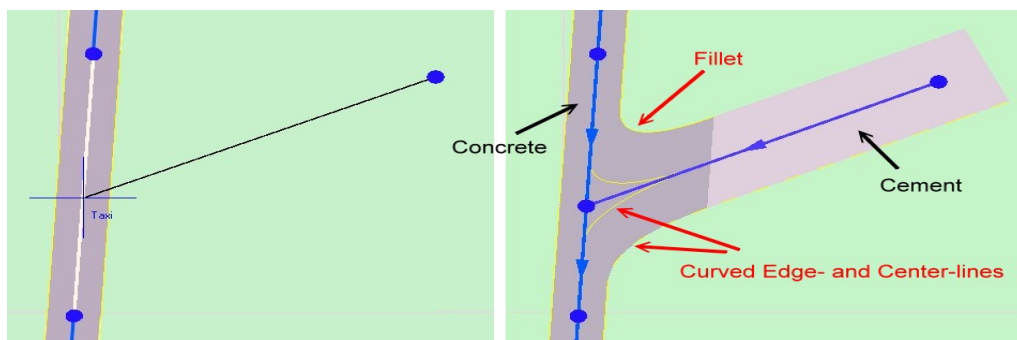


Figure 5-26: Drawing a Junction

When a junction is not properly drawn this can lead to geometrical problems, both in ADE and FS9/FSX

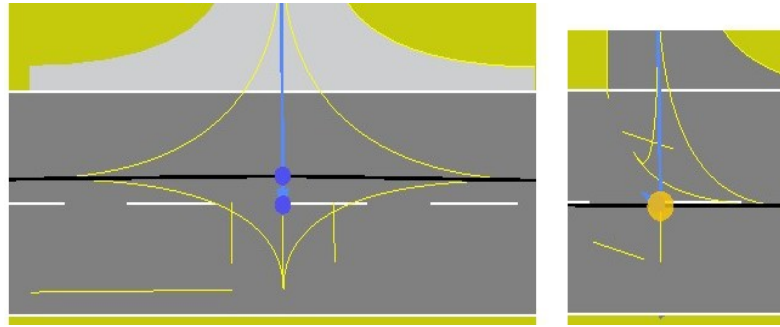


Figure 5-27: Corrupted Fillets and Edge- & Center-Lines

5.3.2 Inheritance

A taxiway network is a complex structure, because it consists of many links. This complexity is drastically intensified because each link can have its own individual set of properties. In Figure 5-28 a (admittedly unrealistic) junction of four links, each with different properties, is shown.

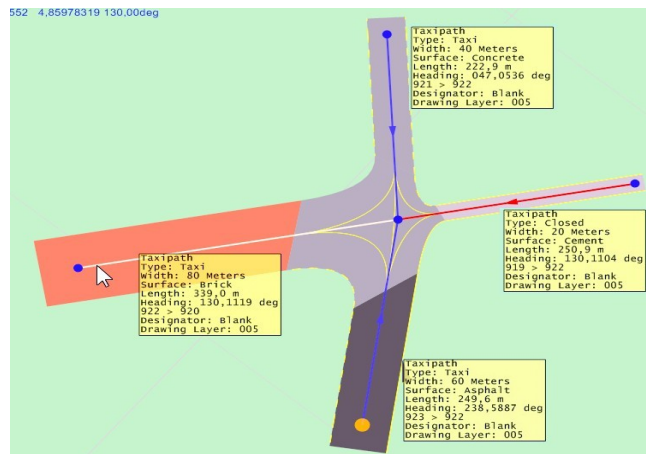


Figure 5-28: Junction with four different Links

Adjacent links forming a continuous line usually have the same properties, which makes drawing them fairly easy.

The difficulty arises with junctions.

To make the design task easy, ADE uses for junctions a few simple "inheritance" rules, how the properties of links can be automated.

- o **Link Drawn from an Existing Link** - a new link, which is drawn from an existing link inherits the property of the "parent"

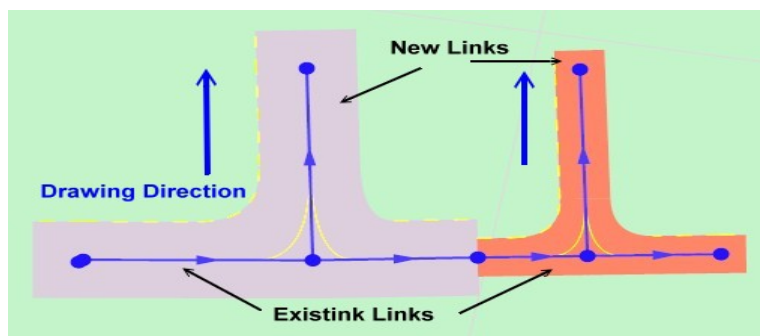


Figure 5-29: New Links originating at Existing Links

- o **New Unattached Links** - There are two ways to get the property inheritance for a new unattached link. Which one is used depends on the check-box "New Link Inherit from Last Draw" in "Settings > Options > General Tab" .



Figure 5-30: Inheritance from Last Drawn Link

- If the check box shown above is checked - then ADE will use the 'AFCAD' method which is to inherit properties from the **last link drawn**.
- If it is unchecked - the inheritance depends on "Prokey" (see **chapter 13.7 ProKey**)
 - * If you do not have ProKey - the properties will be taken from the "Toolbar" settings shown in Figure 5-12 and 5-31 (left)
 - * If you have ProKey - the properties will be taken from the rightclick option "Default Settings" shown in Figure 5-18 and 5-31 (right)

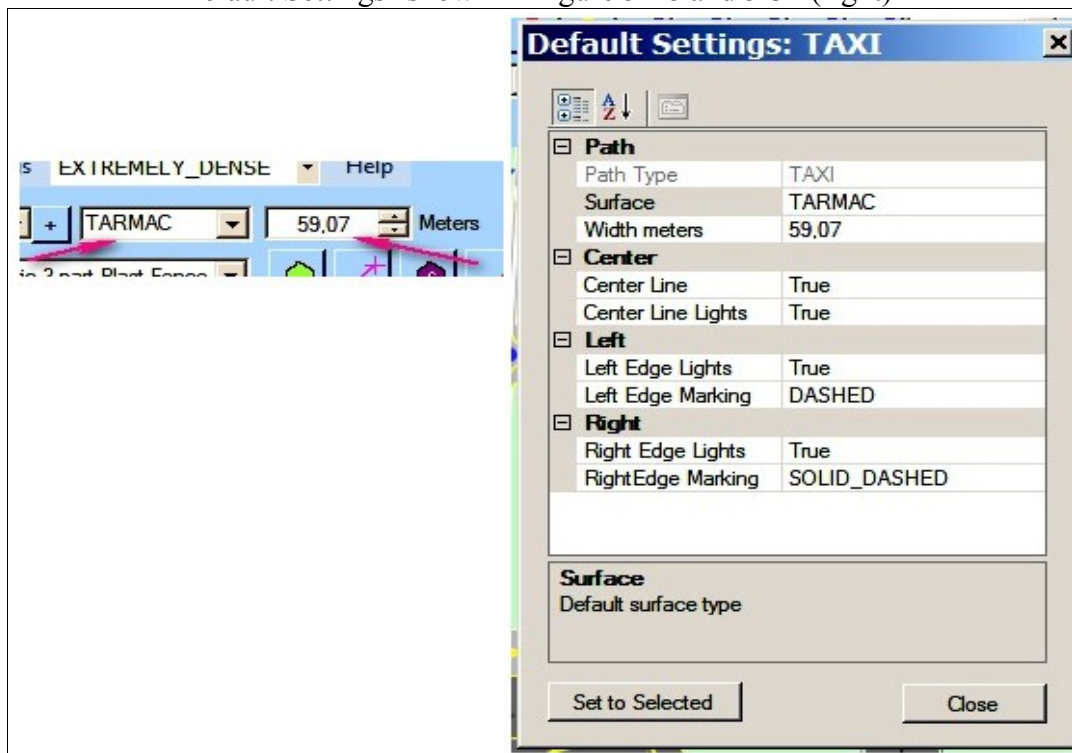


Figure 5-31: Default Settings without and with ProKey

Note that the "ProKey" option contains 9 parameters, the "Toolbar" option only 2 parameters. The 2 parameters are of course identical with their counterparts in the ProKey option and are showing automatically identical values.

A detailed description of the inheritance and default settings process for taxi link junctions is given in the help-document

https://scruffyduck.screenstepslive.com/s/help_docs/m/20268/1/200252-setting-taxi-link-default-properties

6.0 Optional Airport Components

The subsequent components are used mostly in large airports and are not required for smaller airfields. Therefore they are classified here as "optional"

6.1 Taxi Signs

Taxi signs provide airport navigation information to taxiing aircraft. There are specific regulations laid down for the design and placement of taxi signs. Both the US Federal Aviation Authority (FAA) and the UK Civil Aviation Authority (CAA) publish guidance on sign design, location, and usage. It is well worth researching and downloading these guidelines for reference on sign design:

http://p://www.faa.gov/airports/resources/advisory_circulars/index.cfm/go/document.information/documentNumber/150_5345-44J

To add a taxi sign, select "Add" and then "Taxi Sign" from the Rightclick Menu.

To edit a taxi sign, select the taxi sign and choose Edit Object from the Rightclick Menu, or just double-click the sign.

This will bring up the Taxi Sign Wizard.

The image shows a 'Properties' dialog box for a 'Taxi Sign'. It includes a 'Locked' checkbox, a 'Taxi Sign' tab, and a 'Set By Drag' button. The 'Type' section displays various sign examples. The 'Special Symbols' section shows directional arrows and other symbols. A text input field contains 'd<EX2[O]dA3>', and a preview shows the sign '←EX20A3→'. The 'Location' section has fields for Latitude (48.112055136), Longitude (16.572649326), and Heading (26.0). A 'Comments' field is at the bottom, along with 'OK' and 'Cancel' buttons.

Figure 6-1 - Taxi Sign Wizard Properties Dialog Box

The Taxi Sign Property Dialog contains all the symbols that are needed to create signs. There are four types of signs:



The taxiway location sign indicates the current taxiway



The taxiway direction or destination sign is used along with a direction arrow to indicate the direction of an upcoming taxiway



The mandatory / hold position sign is used to indicate a location that requires specific attention or action



The informational sign provides various information about the airport, such as runway length remaining

Clicking a Type button will make all the subsequent letters and symbols conform to the color and layout of that type. Simple tool tips are available for the Types and special symbols.

To add normal letters and numbers type them from the keyboard. If you are familiar with the special symbols FS uses for signs then you can type them in. ADE accepts any mix of typed and clicked symbols. Backspace and delete keys work and the next letter or symbol will always be placed at the cursor position. As you add and remove symbols the visual will show what the sign looks like.

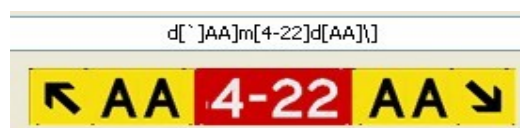


Figure 6-2: What you type and what you see

ADE will try and ensure that the sign you are building will compile. Lower case characters other than those with special meaning will be converted to upper case.

Remember when designing your taxi sign that all sign labels must start with a Sign Type. If you fail to add one or delete it then ADE will issue a warning.

The label must start with a character representing a Sign Type

You will not be able to Save a sign until you have a type code at the start of the label. Also, only special symbols, 0...9, space, dot, dash and the Capital letters A...Z are valid for a sign label. If you enter some other character then ADE will issue a warning and the character will be ignored.

The character just entered is ignored as it is not a valid taxisign character

Placing and positioning taxi signs can be a tedious process, but here are a few tips to help you:

- The grey bar is the side the taxi sign faces, regardless of justification.

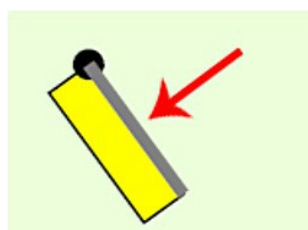


Figure 6-3: Taxi Sign Face

- o Be careful when switching taxi sign justification from left to right.

The direction a sign faces with a left justification and a 343 degree heading will be opposite of a sign with a right justification and a 343 degree heading. For taxi signs with different justifications to face the same way, you will need to use the reciprocal heading for either of the taxi signs.

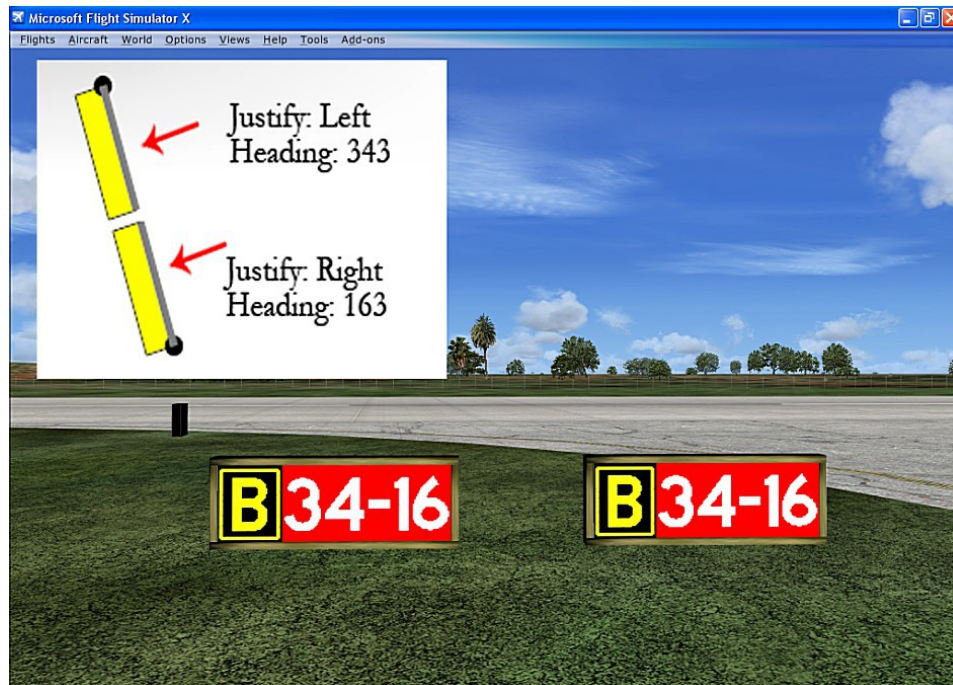


Figure 6-4: Justification and Orientation

- o Based on FAA and CAA regulations, taxi signs should be placed at specific distances from taxiways and intersections. Use ADE's guidelines to help place taxi signs precisely and consistently at your airport.

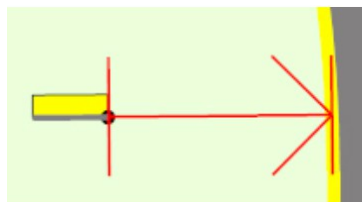


Figure 6-5: Distance Measurements with Guidelines

- o To rotate taxi signs, select the sign and use the handle, press the "Alt" key and use the mouse wheel, or enter a value in the heading field of the properties dialog box



Figure 6-6: Rotating a Taxi Sign

6.2 Helipads

Helipads are basically parking spots for helicopters, and just like you can add parking ramps/gates to airports using ADE, you can also add helipads.

To add a helipad to your airport project, select "Add Helipad" from the Rightclick Menu.

Creating a helipad does not automatically create a Start Location for the helipad. If you want your new helipad to appear in the Start Locations list on the FS9/FSX/P3D "Go To Airport" window, you must also create a Start Location for it. See [chapter 4.7 Start Locations](#) for more information.

To edit an existing helipad, either double click it or select Edit Object from the Rightclick Menu.

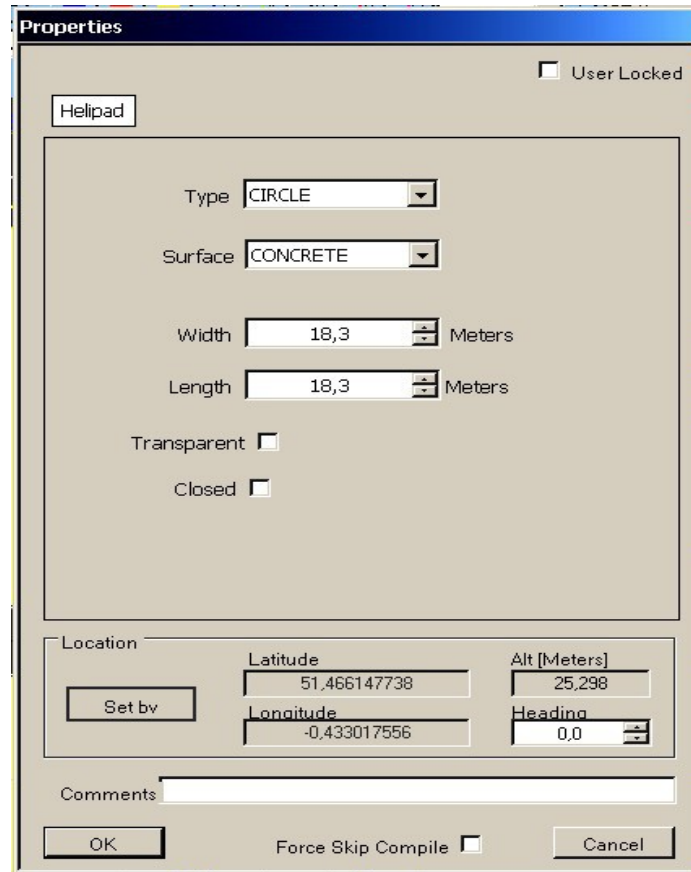
The image shows a 'Properties' dialog box for a 'Helipad'. At the top right is a 'User Locked' checkbox. Below it is a 'Helipad' label. The main area contains settings for 'Type' (set to 'CIRCLE'), 'Surface' (set to 'CONCRETE'), 'Width' (18,3 Meters), and 'Length' (18,3 Meters). There are also 'Transparent' and 'Closed' checkboxes. Below this is a 'Location' section with a 'Set by' button, 'Latitude' (51.466147738), 'Longitude' (-0.433017556), 'Alt [Meters]' (25,298), and 'Heading' (0,0). At the bottom is a 'Comments' text field, an 'OK' button, a 'Force Skip Compile' checkbox, and a 'Cancel' button.

Figure 6-7: Helipad Properties Dialog Box

Once the helipad properties dialog box opens, you have several helipad options from which to choose:

- **Type** – There are four types of helipads in FS9/FSX: H, Square, Circle, and Medical. Each type will appear differently in ADE and FS9/FSX.

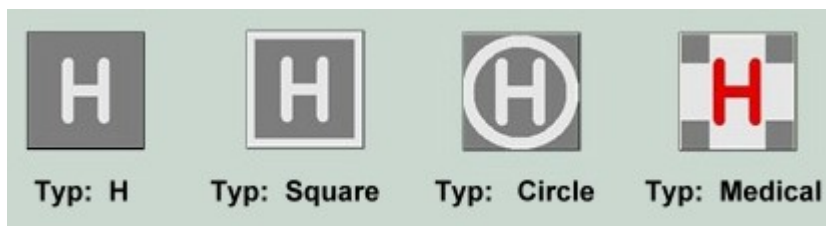


Figure 6-8: Different Types of Helipads

- **Surface** – This option allows you to select the visible surface for your helipad

- **Width/Length** – Provides you the ability to manipulate the helipad dimensions. The length and width should normally be the same to prevent elongation of the markings.
- **Transparent** – If you enable this property, FS9/FSX will only display the helipad markings.
This option is useful when creating helipads on existing surfaces such as aprons.
- **Closed** – If selected, this option will close the helipad
- **Heading** – This is the direction the helipad is oriented from True North

Please **NOTE** that helipads do not come with edge lights. To create edge lights around your helipad, use the Apron Edge Lights icon on the Toolbar (see page 104 for more information about Apron Edge Lights).

6.3 Fences

Fences are a feature of FSX/P3D only. They do not exist in FS9.

FSX/P3D offers two types of fences, namely "Boundary Fences" and "Blast Fences". One can add, delete, move and modify fences.

6.3.1 Add Fences

To add a fence click one of the fence icons in the Tool Bar.

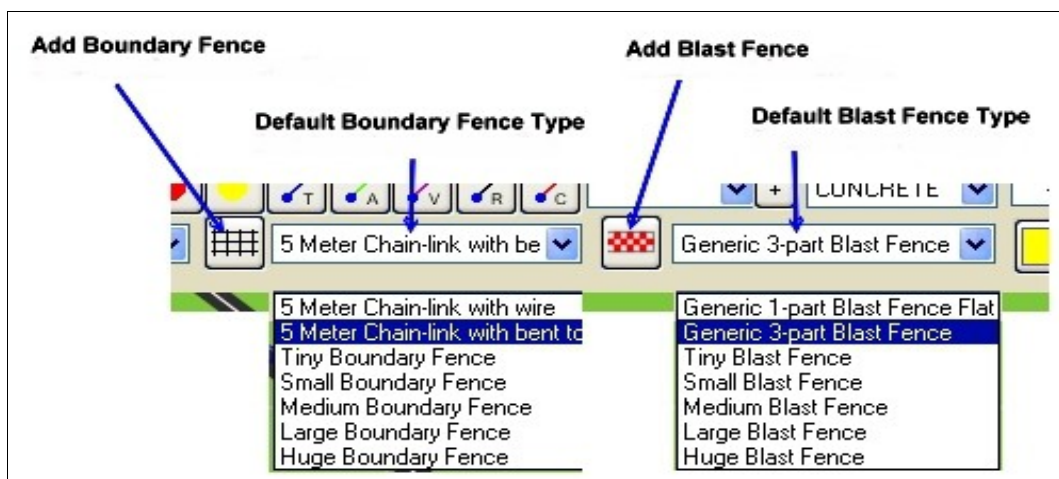


Figure 6-9: The Fence Icons in the Tool Bar and the Fence Types

To place a fence, move the crosshair to the beginning position and draw with pressed mouse-button to the next position. Thus a whole sequence of lines can be generated. A double-click terminates the fence.

One can draw a line also with two separate clicks.

Figure 6-10 shows the ADE display of the two fence types.

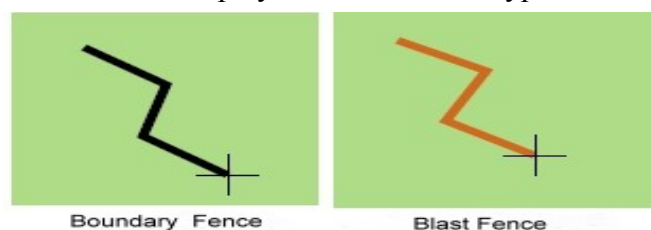


Figure 6-10: The Fences in ADE

6.3.2 The Fence Types in FSX

Due to a FSX limitation, only two boundary fence types and only two blast fence types will produce the right fence display in FSX

- Among the Boundary Fences they are the 5 Meter Chain-link with wire and 5 Meter Chain-link with bent top.
- Among the Blast Fences they are the Generic 1-part Blast Fence Flat and the Generic 3-part Blast Fence.

The other blast fence types will randomly generate either the 1-part or 3-part blast fence in FSX as shown below. The figures show each the seven types (from 1 to 7)

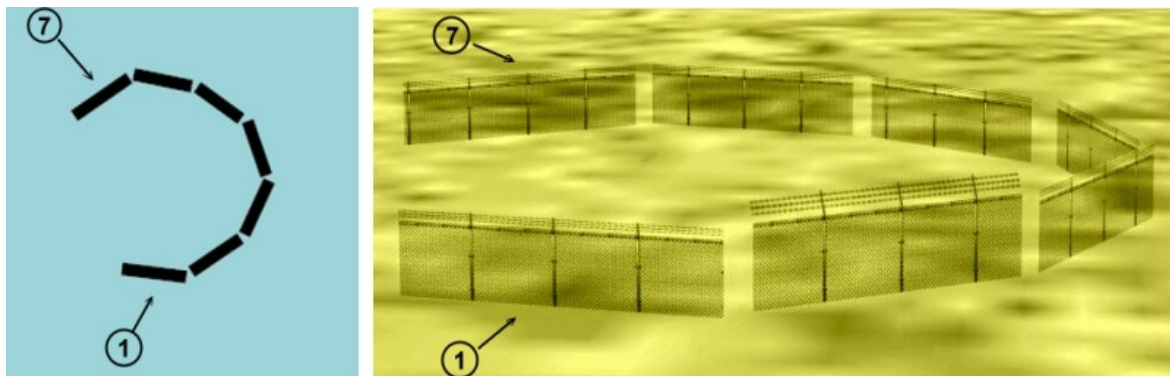


Figure 6-11: The seven Boundary Fences

Only Nr. 2 (5 Meter Chain Link with bent top) is different from the others.

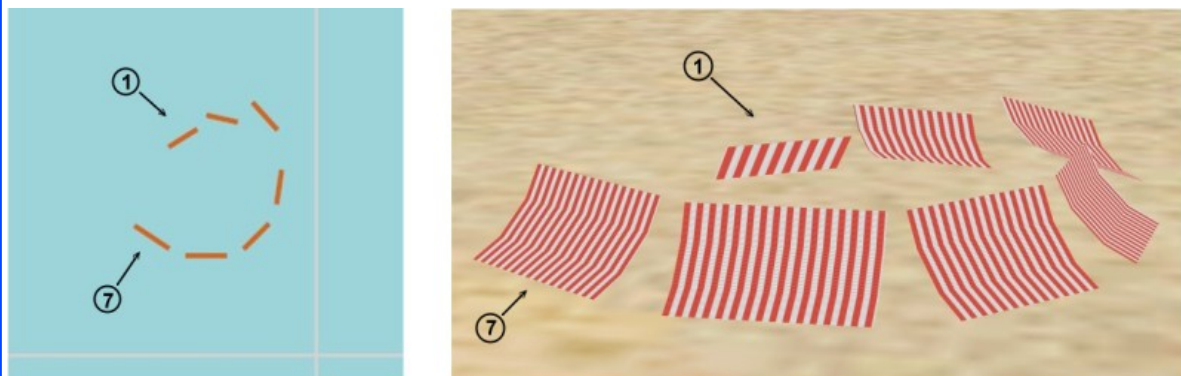


Figure 6-12: The seven Blast Fences

Only Nr. 1 (Generic 1 Part Blast Fence) is different from the others.

6.3.3 Reverse Fences

The boundary fence with the bent top (Nr. 2) and all blast fences, which are bent by definition, are depending on the direction while drawing.

The bending angle is always on the left side seen in the drawing direction.

However when a fence turns out to be drawn in the wrong direction it can be reversed easily with the option "Reverse Fence" in the Rightclick Menu.

6.4 Jetways

6.4.1 Jetways in FS9

In FS9 animated jetways do not exist.
Jetways are just ordinary Library Objects

6.4.2 Jetways in FSX

There are two types of jetways that you might see in FSX: non-animated and animated. Non-animated types are probably just library objects. However, FSX offers animated jetways that you can add to your airport.

They can also have a significant effect on frame rates, so many of them only appear at Very Dense or Extremely Dense scenery complexity settings. To make sure you will see all the jetways at a stock airport, set the Scenery Complexity setting to Extremely Dense. Jetways need to be associated with parking spots. So ADE will only allow you to add it if you have a parking spot selected first.

To add a jetway, select the parking ramp or gate and choose "Add" and then "Jetway" from the Rightclick Menu.

When you choose to add a jetway, the jetway property dialog will open.

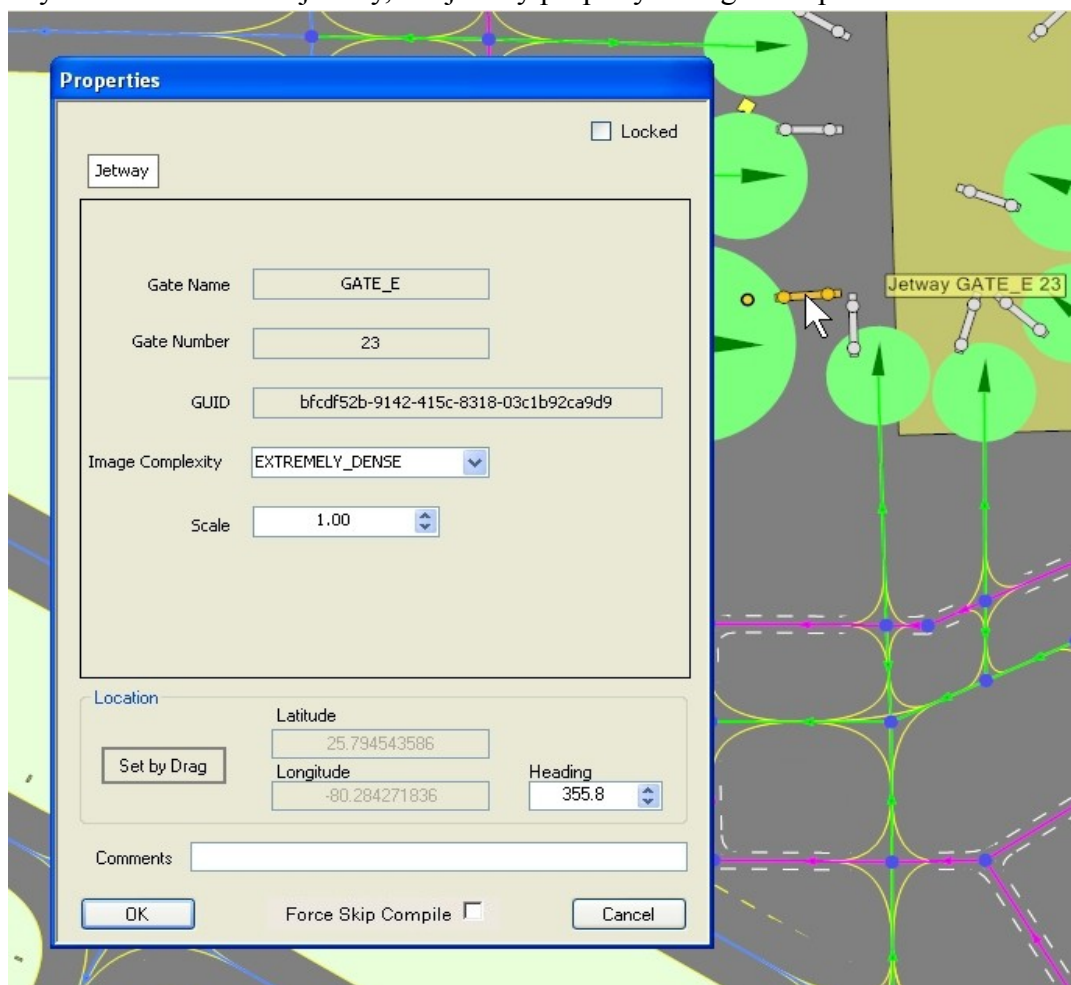


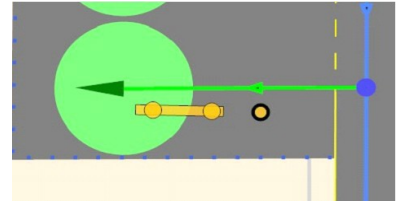
Figure 6-13: Properties Window of Jetways

There are not too many properties to edit a jetway. You cannot (and in any case should not) change the Gate name and number settings. Also FSX provides just one model for the animated jetway so the GUID is fixed. You may change the image complexity if you wish but bear in mind that a lot of jetways at an airport could affect frame rates. By default, ADE sets this to Extremely Dense. Change the scale a bit if you want the jetway slightly larger or smaller. ADE works out the heading based on the heading of the parking spot. You can change it here or use the mouse.

Once you have made any changes click OK to complete the addition

Finally drag the jetway to the correct position. If necessary you can change its heading with the rotation handle

Figure 6-14: Rotation Handle of Jetways



If you need to delete a jetway, you can do so the same as any other element in ADE

There should only be one jetway assigned to each ramp or gate, and ADE will keep you from adding a second.

You can assign a jetway to both ramps and gates in FSX. In the real world, jetways would only be present at Gate type spots and not at other types.

A potential problem with jetways is that they can be located too far from their assigned parking. This can result in unattached jetways trundling across an airport to get to an aircraft. This may look amusing but is not desirable. The Fault Finder will warn you if a jetway is located too far from its ramp or gate.

Editing jetways is possible also via the Jetway list from Lists Menu, in the same way as with other airport elements.

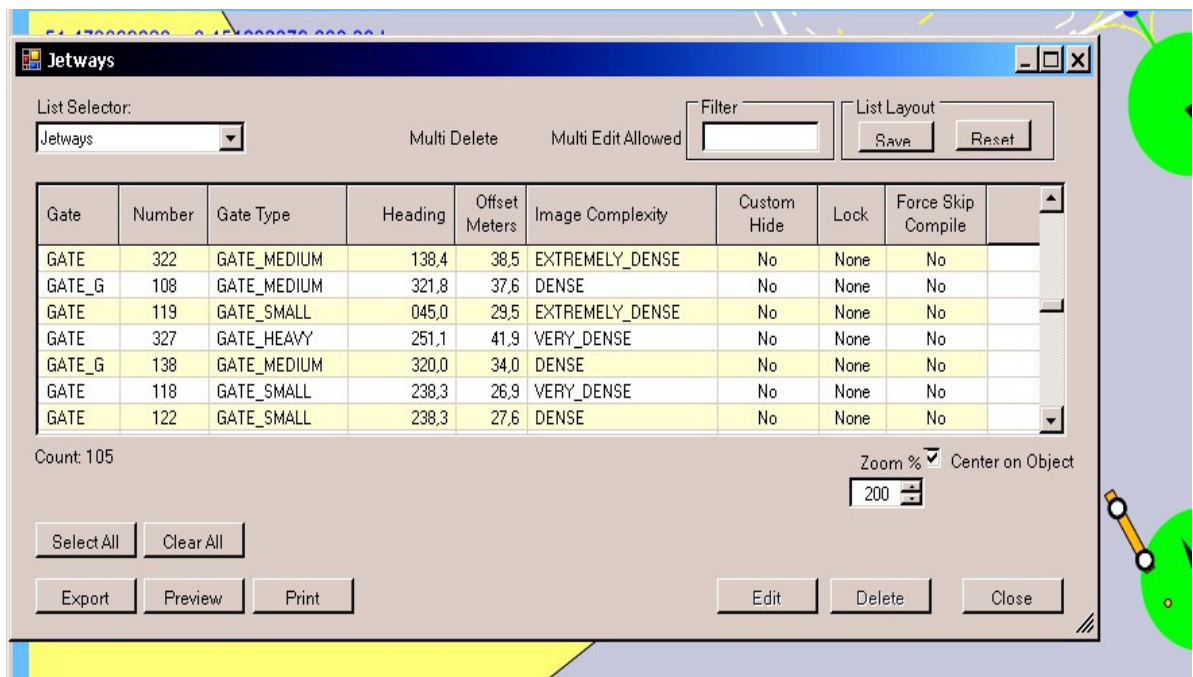


Figure 6-15: Jetways List

6.5 Windsocks

Windsocks are basic FS scenery objects that indicate the direction and relative strength of the wind. Most airports have multiple windsocks, but they are often hard to locate because of their small size. Windsock can be identified by small circle with a 'W'.



Figure 6-16: Windsock Display in ADE

6.5.1 Windsock Properties

To view a windsock's properties, either double-click on the windsock or select Edit Object from the Rightclick Menu .

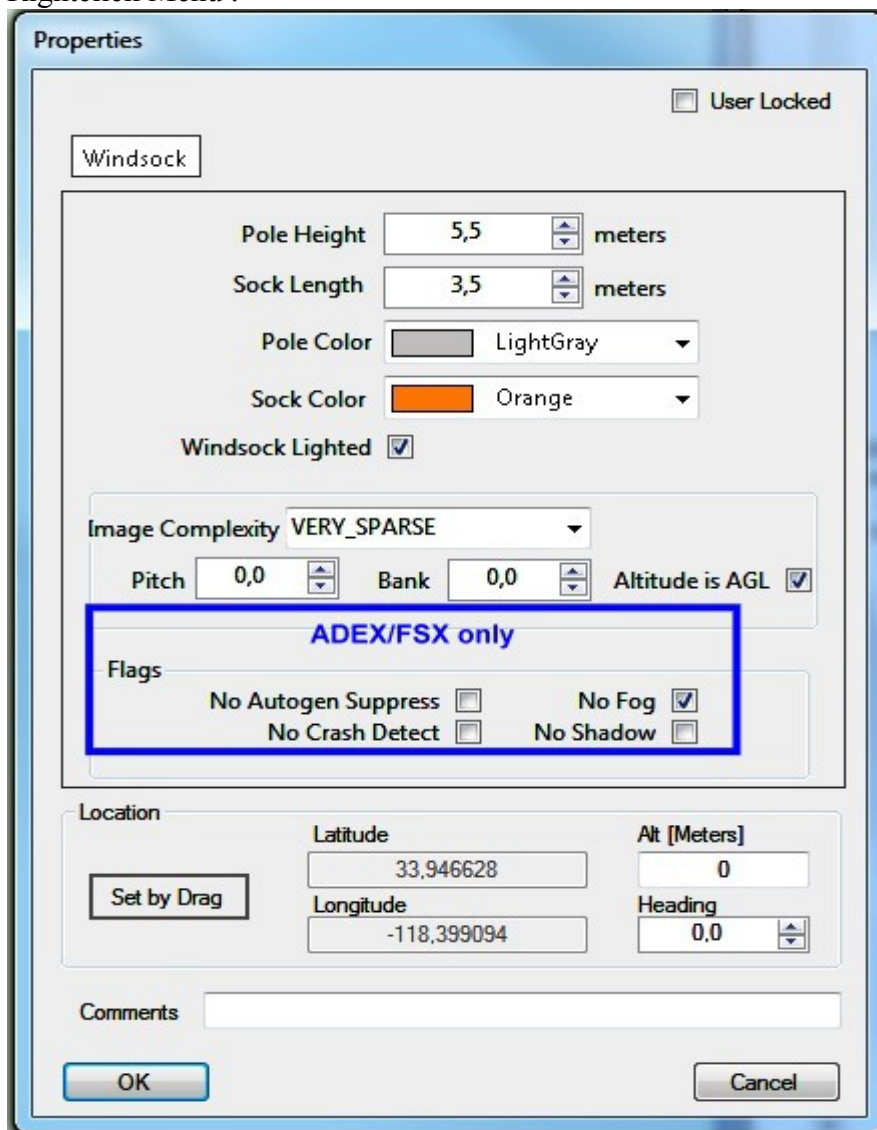


Figure 6-17: Windsock Properties Dialog Box

The windsock has several characteristics that you can edit:

- **Pole Height** – Determines the height on the windsock
- **Sock Length** – Determines the length of the sock
- **Pole Color** – Selects the color of the pole
- **Sock Color** – Selects the color of the sock
- **Windsock Lighted** – Provides a lighting option for your windsock
- **Image Complexity** – Similar to other scenery objects, you can select the image complexity assigned to the windsock
- **Pitch / Bank** – Pitch determines the windsock's North / South inclination, Bank determines its East / West inclination
- **Altitude is AGL** – Specifies that the altitude property is based on Above Ground Level (AGL) versus Above Mean Sea Level (AMSL)

6.5.2 Adding a Windsock

To add a windsock in your airport project choose "Add" and then "Windsock" from the Rightclick Menu.

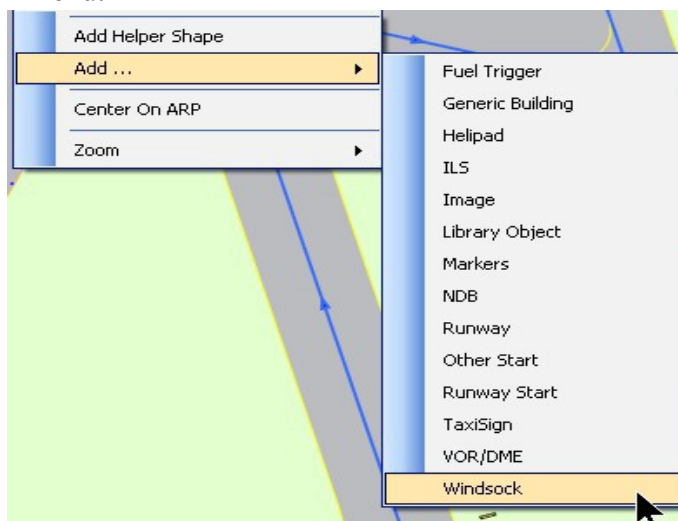


Figure 6-18: Adding a Windsock

This will bring up the windsock properties dialog box where you can insert the parameters for the new windsock.

By clicking "OK" the new windsock will be placed in the airport..

6.6 Beacons

Note: Do not confuse this with "Marker Beacons". Those belong to Nav aids,

It is now possible to add rotating beacons with ADE since they are Scenery Objects..
Beacons are displayed in ADE in the following way:

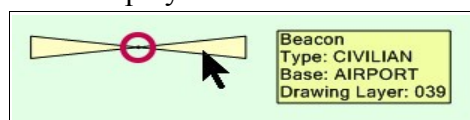
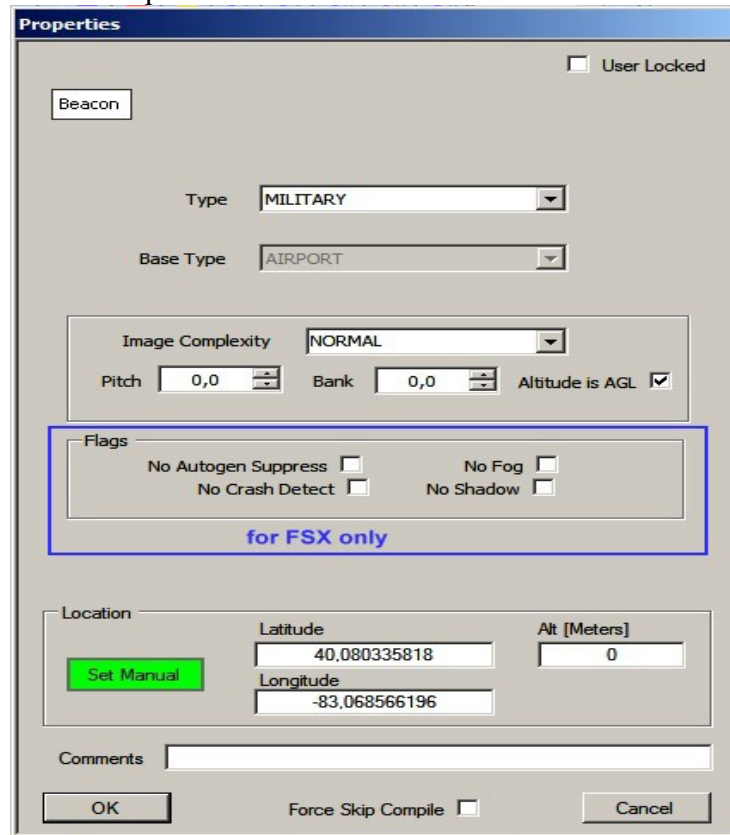


Figure 6-19: ADE's Display of Beacon

o Adding A Beacon

The placement point of the beacon is at the center of the feathers.
Right-Click at the location, where the beacon shall be placed followed by “Add”
and then "Beacon".

This opens the Properties-window for Beacons.



The image shows a 'Properties' dialog box for a beacon. It has a title bar 'Properties' and a 'User Locked' checkbox. The 'Beacon' tab is selected. The 'Type' dropdown is set to 'MILITARY' and the 'Base Type' dropdown is set to 'AIRPORT'. The 'Image Complexity' dropdown is set to 'NORMAL'. The 'Pitch' and 'Bank' spinners are both set to '0,0'. The 'Altitude is AGL' checkbox is checked. A section labeled 'Flags' is highlighted with a blue border and contains four checkboxes: 'No Autogen Suppress', 'No Fog', 'No Crash Detect', and 'No Shadow'. Below this section is the text 'for FSX only'. The 'Location' section has a 'Set Manual' button and input fields for 'Latitude' (40,080335818), 'Longitude' (-83,068566196), and 'Alt [Meters]' (0). There is a 'Comments' text area at the bottom. At the very bottom are 'OK', 'Force Skip Compile' (unchecked), and 'Cancel' buttons.

Figure 6-20: Properties Window for Beacons

You can choose between:

- **Type** - the options are CIVILIAN and MILITARY
- **Base Type** - the options are AIRPORT, SEA BASE and HELIPORT.

The parameters in the lower part of the properties window are standard i.e. they are identical with other properties windows.

6.7 Effects

Effects are displayed in ADE in the following way:

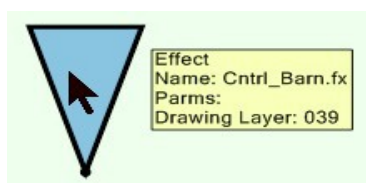


Figure 6-21

6.7.1 Adding An Effect

The placement point of the effect is at the bottom of the triangle.

Right-Click at the location, where the effect shall be placed followed by “Add” and then “Effect”.

This opens the Properties-window for Effects.

6.7.2 Effects Properties

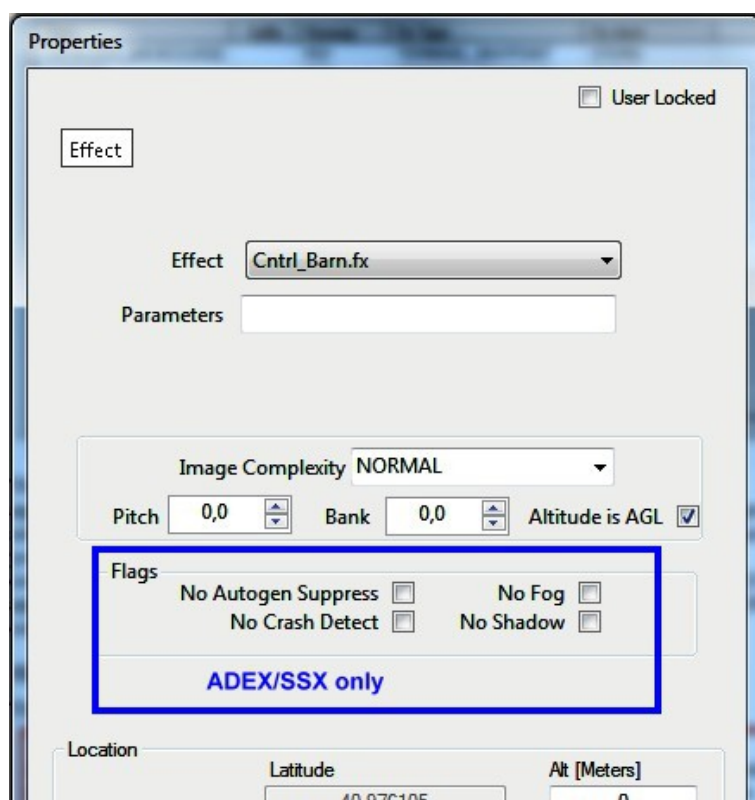


Figure 6-22: Properties Window for Effects

- Under **Effect** you can choose among all effects, which are stored in the Effects-folder (“HDD(*) => FS9/X => Effects”) of your Flight Simulator (FS9 or FSX)
- The line **Parameters** offers the possibility to vary the behaviour of a special effect. Special effects, which offer parameters, are shown in Microsoft's Software Design Kits (SDK), which are part of the FS program package.

Example for FSX:

In the SDK go to “Environmental Kit => Special Effects SDK => Special Effects Tool => Creating Special Effects => Effects File Format”.

There you see tables like this:

Bounce=0.00	The reaction of a particle when it collides with the ground. The larger the number, the greater the bounce. If the parameter is set to 0, no reaction occurs. If it is set to 1.0 then it will come off the ground at the same velocity that it hit it. Use a value less than 1.0 to simulate the loss of energy due to the impact.	fx_animaldust.fx(Bounce=0.00) fx_BilgePump.fx(Bounce=0.20) fx_CampFire.fx(Bounce=1.00) fx_WaterFall.fx(Bounce=0.50)
-------------	---	--

Figure 6-23: Table from the FSX-SDK

An entry in the parameter line of the effects property window would be **Bounce=0.20**

Example for FS9:

Go to “Special Effects SDK”. There you open the document “FS2004 Effects.doc”. There you find the description of “The Effects [File:fx](#)”.

In the chapter “Effects File Properties” you find the parameter tables. They look like this:

[Emitter.0]	The [Emitter.0] section defines the start of the emitter portion of an effect. An emitter creates a flow of particles, like water from a spigot, that is displayed in the effect. You can include sections for several emitters, each with a unique value (for example, [Emitter.0], [Emitter.1], and [Emitter.2]).
Lifetime=0.00, 0.00	The length of time that an emitter emits particles. Measured in seconds.
Delay=0.00, 0.00	The length of delay before the emitter begins emitting particles. Measured in seconds.
Bounce=0.00	The reaction of an emitter when it collides with the ground. The higher the number, the larger the bounce. If the parameter is set to 0, no reaction occurs.
Rate=0.00, 0.00	The rate at which particles are emitted. Measured

Figure 6-24: Table from the FS9-SDK

At the moment ADE does not provide any Edit mechanism for Effects. However we hope to use Arno’s excellent new FXEditor with ADE in a later version.

6.8 Fuel Triggers

Fuel triggers are usually not visible in FS9 or FSX. They are areas where the user aircraft can refuel.

o for FSX

In FSX, fuel triggers are associated with parking spots of the type FUEL. While there is no requirement that they be placed at fuel parking spots, it makes sense to do so. Therefore, ADE will only allow the placement of a fuel trigger with Fuel parking.

To add a fuel trigger, select the fuel parking spot and choose "Add" and then "Fuel Trigger" from the Rightclick Menu. If the fuel trigger option is not available then check that the parking spot you have selected is a FUEL type.

o for FS9

In FS9, fuel triggers can be placed by free choice.

To add a fuel trigger choose "Add" and then "Fuel Trigger" from the Rightclick Menu

After you select to add a fuel trigger the fuel trigger property dialog will open.

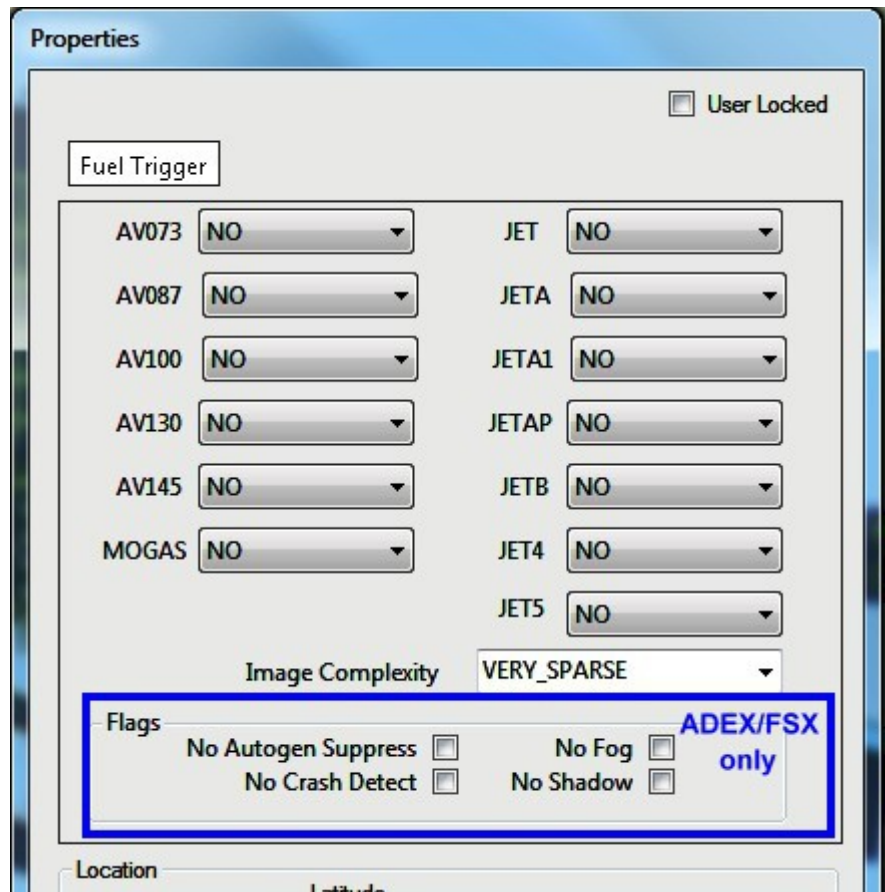


Figure 6-25 Fuel Trigger Properties Dialog Box

Select the fuel types that you want to be available for the user aircraft. Image (Scenery) complexity for fuel triggers is usually set at very sparse and ADE defaults to that. The heading for the fuel trigger is automatically set based on the heading of the parking spot, so you can usually leave that as set.

Click OK to complete the creation of the trigger.

o for FSX

In FSX, the trigger is shown as a semi transparent box that just encloses the parking spot.

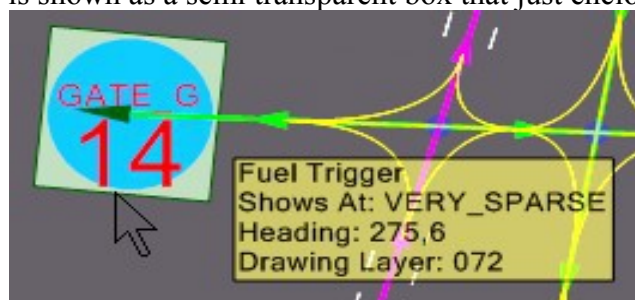


Figure 6-26

This should ensure that user aircraft visiting the spot will get re-fuelled. If you subsequently move or delete the parking spot, you should do the same with the fuel trigger. ADE will not automatically move or delete it for you in this version.

o for FS9

In FS9 the trigger is shown as semi transparent box

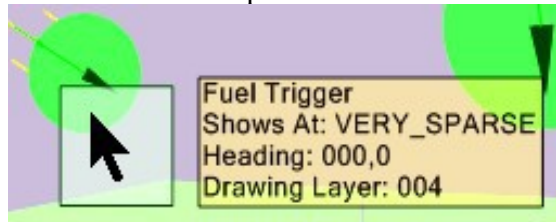


Figure 6-27

Fuel triggers are like most other objects. They can be edited, moved or deleted. You cannot copy and paste a fuel trigger since they are sized to match their fuel parking spot.

6.9 Extrusion Bridges

The current version of ADE does not support extrusion bridges.

However in FSX they can be excluded in ADE via an Exclusion Rectangle. **FSX only**

6.10 Weather Trigger

The current version of ADE does not support weather triggers.

7.0 Communication Frequencies & Air Traffic Control

Communication (comm) frequencies are not visible on the ADE display but you can set up all the radio channels (tower, ground, ATIS, clearance delivery, etc.) for an airport using ADE. These frequencies are shown on the Flight Simulator map view window when you click on an airport to get information for it. They can also be tuned with your aircraft radio stack. Most important of all, comm frequencies allow you to use ATC.

NOTE: Communication does not work, when the airport does not have a runway, as is the case with helipads.

7.1 Enabling Air Traffic Control (ATC)

To add ATC service to an airport currently without ATC, you need to add a communications frequency. If the real airport has a control tower, you need to add at least a tower frequency. This works even if there is no visible control tower object at that airport (or even a control tower there in real life). This will provide the airport with Clearance, Ground, and Tower services. AI aircraft will use the same services.

If the real airport does not have a control tower, you need to add a Multicom or Unicom frequency. This will give you the ability to broadcast your intentions without expecting a reply. AI aircraft will broadcast when departing and also when entering each leg of an approach and when the runway is vacated.

7.2 Working with Airport Comms

The way to see current airport frequencies and work with them in ADE is with the Comm list (List Menu > Comms).

This list shows all the frequencies that belong to the current airport project. They have the black headphones icon. The list also shows frequencies for airports within a 25nm radius.

These frequencies have a grey headphone icon. You cannot add, edit or delete a frequency that does not belong to the current airport, but the list will help you to see what frequencies are in use by which airport.

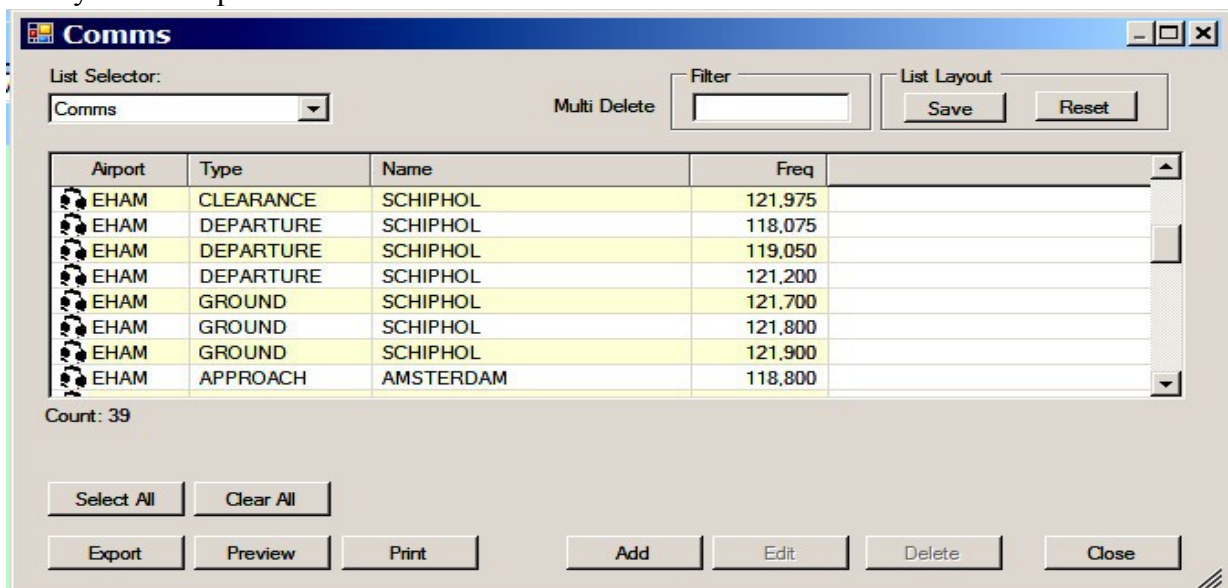


Figure 7-1: Comms List

7.3 Adding a Frequency

To add a new airport frequency, first make sure that the airport has a runway. If it does not, for example with a helipad, generate a “fake” runway (4ft x 1ft co-located).

Click the "Add" button on the frequencies list window. ADE will present you with a new comm property dialog box

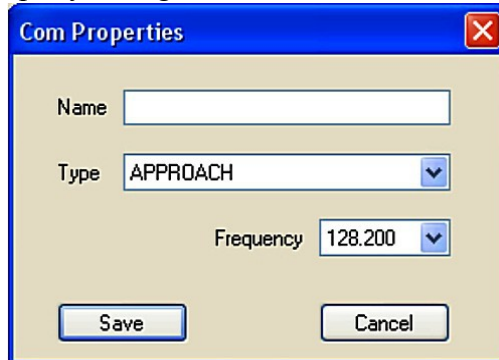


Figure 7-2 Comm Properties Dialog Box

Use the comm properties dialog to examine or modify the following settings:

- **Frequency** – ADE will generate a unique frequency for you to use. However, you can choose your own frequency. Be sure to choose a frequency that is currently not in use at either your airport or nearby airports.
- **Type** – All possible comm types are available from the drop-down. If the real airport has a control tower, the most important frequency to add is Tower. This will give you the combined Ground, Tower, Departure, Arrival (etc.) services that you can expect from a small airport tower.
You may also want to add ATIS (Automated Terminal Information Service). You could also add separate channels for Ground, Clearance Delivery, Departures, Arrivals etc, but that would probably stretch the boundaries of realism if you have a small one-runway airstrip.
If the airport does not have a control tower, a Multicom or Unicom frequency could be added instead. Each country often specifies limited frequencies for these services. For example, in the USA Unicom frequencies are limited to 122.700 MHz, 122.725 MHz, 122.800 MHz, 122.950 MHz, 112.975 MHz, 123.000 MHz, 123.050 MHz, or 123.075 MHz.
- **Name** – For most frequencies, (except for ATIS), this field should have the name of your airport, usually the town name. There are specific exceptions at particular airports. The ATIS frequency should be named the airport code used by FS for this airport.

7.3.1 Editing a Frequency

If the Edit button is active then you can edit the information for the selected frequency. The same properties dialog box will open that is used to add a frequency.

7.3.2 Deleting a Frequency

To delete a comm, select the frequency in the list and click the Delete button. This button will only be available if the frequency is associated with your current airport project.

8.0 Navigation Elements

Along with airport and library objects, ADE enables you to add, move, and delete certain navigational elements (or nav aids) in your airport project: marker beacons, ILS, VOR/DME, NDB, and waypoints.

8.1 Navaid List

To help you manage your navigational elements, ADE provides a list of all nav aids within 60 nm of your airport via the ADE Lists Menu.

8.2 Marker Beacons

Note: Do not confuse this with "Beacons". Those are Scenery Objects.

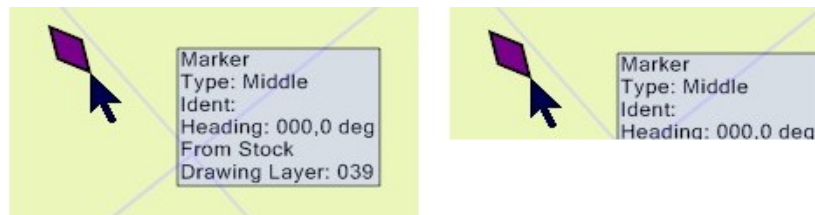


Figure 8-1: ADE's Display of Marker Beacons

8.2.1 Stock Marker Beacons

ADE will display stock marker beacons **but you cannot move, delete, or modify them.**

Flight Simulator provides outer, middle, inner, and back course markers. Markers are part of many ILS systems but have become less common as DME equipment has become cheaper. Canada and other countries have removed all middle markers, and many other Marker Beacon types as well, in favour of DME fixes or other fix types. Outer markers may be paired with or replaced by low power NDBs, referred to as Compass Locators in the U.S. This may also be done with middle and back course markers.

All markers are on an extension of the centerline of the runway. When you create markers with ADE it will place them at the typical locations by default and you can move them later if needed. Exact Marker Beacon locations, or distances from the runway, can be determined from approach charts.

- **Outer Marker (OM)** – The outer marker (and/or Compass Locator NDB) is normally located at the intercept point for the Glide Path. This is normally about 3.9 to 4.4 miles from the runway threshold, where the Glide Path beam is about 1400 ft above the runway elevation. A distance of 3.5 to 7 miles is allowed to accommodate terrain.
- **Middle Marker (MM)** – This is normally located 3500ft from the threshold of the runway where the Glide Path beam is at the decision height for a Cat I ILS.
- **Inner Marker (IM)** – IMs are only used for Cat II or Cat III ILS. They are normally located 1000ft from the threshold of the runway where the Glide Path beam is at the decision height for a Cat II ILS.
- **Back Course Marker (BC)** – BCs (and/or low power NDBs) may be used where a back course approach is approved for a runway. They are the equivalent of an OM on a front course. The BC is typically located 3.9 to 4.4 miles from the threshold of the back-course approach runway. If a runway has an ILS at both ends then it won't need BC markers. **NOTE** that there are no back course markers in FS9/FSX!

8.2.2 User Created Marker Beacons

As mentioned above ADE will add marker beacons in sensible locations. You can modify these later.

To add markers select "Add" and then "Markers" from the Rightclick Menu.

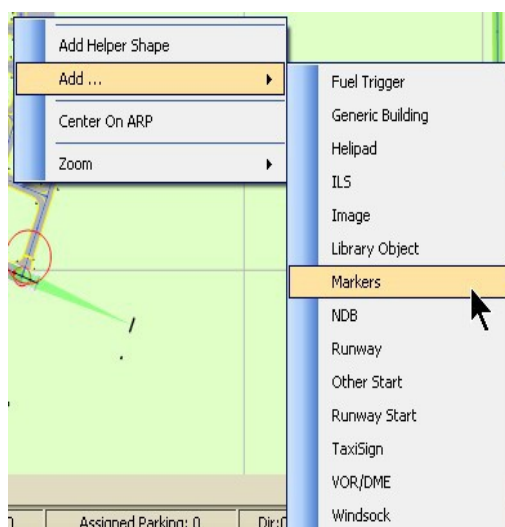


Figure 8-2: Adding a Marker Beacon

Note that ADE will not use any information related to the mouse location in locating markers.

After you add a navigational Marker Beacon, the new Marker Beacon properties dialog box will open:

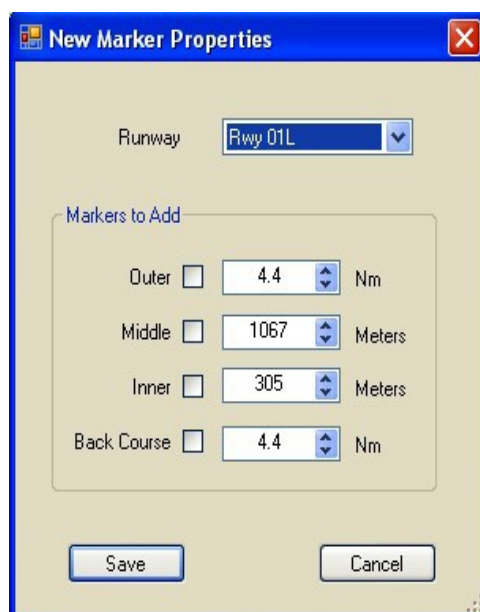


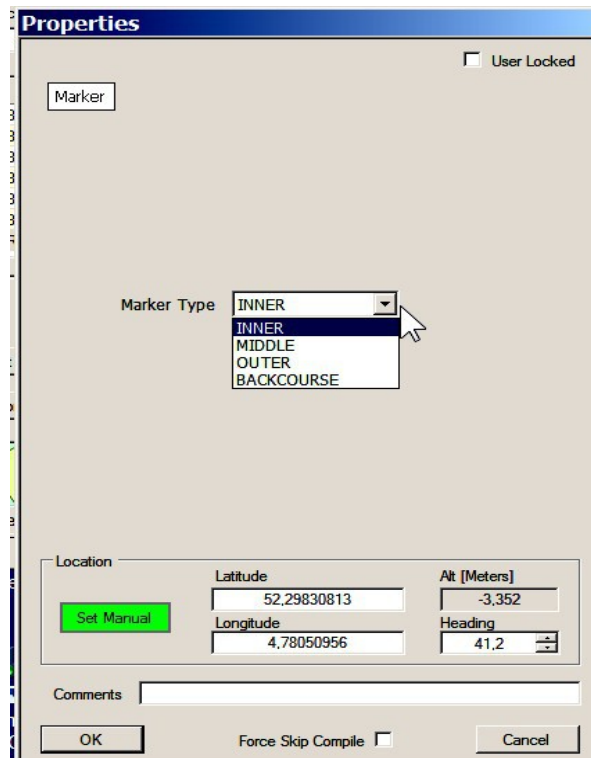
Figure 8-3: New Marker Beacon Properties Dialog Box

With the properties dialog box open, you now need to complete three steps:

1. Select the runway that you want the markers to be associated with from the drop down list. Each runway end is listed separately

2. Check those marker beacons that you wish to add for the runway. You can keep the default distances or modify them before going to step 3. You will be able to move or edit the markers later if you wish
3. Click Save to create the beacons or Cancel to abort the process

To modify user-created marker beacons either double-click on the Marker Beacon or select Edit Object from the Rightclick Menu.



The image shows a 'Properties' dialog box for a 'Marker'. It has a 'User Locked' checkbox at the top right. Below it is a 'Marker' label. The 'Marker Type' dropdown menu is open, showing options: INNER (selected), MIDDLE, OUTER, and BACKCOURSE. Below this is a 'Location' section with a 'Set Manual' button. It contains input fields for Latitude (52.29830813), Longitude (4.78050956), Alt [Meters] (-3.352), and Heading (41.2). There is also a 'Comments' text area and 'OK', 'Force Skip Compile', and 'Cancel' buttons at the bottom.

Figure 8-4: Marker Beacon Properties Dialog Box

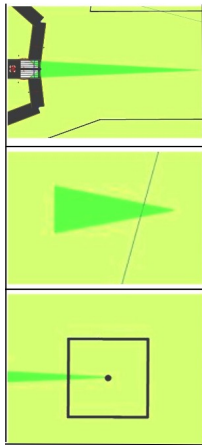
From the properties box, you can modify the following properties:

- **Type** – You can choose from Outer, Inner, Middle, or Back Course.
- **Longitude/Latitude** – the entry lines are active when set to "Set Manual"
- **Heading** – This should be the same as the runway heading. It is used to orient the vertical 'fan' beam. ADE will automatically set this for you.
- **Comments** – Any information you wish to keep about the Marker Beacon.
Note that comments are saved in the .ad4-file but are not passed into a .BGL file.

8.3 ILS (Instrument Landing System)

8.3.1 Display of ILS Elements in ADE

ADE displays all elements of an ILS in their correct locations.



This is the “**Localizer**” and it is usually located beyond the end of the runway.

It is the localizer from Stock-ILS that one cannot delete.

One may however delete the Glideslope and DME if present.

This is the “**Glide Slope**” and it is usually located to one side of the runway near the touchdown point

The “**DME**” may be co-located with the Localizer or set somewhere else near the airport.

Figure 8-5: ILS Displayed in ADE

8.3.2 Stock ILS

- o Theoretically you could edit an ILS from a stock airport, by activating it and then double-clicking or right-click and select "Edit Object". This will open the ILS Properties window.

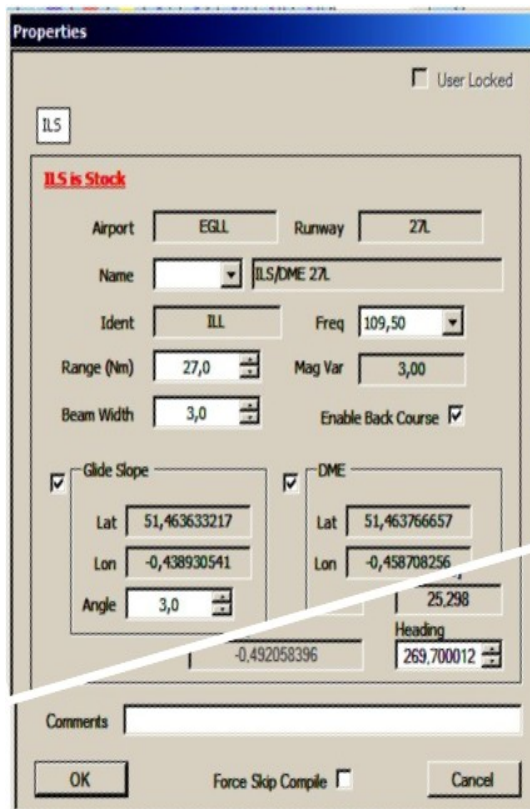


Figure 8-6: Properties of a IStock ILS

Note, that you are warned by a red title, that this is an ILS from Stock

But only a few parameters can be edited, namely

- Frequency,
- Range,
- Beam Width,
- Latitude, Longitude
- Heading.

8.3.3 Deleting (Orphaning) ILS

Stock ILS cannot be deleted.

However ADE introduces the concept of orphaning ILS that are not wanted

Since the compiler only allows ILS attached to a runway ADE will create an 'orphan runway'. It is a small (3m x 3m or so) runway with a brick surface. It is created when the project requires to orphan ILS. BY default it is located 5000m north of the ARP bearing 000.

- When ADE loads a third party BGL file (especially needed if BGL is created by AFCAD/AFX) it checks for any ILS that are not assigned to a runway or that the original designer has tried to delete. Any such ILS are orphaned by ADE and attached to the orphan runway. By default they are oriented North
- If a user wants to delete a runway that has stock ILS ADE warns and then if the user goes ahead will orphan the ILS.
- If a user wants to delete a stock ILS then ADE warns and if the user goes ahead will orphan the ILS
- Once orphaned these ILS are not recoverable. Undo will work directly after the orphan (for deleting runways and ILS) however.
- The orphan runway can be dragged and rotated and the orphan ILS will follow. This is to allow a user to move/orient the orphans so that they do not interfere with the current or other airports.
- Orphans are named DO NOT USE and have a fixed frequency of 108.000. Glide slopes and DMEs are stripped. They show up in the GPS and map displays.

8.3.4 Adding ILS

Adding an ILS to a runway merely generates a display of the ILS-elements in the ADE-display. For AI-traffic it is useless but the user pilot plane panel uses it

In order to be functionally, this ILS needs an appropriate approach.

Such an approach can be generated as shown in [chapter 13.1 Approach Designer](#)

Or it can be generated by ADE, when the check-box "Create ILS Approach" in the New ILS Properties window is activated (see Figure 8-8).

To add ILS to your airport project, select "Add" and then "ILS" from the Rightclick Menu.

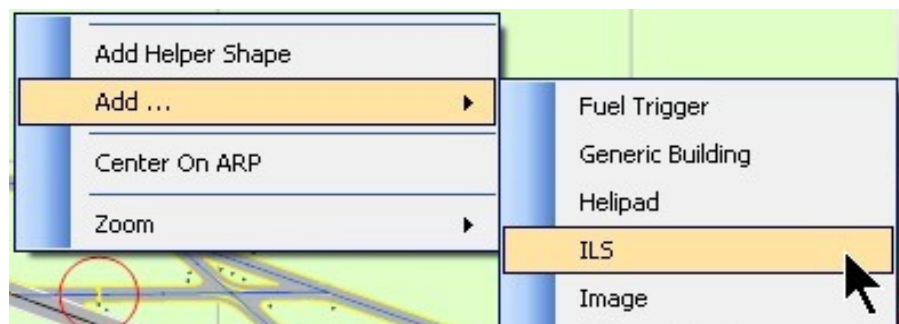


Figure 8-7: Adding an ILS

The New ILS dialog box will open.

Figure 8-8: New ILS Properties

ADE does most of the work of placing the elements of an ILS for you.

- **Runway** – Selects the runway to which you want to add the ILS
- **Ident** – ADE will give you a default Ident for the ILS. You will want to change this if you are adding a real ILS, if not, either keep this or assign your own.
- **Name** – Notice that you are given a name for the Navaid. Naming of ILS follows a specific format, and ADE will construct the appropriate name depending on the elements present. The drop list to the left allows you to add CAT II or CAT III if your ILS requires that as part of the name.
- **Frequency** – ILS transmitter frequencies start at 108.100 MHz and go up to 111.950 MHz. However, they are only on odd-tenths, with 50 kHz spacing between each frequency. When you add ILS to your airport, ADE assigns a valid frequency for you at random. You may change this value based on the limitations specified above for ILS frequencies.
- **Range** – ILS range is generally 27nm but you can set this value up to 30nm in ADE. It appears that if you set a 30nm range, the localizer activates at about 28.6nm and the glide slope comes alive at about 24.1nm. This appears to be a limitation within FS.
- **Glide Slope / DME** – By default glide slope and DME are checked. Uncheck them if you do not want them. Notice that the name will change if you do this.
- **Back Course** – Check Enable Back course if you want one.
- **Create ILS Approach** – For an ILS to function correctly in FS, it needs to include an approach. ADE will automatically create a very simple ILS approach for your new ILS if you leave this option checked. If you want to create your own approach via ADE's Approach Designer, then leave this option unchecked. If you choose to have ADE create your ILS approach automatically, you can view the new approach in Approach Mode.

Once you select your ILS properties, click "Add" and your airport ILS will be created.

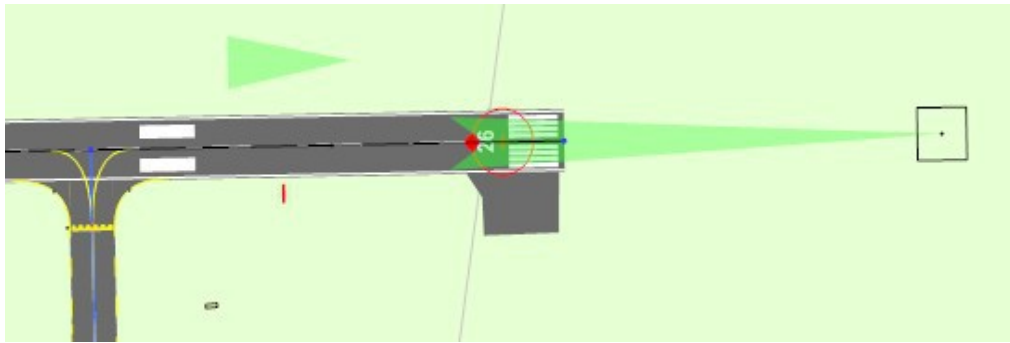


Figure 8-9: Newly added ILS

These are typical locations but if you want to move the glide slope or DME to suit their real world locations then it is easy enough to do.

8.3.5 Moving ILS

The localizer should point along the runway, so you should not move it. But, if you need to move any element just select and drag it to the new location. If you change your mind then Undo will place it back from where you moved it.

8.3.6 Editing ILS

To edit an ILS element (localizer, glideslope or DME), either double click on the object or select Edit Object from the Rightclick Menu.

Figure 8-10: ILS Properties Dialog Box

Much of the information will be familiar from the Add ILS dialog. However, there is some additional information about the glide slope and DME.

- **Beam Width** - This is the width of the LOC beam that represents a full swing of the needle from one side of the ILS instrument gauge to the other side. This is normally limited to 3.0 to 6.0 degrees. This is usually set so the beam is 700 ft wide over the threshold of the runway. This means that the longer the runway, the narrower the beam, and the more sensitive the ILS gauge needle will be. AFCAD automatically calculates the beam width and inserts the appropriate value when you create an ILS or move a LOC.
- **Location** – The location of the Localizer is listed at the bottom. To move either the glide slope or DME, drag them in the main display.
- **Altitude** – Altitude is the same for all elements and is fixed at the airport reference point. You cannot change this in ADE and generally you should not need to do so.
- **Heading** – The heading applies to both the localizer and glide slope so if you change this both will point in the new direction. While some ILS are offset to the runway heading they serve, it is not something that you would normally do unless you are adding a real world ILS that is offset.
- **Magnetic Variation** – The magnetic variation is always the same as the airport. FS9/FSX will not recognize any changes to this value.
- **Glide Slope / DME** – Selecting or un-selecting the glide slope and DME will either remove them or add them. The only thing that you can change is the glide slope angle.

If you need to delete either a glide slope or DME, either select them on the airport and delete or uncheck them in the dialog. Remember that ADE will not allow you to delete stock localizers, and if you try you will get a warning message. You can delete, on the other hand, user-created localizers.

8.4 VOR / DME

(VHF Omni-directional Range / Distance Measuring Equipment)

ADE will show stock VOR/DME if they are within 60nm of the current airport. ADE also allows you to add your own VOR/DMEs.

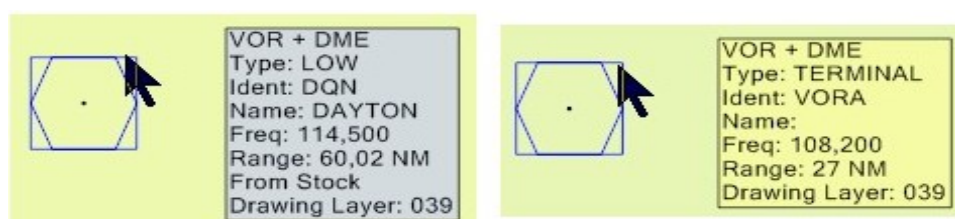


Figure 8-11: ADE's Display of Stock- and User Created VOR/DME

8.4.1 Stock VOR/DME

o in FS9

- A stock VOR/DME cannot be moved or deleted
- A stock VOR/DME can only be edited for Name, Type and Frequency

o in FSX

- A stock VOR/DME can not be moved, deleted or edited.

8.4.2 User Generated VOR/DME

To add a VOR/DME, select "Add" and then "VOR/DME" from the Rightclick Menu.

8.4.3 VOR/DME Properties

To edit a VOR/DME, either double click on the object or select Edit Object from the Rightclick Menu.

Figure 8-12: VOR Properties Dialog Box

From the VOR property box you can edit the following options:

- **Name** – Displays the name of your VOR/DME
- **Ident** – The VOR ident is usually 3 to 4 letters in length
- **Type** – There are three general types of VOR/DME: VOR only, VOR + DME, and DME only. VOR-only will provide directional guidance via the omni radial but no distance information. VOR + DME will provide both direction and distance. DME-only will provide distance information, but will not transmit an omni radial.
- **VOR Type** – there are four specific VOR types from which to choose:
 1. **Terminal** – This type has an altitude between 1,000ft and 12,000ft and a range of 25nm
 2. **Low** – This type has an altitude between 1,000ft and 18,000ft and a 40nm range
 3. **High** – This type has an altitude between 14,500ft and FL450 and a range from 100nm to 130nm.
 4. **VOT** – This is a low-power omni station located on many of the mid-to-large size airports. A VOT differs from a standard omni in that it transmits only a single radial, the 360° radial. FS9/FSX does not appear to use stock VOTs.

- **Frequency** – The valid frequencies for VORs are between 108.000 MHz and 117.950 MHz (with 50-kHz spacing).
- **Range** – ADE defaults the VOR/DME range to 27nm, but you should edit this based on the VOR type you select. For VOTs, FS9 and FSX locks the range at 0.5nm regardless of the value you enter. ADE allows any range under 300nm and will provide a recommended value if you press the Set Range button.
- **Magnetic Variation** – The value is based on the magnetic variation of the airport. FS9/FSX will not recognize any changes to this value.
- **Region** – Region is based on the location of your airport project.
- **Location** – Allows you to specify the geographic coordinates of your VOR; however, the elevation is based on the airport elevation.

8.5 NDB

(Non-Directional Radio Beacon)

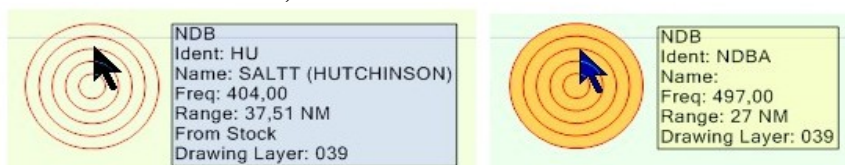


Figure 8-13: ADE's Display of NDB

8.5.1 NDB from Stock

o for FS9

- A stock NDB cannot be deleted
- A stock VOR/DME can only be edited for Name, Type and Frequency

o in FSX

- A stock NDB can not be moved, deleted or edited.

8.5.2 User Generated NDB

You can add new terminal NDBs but not regular ones. That is, all NDBs you add will be stored in the airport record.

To add NDBs, select "Add" and then "NDB" from the Rightclick Menu. This will bring up the NDB properties dialog box.

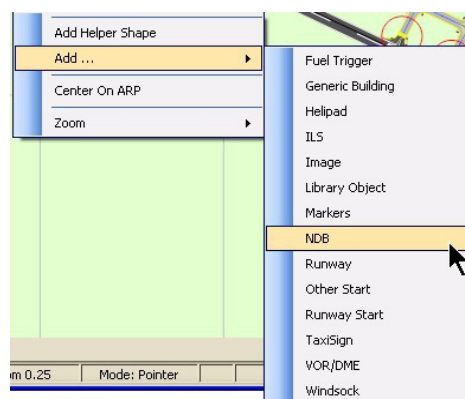
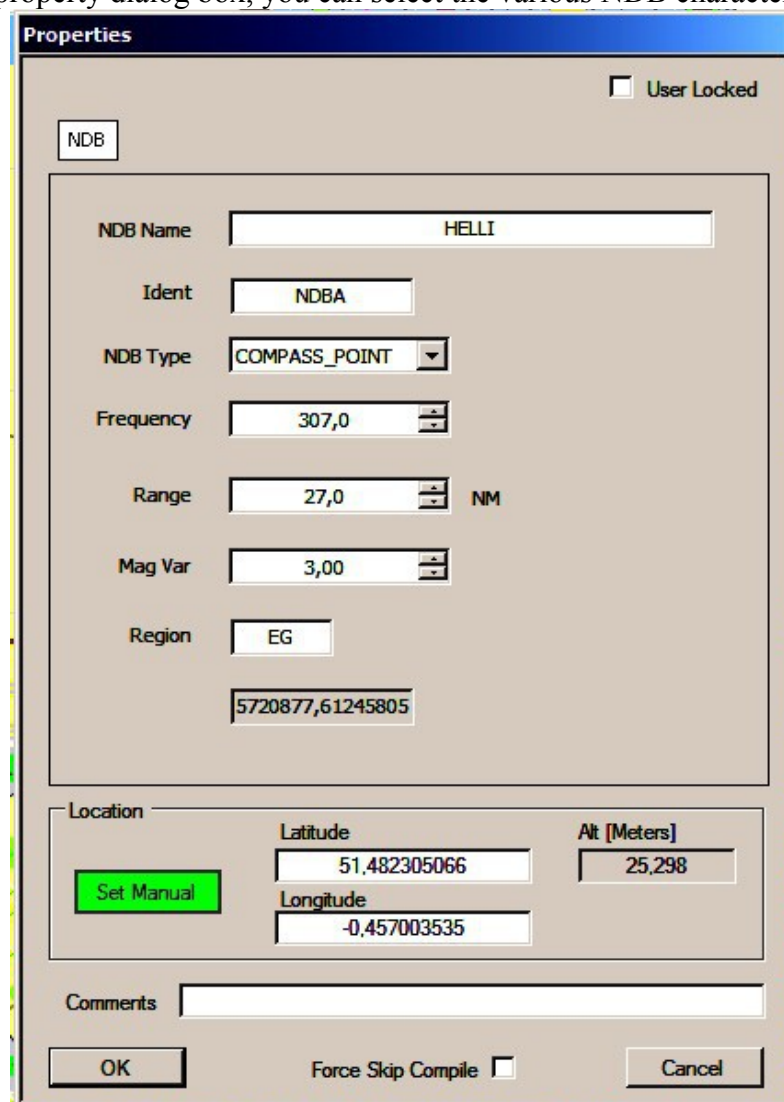


Figure 8-14: Add a NDB

8.5.3 NDB Properties

From the NDB property dialog box, you can select the various NDB characteristics:



The image shows a software dialog box titled "Properties" with a tab labeled "NDB". In the top right corner, there is a checkbox labeled "User Locked" which is currently unchecked. The main area of the dialog contains several input fields: "NDB Name" with the text "HELLI", "Ident" with "NDBA", "NDB Type" with a dropdown menu showing "COMPASS_POINT", "Frequency" with "307,0", "Range" with "27,0" and a unit "NM" to its right, "Mag Var" with "3,00", and "Region" with "EG". Below these fields is a text box containing the coordinates "5720877,61245805". A section titled "Location" contains a green "Set Manual" button, a "Latitude" field with "51.482305066", a "Longitude" field with "-0.457003535", and an "Alt [Meters]" field with "25,298". At the bottom, there is a "Comments" text box, an "OK" button, a "Force Skip Compile" checkbox (unchecked), and a "Cancel" button.

Figure 8-15: NDB Properties Dialog Box

- **Name** – Displays the name of the NDB
- **Ident** – The NDB ident is usually 3 to 4 letters in length.
- **NDB Type** – There are four types of NDBs you can choose from: Compass Point, MH, H, and HH.
 1. **Compass Point** (or L) – Power < 25 watts and Range = 15nm
 2. **MH** – Power < 50 watts and Range = 25nm (Most terminal NDBs in FS are MH)
 3. **H** – Power 50 - 2,000 watts and Range = 50nm
 4. **HH** – Power > 2,000 watts and Range 75 - 100nm
- FS9/FSX allows any nm range to be used regardless of the type you select. That means you can create a HH NDB and set the range for 1.0nm and FS will honor it. FS9/FSX also reads the vertical height altitude of a NDB. Consequently, if you are 1.0nm from the NDB at ground level and slew upward to 30,000ft the NDB range distance increases also.

- **Frequency** – NDB frequencies vary from country to country. In North America, the NDB band is from 190 to 435 kHz and from 510 to 530 kHz. In Europe, there is a long wave broadcasting band from 150 to 280 kHz, so the European NDB band is from 280 kHz to 530 kHz with a gap between 495 and 505 kHz because 500 kHz is the international maritime distress (emergency) frequency. Consequently, ADE will allow you to assign an NDB frequency between 0 and 1737 kHz.
- **Range** – As already mentioned, each type of NDB has a range based on its power output. ADE uses the default range of 27nm. However, you should change this value based on the type of NDB you wish to create.
- **Magnetic Variation** – The value is based on the magnetic variation of the airport. FS9/FSX will not recognize any changes to this value.
- **Region** – Region is based on the location of your airport project.
- **Location** – Allows you to specify the geographic coordinates of your NDB; however, the elevation is based on the airport elevation.

8.6 Waypoints (Approach Mode Only)

The "Approach Mode" is described in detail in [chapter 13.1 Approach Designer](#)

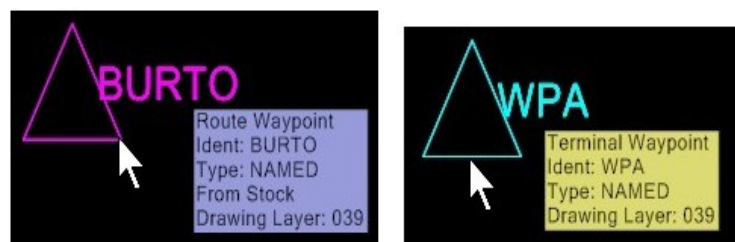


Figure 8-16: ADE's Display of Waypoints

Waypoints are used to define approaches or routes in FS.

There are two types,

- Terminal Waypoints
- Route Waypoints.

They are visible only in ADE's approach mode.

When loading a stock airport, ADE will load any terminal or route waypoints within a radius of 60 nm around the airport.

8.6.1 Route Waypoints

- Route Waypoints cannot be added, deleted or modified

8.6.2 Terminal Waypoints

When loading a stock airport, ADE will load any terminal or route waypoints within the test radius of the airport.

To add a terminal waypoint, switch to "Approach Mode" in the ADE-Main Display and select "Add " and then "Terminal Waypoint" from the Rightclick Menu in the Approach Designer.



Figure 8-17: Add a Terminal Waypoint

After a short delay, the Waypoint Properties will open. If you want you can cancel the waypoint via the Cancel button in the property dialog, or via Undo.

Figure 8-18: Waypoint Properties Dialog Box

- **Ident** – Waypoints have an ident of up to five letters and numbers. ADE offers a dummy ident (WPA). You need to change this and ensure that it is not the same as another waypoint associated with the airport otherwise there will be a compiler error.
- **Type** – Although there are a range of types in FS, only two are used throughout the default FS world: Named and Unnamed. Even this distinction seems to be erratic and overall the Type does not appear to be used for anything in FS. The rationale behind named and unnamed is that if you can speak it (ATOFF) then it is “named” but if you can't (A1234) then it is “unnamed.”
- **Magnetic Variation** – ADE will determine the magnetic variation based on the airport value. You should not change this unless you know via some published data that the value selected by ADE is not correct.
- **Region ID** – ADE will determine the Region ID for you. It uses an algorithm that should be correct so only change this if you know that it has picked the wrong one.

To move a terminal waypoint, just select and drag it.

You can delete user-created terminal waypoints.

9.0 Terrain Elements

Terrain display which is as realistic as possible is one of the pillars of flight simulation. However the huge diversity renders this topic a very complex issue.

ADE addresses this only as far as it serves to change or improve or both the scenery of an airport.

9.1 Types of Terrain in Flight Simulator

The scenery in the Flight Simulator is comprised of several different terrain elements:

- a) **Terrain Mesh** – The topographic profile of the land
- b) **Land Class(ification)** – Types of terrain (e.g. urban, farmland, and forest)
- c) **Water Class(ification)** – Types of water (e.g. river, lake, and ocean)
- d) **Seasons / Regions** – Changes the scenery based on time of year and location
- e) **Population Density**
- f) **Terrain Vectors** – Types of land features (e.g. shorelines, bridges, and roads)

Experienced scenery developers have the ability to change any one of these terrain elements when developing their scenery projects using programs like "FSX KML" or "SBuilder X". ADE provides experienced airport designers the ability to modify terrain elements around their airport projects by supporting (b), (c), and (f) above.

Note

There is a significant difference for Terrain with FS9 and FSX/P3D. While for FSX/P3D a whole range of features are available, for FS9 presently exist only a few.

Note also that the term "vector" is the same as a "line" but with a designated heading

ADE provides four tools to modify the terrain:

- **terrain polygon** - Land-/Water-Class, Airport Backgrounds, polygons which manipulate the terrain)
- **terrain vector** (or line) - Roads, Railways, Rivers, Coastlines
- **custom ground polygon** - and
- **custom ground line** - allow you to create ground cover and markings directly from the ADE display for use with FS9 and FSX/P3D.

Custom Ground Polys and Lines were standard for early Microsoft Flight Simulators up to FS8 and FS2004, but were not implemented any more for FS9 and FSX.

ADE owes it to **Don Grovestine** (gadgets) who wrote a "Ground Poly Editor", which allows the user to create and edit Ground Polys and Ground Lines also in FS9 and FSX. This GP-Editor is now an integral part of ADE. Its use is briefly described below in chapter 15.4. For details the user is referred to a separate Manual, which is also a part of the ADE package. It can be found as a PDF-file "ADE-GP-UserManual.pdf" in the folder "Manuals" in the main ADE directory.

9.2 Terrain Polygons

9.2.1 with ADE for FS9

Terrain-Polygons in FS9 are simple "**Flattens**" only, which are used for levelling bounded areas. To create these use the Add Polygon icon in the Tool Bar.



Figure 9-1

This will allow you to draw a poly in the shape of your flatten (remember to double click to close it)

These polygons are placed in the same way as aprons. You can select the shapes, drag and rotate them and add or delete vertex points later as described in [chapter 4.3.1 Creating Aprons](#)

After completing a polygon, the Flatten properties dialog box will open.

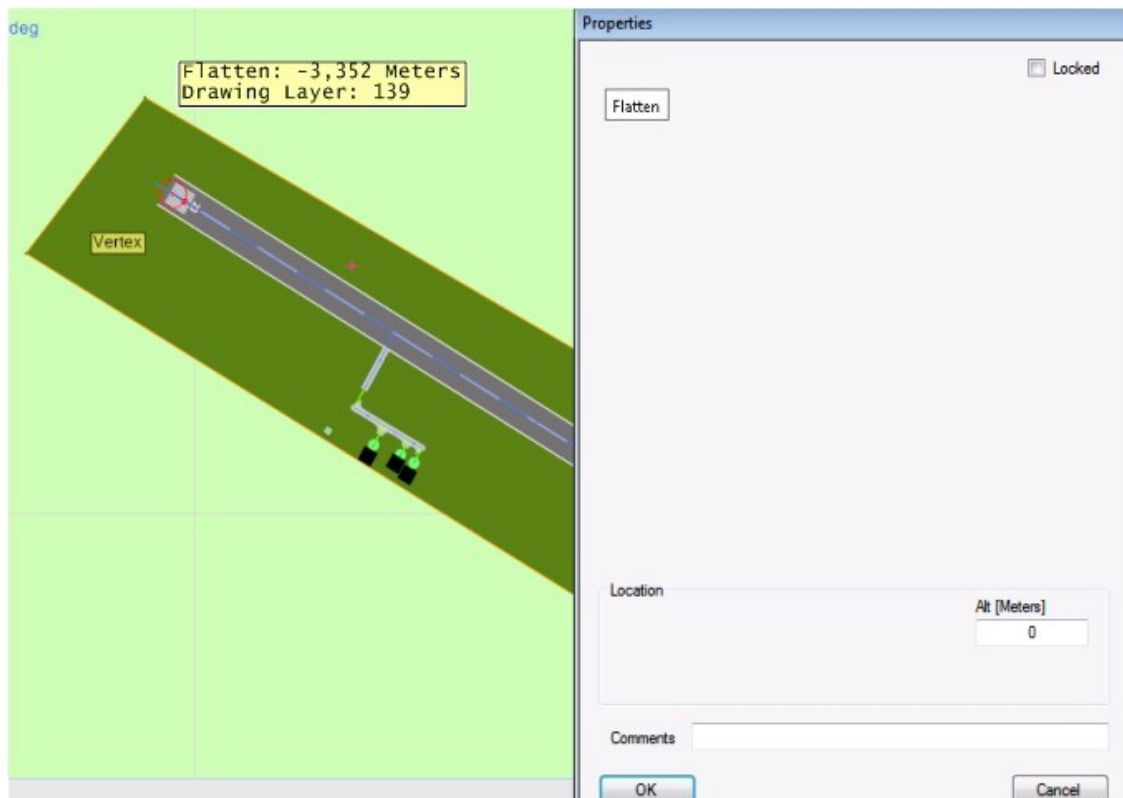


Figure 9-2: Flatten Properties Window

The only thing you can change is the altitude. This is set to the airport reference altitude by default but can be changed to suit your needs.

The tooltip will tell you that it is a Flatten and the altitude. You may add multiple flattens to your airport. These can create some ground contours. When compiled ADE will create a separate BGL file that uses the same name as the airport BGL file but includes '_TER' in the name. ADE is using SCASM to compile these and a copy is shipped with the program.

It is possible to choose the display color of a Flatten.
This is done by selecting “**Settings => Colors => FS9-Flatten**” in the Settings-menu.
The effect of "Flatten" is demonstrated in the two following pictures.

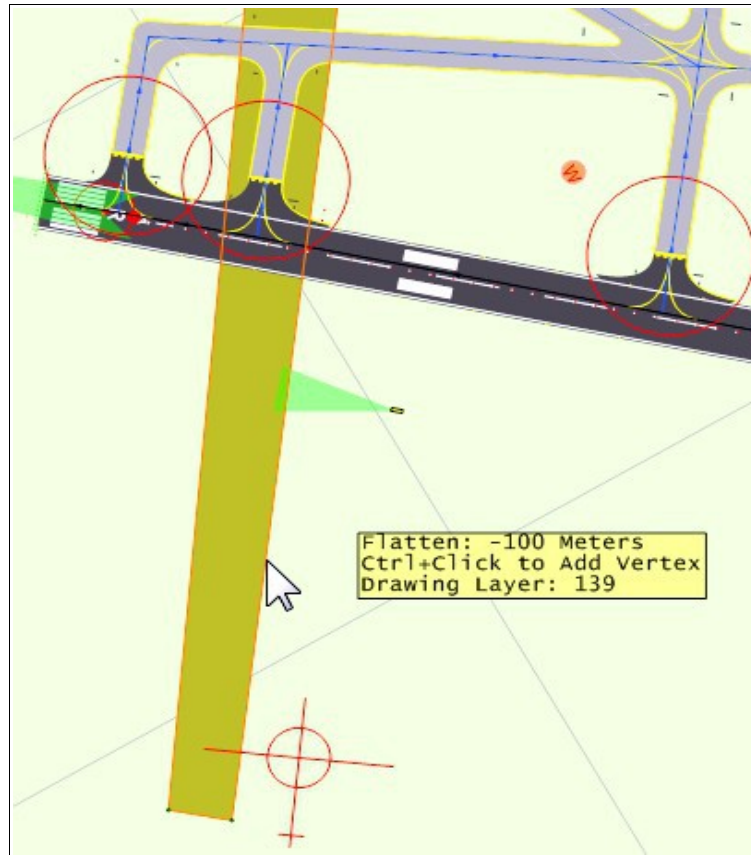


Figure 9-3: A Flatten Polygon in ADE

Note that the altitude of the Flatten has been set to minus 100 meters



Figure 9-4: The Effect of the Flatten in FSX

9.2.2 with ADE for FSX

ELEMENT (TAG)	Add with:	Exclude with:
GENERAL (11)		
Airport Background		Poly Type: Exclude General
Everything		Poly Type: Exclude General
Parks	Poly Type: Land Class	Poly Type: Exclude General
Water Polys	Poly Type: Water	Poly Type: Exclude General
Water Polys GPS		
Freeway Traffic (not yet available)	Vector Type: Freeway	Poly Type: Exclude General
Railways	Vector Type: Railway	Poly Type: Exclude General Poly Type: Exclude Specific
Roads	Vector Type: Road	Poly Type: Exclude General
Shorelines	Vector Type: Shoreline	Poly Type: Exclude General
Streams	Vector Type: Stream	Poly Type: Exclude General
Utilities	Vector Type: Utility	Poly Type: Exclude General
AIRPORT BACKGROUND (7)		
Exclude AutoGen	Poly Type: Airport Background	Poly Type: Exclude Specific
Flatten	Poly Type: Airport Background	Poly Type: Exclude Specific
Flatten Exclude Autogen	Poly Type: Airport Background	Poly Type: Exclude Specific
Flatten MaskClassMap	Poly Type: Airport Background	Poly Type: Exclude Specific
Flatten MaskClassMap Exclude Autogen	Poly Type: Airport Background	Poly Type: Exclude Specific
MaskClassMap	Poly Type: Airport Background	Poly Type: Exclude Specific
MaskClassMap ExcludeAutogen	Poly Type: Airport Background	Poly Type: Exclude Specific
LAND POLYGONS (123)		
LandClassPoly Airfield 1	Poly Type: Land Class	Poly Type: Exclude Specific
to (123 Polys)	Poly Type: Land Class	Poly Type: Exclude Specific
LandClassPoly Woody Savanna	Poly Type: Land Class	Poly Type: Exclude Specific
WATER-POLYGONS (12)		
Hydro Polys Default (2 Tags)	Poly Type: Water	Poly Type: Exclude Specific
Hydro Polys Generic Bay Harbour Default (2 Tags)	Poly Type: Water	Poly Type: Exclude Specific
Hydro Polys Generic Canal Channel Default (2 Tags)	Poly Type: Water	Poly Type: Exclude Specific
Hydro Polys Generic Lake Default (2 Tags)	Poly Type: Water	Poly Type: Exclude Specific
Hydro Polys Generic Ocean Default (2 Tags)	Poly Type: Water	Poly Type: Exclude Specific
Hydro Polys Generic River (2 Tags)	Poly Type: Water	Poly Type: Exclude Specific
VECTORS (113)		
Freeway Traffic (not yet available)	Vector Type: Freeway	Poly Type: Exclude General
Railroad	Vector Type: Railway	Poly Type: Exclude Specific
Railroad Bridges	z.Zt. noch nicht verfügbar	Poly Type: Exclude Specific
Road Bridges Asphalt (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Road Bridges Concrete (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Road Bridges Dirt (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Road Bridges Gravel (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Roads Asphalt (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Roads Concrete (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Roads Dirt (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Roads Gravel (12 Tags)	Vector Type: Road	Poly Type: Exclude Specific
Shorelines Default (2 Tags)	Vector Type: Shoreline	Poly Type: Exclude Specific
Shorelines Generic Bay Harbour (2 Tags)	Vector Type: Shoreline	Poly Type: Exclude Specific
Shorelines Generic Canal Channel (2 Tags)	Vector Type: Shoreline	Poly Type: Exclude Specific
Shorelines Generic Lake (2 Tags)	Vector Type: Shoreline	Poly Type: Exclude Specific
Shorelines Generic Ocean (2 Tags)	Vector Type: Shoreline	Poly Type: Exclude Specific
Shorelines Generic River (2 Tags)	Vector Type: Shoreline	Poly Type: Exclude Specific
Stream Lines Perennial	Vector Type: Stream	Poly Type: Exclude Specific
Utility1	Vector Type: Utility	Poly Type: Exclude Specific
Utility2	Vector Type: Utility	Poly Type: Exclude Specific

Figure 9-5: List of Terrain Polygons and Vectors

In the table of Figure 9-5 all terrain elements except Custom Ground Polys and Lines are listed, which can be added to or excluded from an airport scenery. For better reading a zoom factor of app. 150% is recommended.

This list contains 262 elements!!

This means, that the relevance of these elements can be explained only for a few selected examples.

They includes

- exclusions.....to mask airport background, land- and waterclass, vectors (lines)
- airport backgroundsFlatten, MaskClass
- land polygons
- water (or hydro) polygons.

They are created in ADE with the use of the "Add Polygon"-Icon in the Tool bar

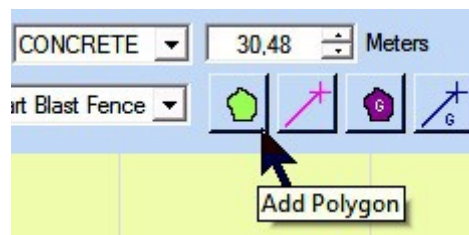


Figure 9-6

These polygons are placed in the same way as aprons. You can select the shapes as described in [chapter 4.3.3 Selecting Aprons](#), drag and rotate them and add or delete vertex points later.

After completing a polygon, the polygon properties dialog box will open (see Figure 9-7 below)

9.2.3 Polygon Properties

From the dialog box you can select what type of polygon you want to create. Each type of polygon has additional definitions (or tags) from which to choose.

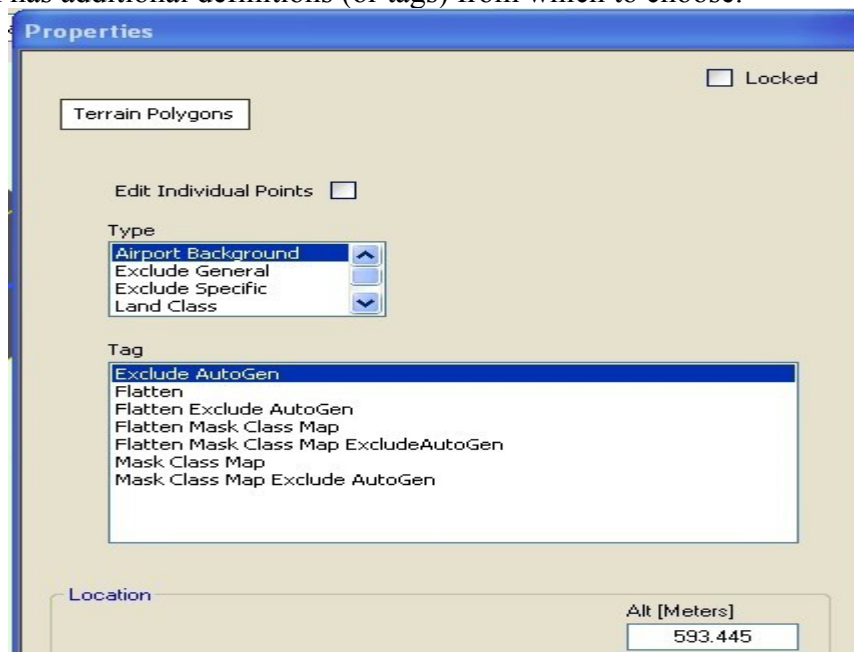


Figure 9-7: Polygon Properties Dialog Box

o **Edit Individual Points**

Activating this box one can allocate an altitude value separately for each vertex of the polygon. Deactivating the box puts all vertices on the same altitude.

This function is only available for the types "Airport Background" and "Water"

o **Alt (Meters)**

defines the altitude of the polygons, available only for the types "Airport Background" and "Water"

o **Type**

You can work with five **Types** of terrain polygons in ADE:

(use the slider to make them all visible)

- **Airport Backgrounds** – Includes 7 different polygons (tags) for modifying the airport background
- **Exclude General** – Includes 11 different polygons for excluding a whole group of attributes (tags)
- **Exclude Specific** – Includes 253 specific polygons for excluding individual attributes (tags)
- **Land Class** – Includes 123 different classes of land
- **Water Class** – Includes 12 different classes of water

These **Types** can be seen in column 2 and 3 of the table in Figure 9-5, their attributes or **Tags** in column 1.

In Figure 9-8 the example of **Type**="Landclass" and **Tag**="Forest and Field" is shown

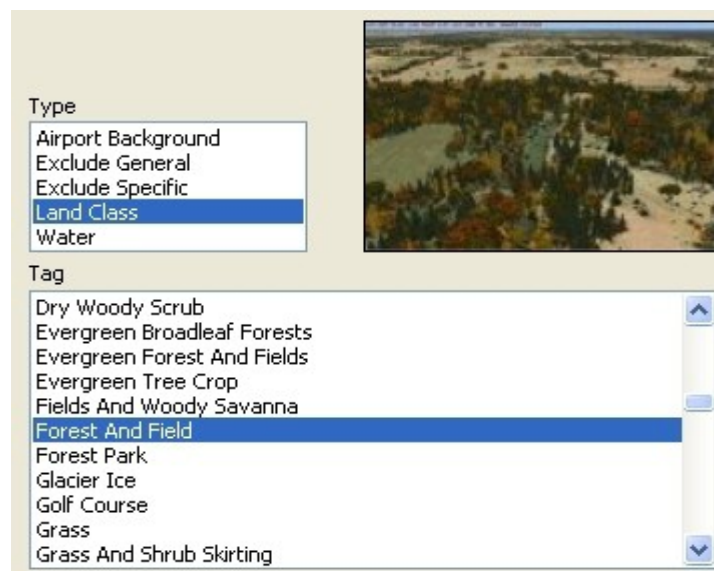


Figure 9-8:

Thumbnails like the one above are shown by ADE only for Landclass tags.

o **Tags**

Since each of the 5 **Types** shown above contains a varying number of **tags**, all together they are too numerous to explain them in detail here.

In the following a short description of each type is given.

9.2.4 Airport Backgrounds

This is the first type in the properties window of Terrain Polygons. It contains 7 tags for modifying the airport background:

- a) **Exclude Autogen** - excludes autogen-buildings and -vegetation
- b) **Mask Class Map** - covers the surface under the polygon with the texture of the landclass "Dry Grass & Dirt Skirting". This substitute texture, that FSX uses, is hard coded in the file lcllookup.BGL, which cannot be changed.
However, you can change the texture by creating three polygons:
 - o Exclude general background
 - o Land class (with desired texture)
 - o New airport background without the "mask map class" property
- c) **Flatten** - levels the surface under the polygon but only provided the stock -background was excluded with "Exclude General => Airport Background"
- d) **Flatten Exclude Autogen** - is the combination of the a) and c) above
- e) **Flatten Mask Class Map** - is the combination of tags b) and c)
- f) **Flatten Mask Class Map Exclude Autogen** is the combination of tags a), b) and c)
- g) **Mask Class Map Exclude Autogen** is the combination of tags a) and b)

The checkbox "Edit Individual Points" in the properties window for terrain polygons, which is available specifically for Airport Backgrounds is a useful feature.

In conjunction with tag "Flatten" it is possible to create sloping surfaces by varying the altitudes of individual polygon vertices.

This is described in detail below in [chapter 9.2.7 Sloping Polygons](#).

9.2.5 Exclusion Polygons

It is not required, that exclusion polygons have the exact measurements and shape of the element, which shall be excluded. It is sufficient, that the polygon is somewhere in touch with the element.

For exclusion two types of polygons are available namely "Exclude General" and "Exclude Specific".

o **Exclude General**

This type has under "tags" 11 entries:

- Airport Backgrounds - excludes all terrain elements within the boundaries of the airport.
- Everything - excludes all terrain elements and all scenery objects

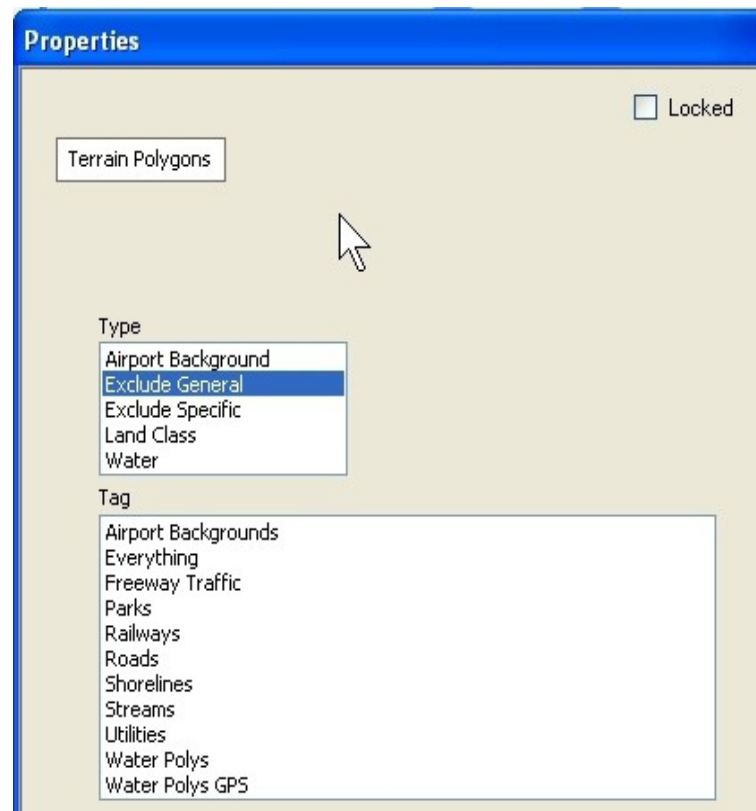


Figure 9-9: Tags of "Exclude General"

- Freeway Traffic - is not yet available in ADE
- Parks - excludes the landclass "City Parks"
- Railways - excludes all railway lines
- Roads - excludes all types of roads and highways
- Shorelines - excludes all shorelines of rivers, lakes, oceans
- Streams - excludes all rivers and brooks, which are treated in FSX as terrain vectors
- Utilities - excludes all electrical power lines and telephone lines
- Water Polys - excludes all water surfaces (rivers, lakes, oceans)
- Water Polys GPS - excludes all water polygons which are displayed in GPS

It is usually possible to see the extent of the polygon in FSX. In many cases, there is a boundary fence as well that can serve as a reference. The important thing to remember is to make sure that the exclusion intersects the perimeter of the airport background polygon.

If you decide to use TmfViewer, you will need the directory and file information from the ADE Status Bar to determine the relevant FSX scenery file.

Notice that the Tool Tip includes both the type and tag of the exclusion polygon.

o **Exclude Specific**

This type contains 251 tags. A few of them are shown in Figure 9-10.

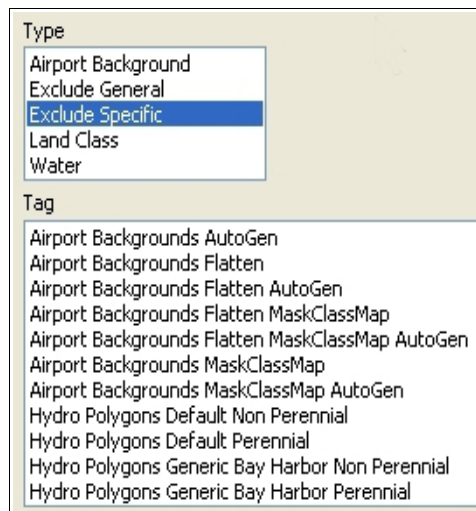


Figure 9-10: Tags of "Exclude Specific"

The elements (tags), which can be excluded individually again have to be touched only by the exclusion polygon.

However with vectors care must be taken because they are straight lines only, which are grouped in segments to achieve curvatures. Only those segments are excluded, which are touched by the polygon.

9.2.6 Land- and Water-Class

This Type is used to place elements of both classes on the airport area.

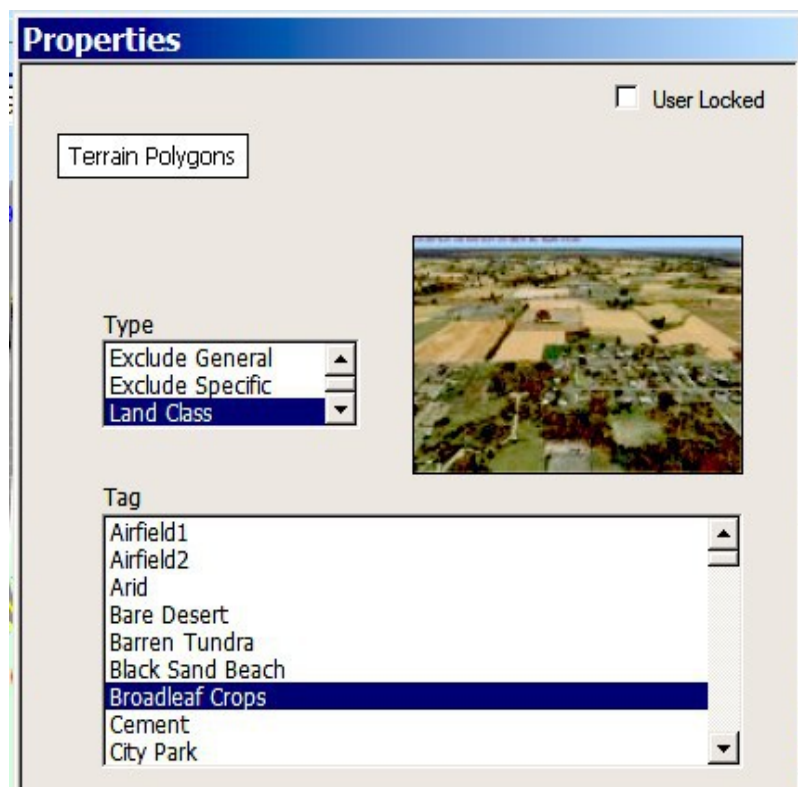


Figure 9-11: Tags of Landclass

Land class can vary from cities to desert. Water can be anything from a river to an ocean. ADE will even display a thumbnail of these land and water classes if they are available.

Note: Before any modification of a stock airport takes place it is mandatory, that the stock airport background is excluded. Without this a Landclass polygon is not visible.

In view of the large number of available Land-and Waterclass surfaces a detailed description is beyond the scope of this Manual.

Just as an example in Figure 9-12 the effect of a landclass poly is shown.



Figure 9-12: Placement of a Landclass "Broadleaf Crops"

9.2.7 Sloping Polygons

If Edit Individual Points (see the checkbox on top of Fig.92 above) is unchecked in the polygon properties box then the altitude box is accessible and the value there is used for all vertices on the polygon. Generally this is the method used to create a flatten for an airport.

In some cases the placing of an airport flatten will cause 'cliffs' in the surrounding scenery.



Figure 9-13: "Cliffs" created by Flatten Polygon
(airport background of type "Flatten MaskClass Map Exclude Autogen")

Sloping polygons can be used to make these changes more gradual and visually acceptable.

To change the altitude of individual points, check the Edit Individual Points box. The altitude will now be greyed out, but ADE will transfer the value to each individual vertex point. Deselecting this box will result in all the points getting the single value stored in the altitude box.

To set the altitude for an individual vertex, select that vertex and then edit it by either double clicking or choosing Edit Object from the Rightclick Menu.

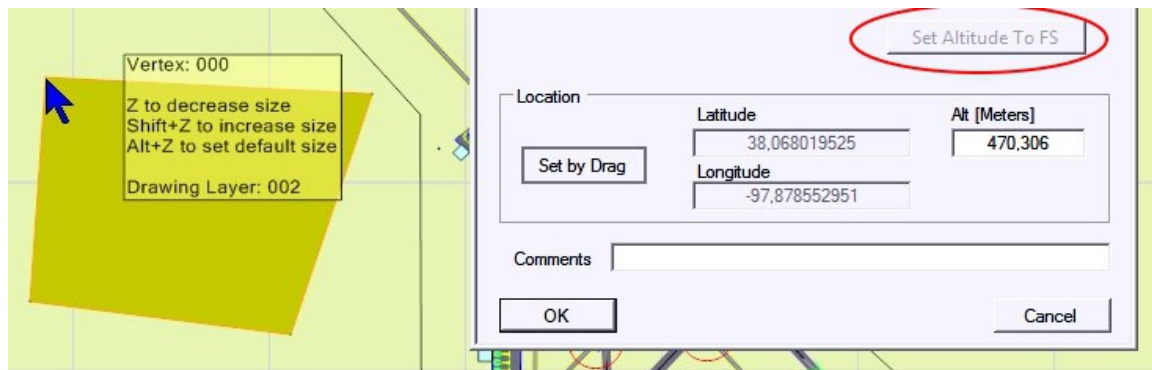


Figure 9-14: Setting the Altitude of a Vertex

If you leave Edit Individual Points unchecked you will get the properties dialog box for the entire polygon.

Generally you would want to be connected to FSX so that you can get an accurate altitude by positioning the aircraft and vertex together (to use ADE with FSX, refer to page 70). When connected, the Set Altitude to FSX button is active and you can click it to set the vertex altitude. Otherwise you will need to enter a value. Click OK to save that vertex with a unique altitude.

The creating of a "Sloping Polygon" is shown in Figure 9-15

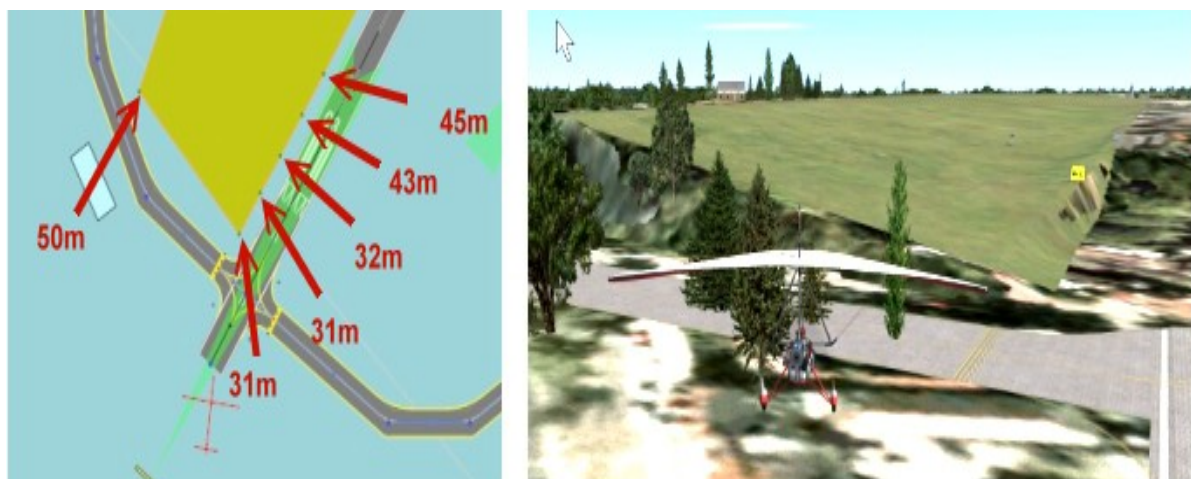


Figure 9-15: Airport Height = 31m, Airport Background Height= 50m

At the right poly edge four vertices are added and they get individual altitudes (left picture). This generates a sloped Airport Background polygon.

9.3 Terrain Vectors (Lines)

Terrain vectors are terrain elements such as roads, railroads, shorelines, streams, and utilities. To add vectors, click the Vector icon from the main Toolbar.

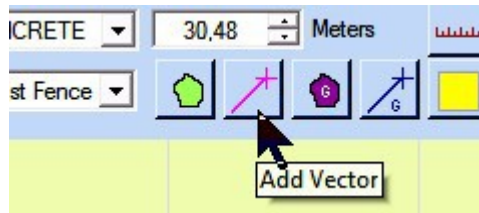


Figure 9-16: Icon for Terrain Vectors

Draw your line with as many vertex points as required and complete it by double clicking. This will open the property dialog box, and you may select the type and specifics of your vector line. Click OK to save this.

You may move or delete vector lines as needed. You may also add or delete vertices in an existing vector line.

9.3.1 Vector Types

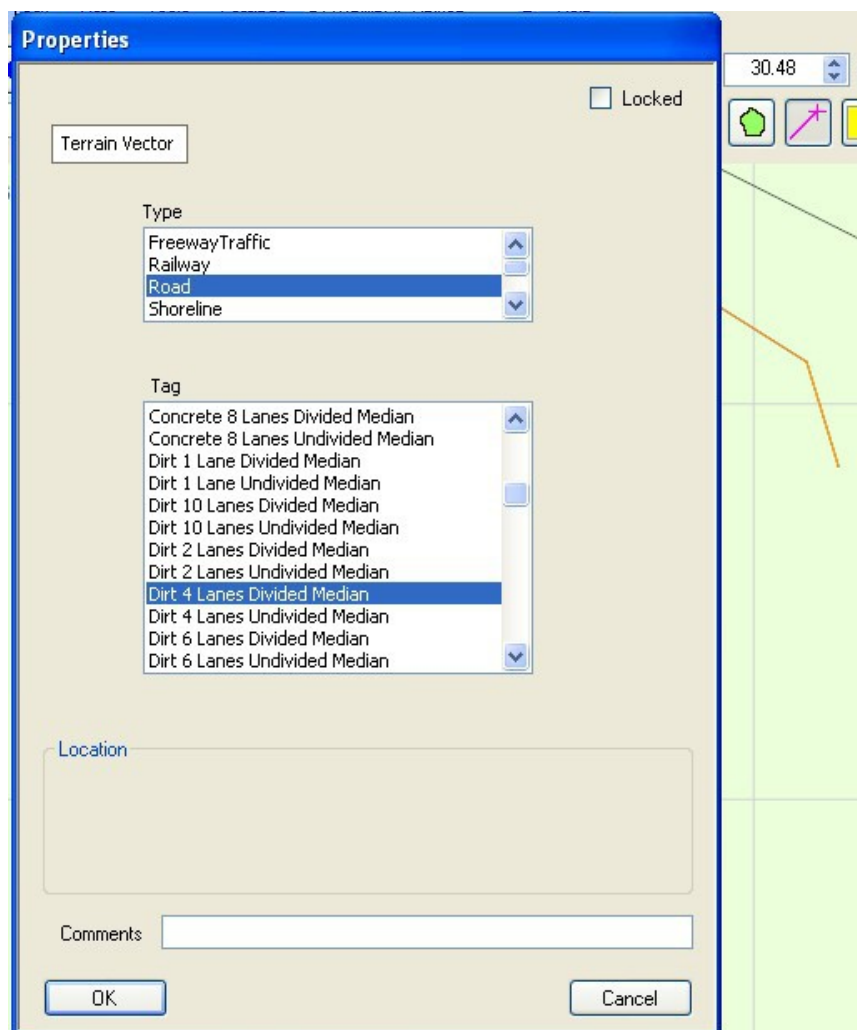


Figure 9-17: Tags of Terrain Vector "Road"

There are six basic vector types available within the vector property dialog box:

- **Railway** – This type creates a railroad vector
- **Road** – This type contains 48 different road vectors based on surface and number of lanes
- **Shoreline** – This type contains 6 different shorelines, each with a perennial and non-perennial option
- **Stream** – This type creates a perennial stream vector
- **Utility 1&2** – This type creates power- and telephone-line vectors
- **Bridges** - This type creates Railroad- and Roadbridges.
ADE does not support this function

Below some examples of Terrain Vectors are shown.

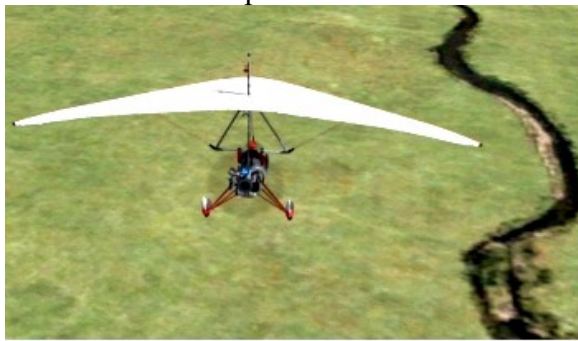


Figure 9-18 Stream



Railway



Figure 9-19 Road 1 Lane Undevided Median



Road 2 Lanes Devided Median



Figure 9-20 River without Shoreline



River and Ocean Shoreline

Overall there are 113 different Terrain Vectors available in FSX.
Their detailed description goes beyond the scope of this Manual.

9.4 Custom Ground Polygons

9.4.1 Custom Ground Polys versus Terrain Polys/Vectors

The following table shows the main differences between both types of terrain elements.

	Terrain Polygon	Custom Ground Polygon
Valid for	FSX, P3D	FS9, FSX, P3D
Provide	Landclass, Waterclass, Exclusions, Mapping	Pre-defined and user-defined textures
Display	Below airport elements, not over photo-sceneries	Over airport elements, also over photo-sceneries
Altitude	for Airport Background and Water)	No altitude

Figure 9-21: Differences between Terrain- and Custom Ground Polygons

9.4.2 Adding a Custom Ground Poly

There are two buttons available in the tool bar for Ground Polys and Ground Lines

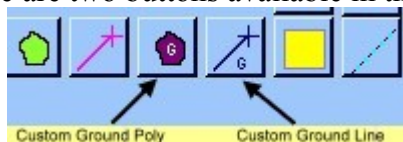


Figure 9-22

- o Select the Custom Ground Poly button
- o Draw the polygon in the usual way remembering to double click the last point to complete the poly
- o The Custom Editor will open to allow entry of the required properties

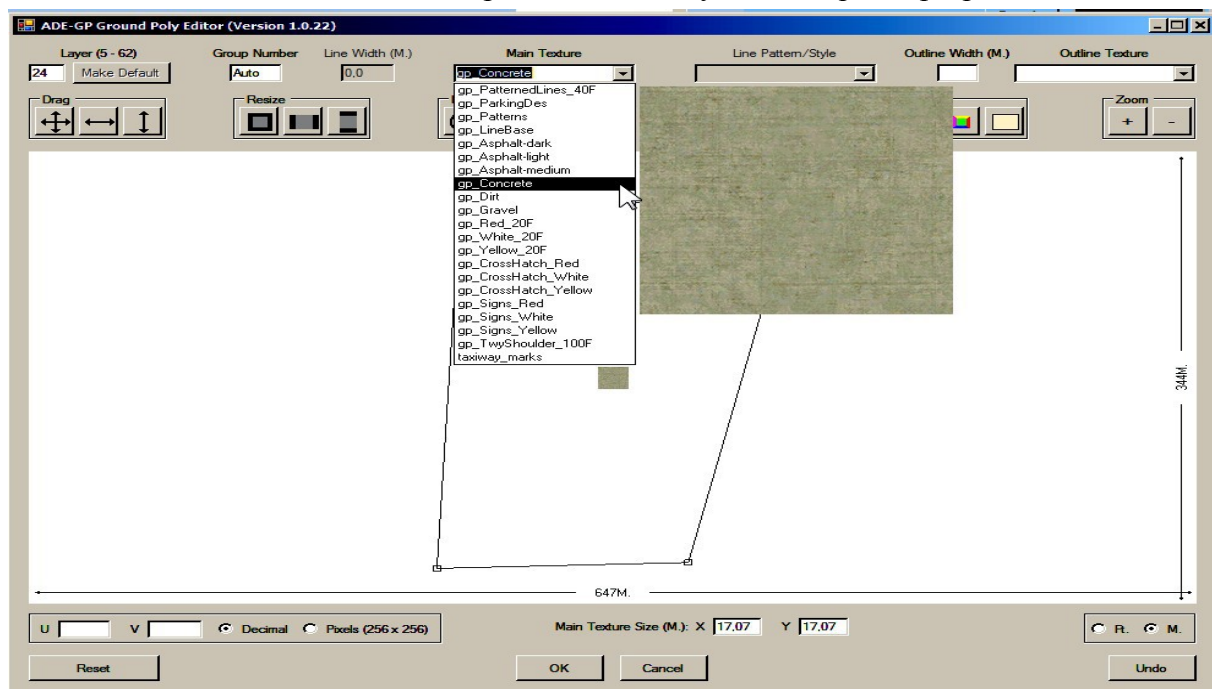


Figure 9-23: Custom Ground Poly Editor

- o The minimum editing, which is required is to choose a texture from the "Main Texture" roll down window. This displays at the same time the polygon in the editor window.
- o A click on "OK" terminates the first editing. The resulting display in ADE and in the Flight Simulator is shown in the next pictures.

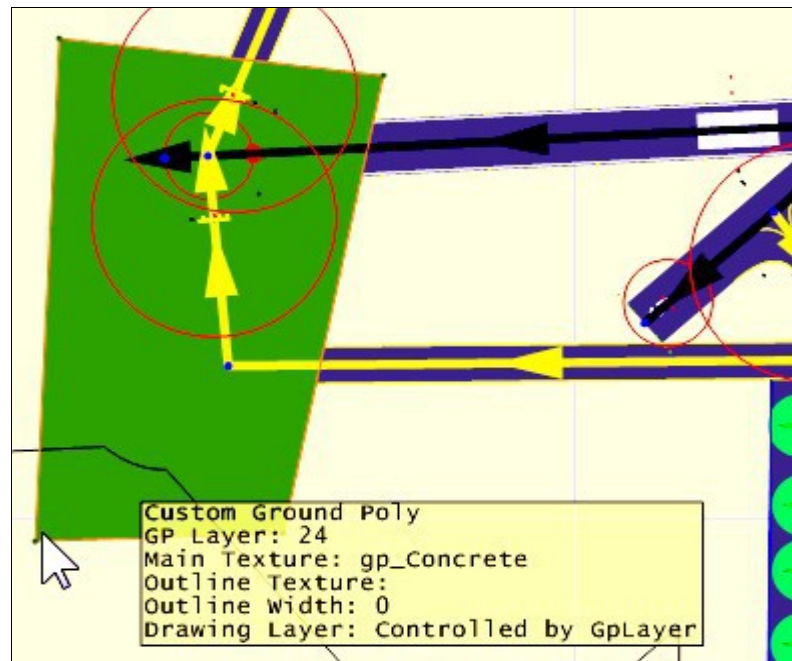


Figure 9-24: Custom Ground Poly in ADE

- o The tooltip shows details of the polygon

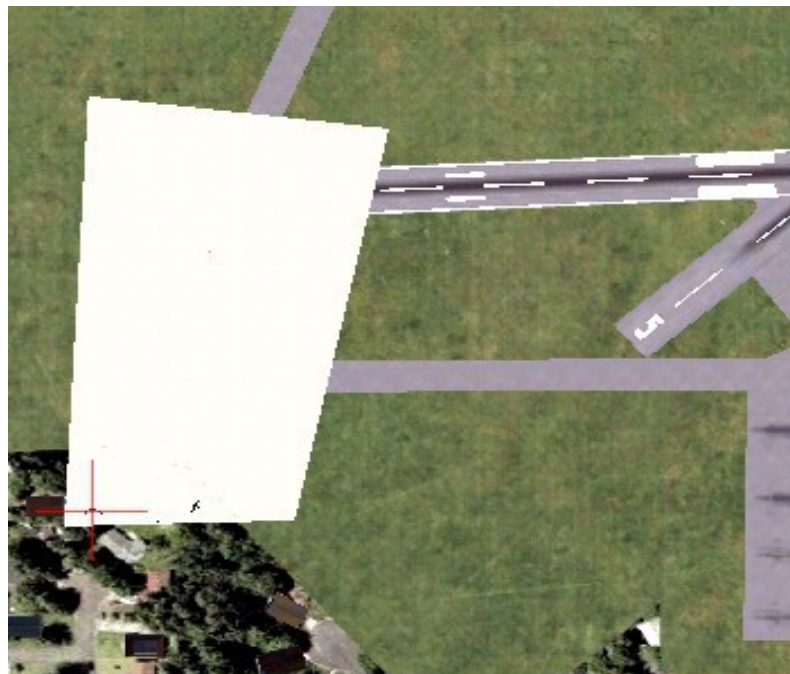


Figure 9-25: Custom Ground Poly in Flight Simulator

More details about editing Custom Ground Poly, such as drawing layers and in particular using customer-provided textures can be found in the "ADE-GP-User Manual" in the folder "Manuals" of the ADE main directory.

9.4.3 Use Helper Shapes for Custom Ground Polys

The method of using Helper Shapes is more or less the same as with Aprons (see [chapter 4.3.2 Using Helper Shapes](#)). Helper Shapes are explained in [chapter 14.10 Helper Shapes](#). Once you have added a helper shape, you can turn it into a custom ground poly. To do so, select the helper shape, right click, and select "Make Custom Ground Poly".

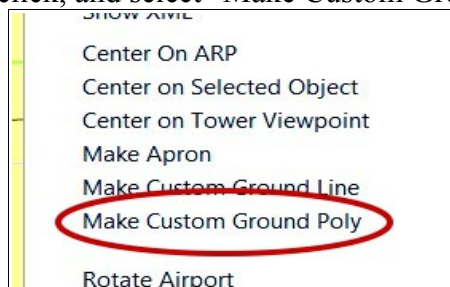


Figure 9-26: Selection in Rightclick Menu

After ADE creates the ground poly from the helper shape, you can move it to another location and make additional polys, or if you are finished with it, just delete it.

9.4.4 Edit Custom Ground Polys

Custom Ground Polys can be moved, edited or deleted in the same way as any other ADE object. Via the GP-Editor you can resize it, resize the texture, change colors. In the "View" Menu you can hide and restore it and in the "Lists" Menu it can be handled as any other airport element. In the "Files" Menu one can import previously created FS8-style ground polys or using Gmax and FS8 MakeMDL (or some other set of tools) to integrate those ground polys into your airport ad4-file.

Before you attempt to change any aspect of an imported Ground Poly object, e.g., add, delete or change the position of individual vertices, it is important that you open the object in the ADE_Ground Poly editor first and save it before making such changes.

Otherwise, the ADE display of the revised poly may be distorted. Not doing so will cause no permanent harm. A simple "reset" in the ADE_Ground Poly Editor is all that is required to recover, but you likely will have to touch-up the texture placement if using a non-uniform texture.

An unedited, unmodified, imported object will compile and be rendered properly in FlightSim.

9.5 Custom Ground Lines

9.5.1 Adding Custom Ground Lines

Ground lines are added via the icon in the tools bar.

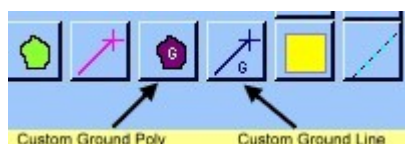


Figure 9-27 (same as 9-22)

- o Draw the line remembering to double click the last point to complete the line
- o The custom editor opens to allow entry of the required properties

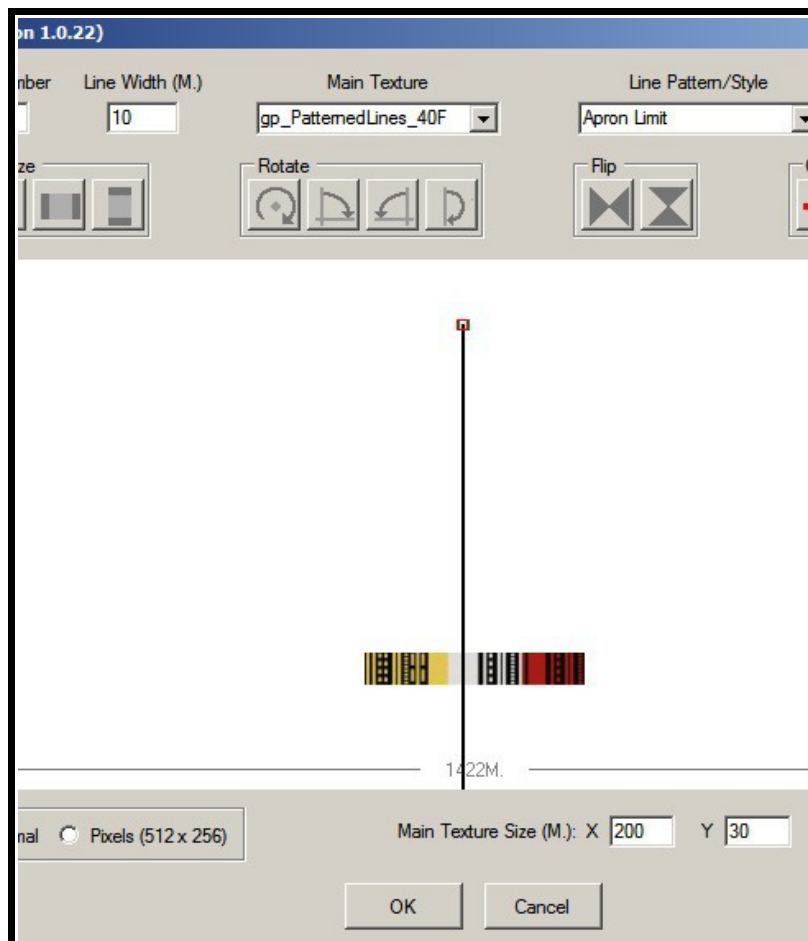


Figure 9-28: Custom Ground Line in GP-Editor

- o Click "OK" to terminate the process and the line will stay fixed in the ADE display.

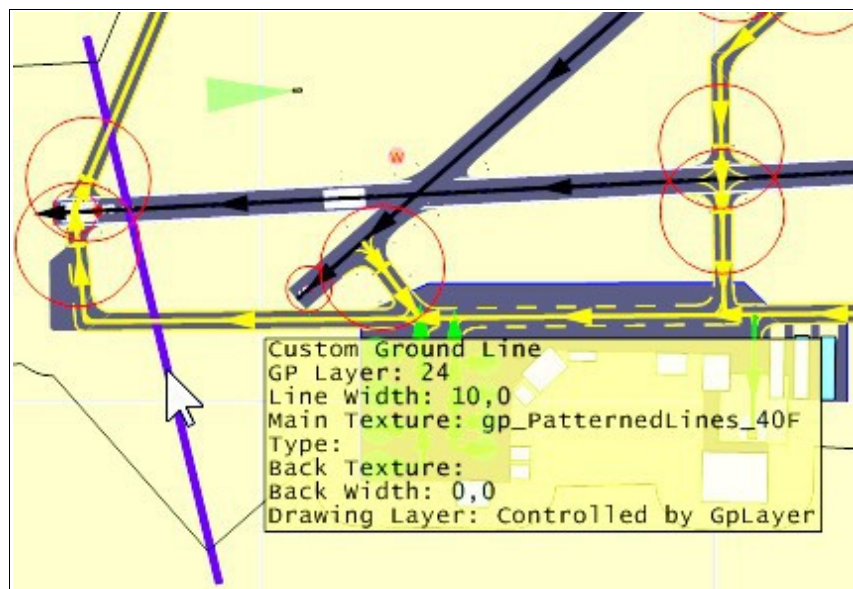


Figure 9-29: Custom Ground Line in ADE

The tooltip shows the parameters of the ground liner

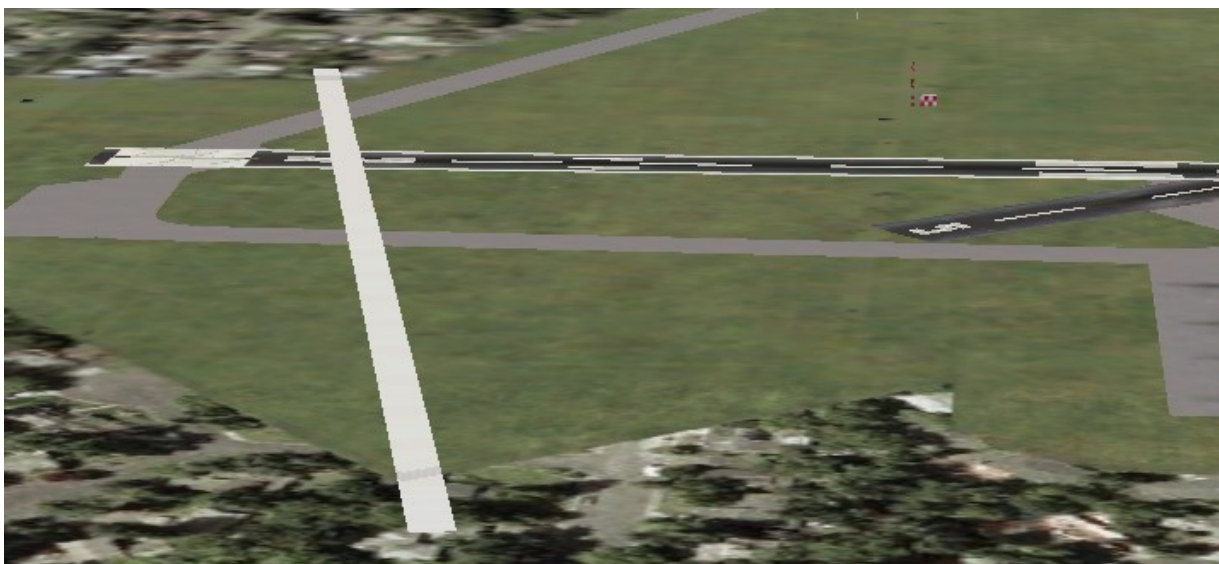


Figure 9-30: Custom Ground Line in Flight Simulator

9.5.2 Edit Custom Ground Lines

Custom Ground Lines can be moved, edited or deleted in the same way as any other ADE object. Via the GP-Editor you can resize it, resize the texture, change colors.

In the "View" Menu you can hide and restore it and in the "Lists" Menu it can be handled as any other airport element. In the "Files" Menu one can import previously created FS8-style ground lines or using Gmax and FS8 MakeMDL (or some other set of tools) to integrate those ground lines into your airport ad4-file.

It is convenient to use "Helper Shapes" for editing and changing Ground Lines. This is done the same way as with Ground Polys (see [chapter 9.4.3 Use Helper Shapes for Custom Ground Polys](#)).

10.0 Scenery Elements

Airport Design Editor allows you to add or modify most of the scenery objects available in FS9, FSX and P3D. Presently the following objects are included:

Generic Buildings, Library Objects and User Models.

10.1 Generic Buildings

Generic buildings are 3D scenery objects that are created using XML code. They are found at almost every airport in FS9 and FSX/P3D. In fact, there are almost 80,000 generic buildings existent in FSX. In ADE, generic buildings are usually depicted by a blue rectangle. Display of generic buildings depends on the scenery complexity setting in ADE.



Figure 10-1: Display of Generic Buildings in ADE

You can copy, paste, and delete generic buildings in your airport project like you can with other scenery objects. To copy, select the generic building and select Copy from the Rightclick Menu. To paste a copied generic building, select Paste from the Rightclick Menu.

10.1.1 Adding Generic Buildings

To add generic buildings to your airport project, position your mouse where you want to place the building, and select "Add" and then "Generic Building" from the Rightclick Menu

This will bring up a dialog box similar to the Generic Building Manager which is described in chapter 14.7.6.

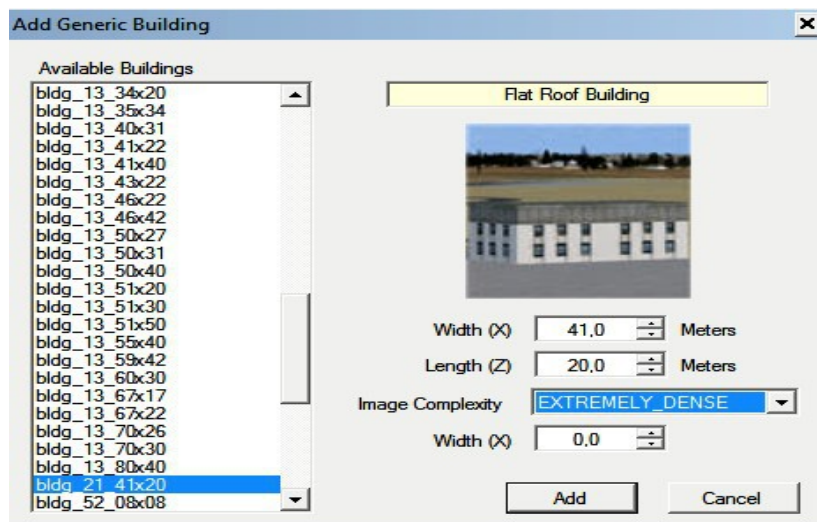


Figure 10-2: Adding a Generic Building

From this window, you can adjust the object's size and heading.. Finally, you can specify the image complexity of the library object you want to add.

10.1.2 Creating Generic Buildings

Creating a Generic Building from scratch comes close to an art. Doug Matthews, one of the experts from Microsoft Game Studios, phrased it like this:

*"Generic Buildings are a wonderful tool to fill out an area.
Our Data Techs (the team that builds the world we ship) couldn't do it without them.
But Generic Buildings can be a bit quirky and trying to get absolute control over their
use of textures is not really possible (trust me - I've fixed a few bugs in the source code)".*

The current version of ADE does not support creating generic buildings.

However, you can use other utilities to create generic buildings and save / import them into ADE.

In the WIKI of the FSDeveloper Forum a very detailed tutorial (PDF) can be found on the creation of Generic Buildings under:

http://www.fsdeveloper.com/downloads/generic_buildings_for_FS9_and_FSX.pdf

10.1.3 Moving and Rotating Generic Buildings

You can move and rotate generic buildings just like you can with taxi signs. Simply select the generic building and move it with your mouse to the desired location. To rotate a generic building, select the object, and use the small handle to rotate it to the desired heading. You can also change the heading via the properties dialog box.

10.1.4 Generic Building Properties

You can open the generic building properties dialog window by either double-clicking on the generic building or by selecting it and choose "Edit Object" from the Rightclick Menu.

The screenshot shows the 'Properties' dialog box for a generic building. It includes a 'Beacon' field, dropdown menus for 'Type' (set to MILITARY) and 'Base Type' (set to AIRPORT), and a section for 'Image Complexity' (set to NORMAL). Below these are input fields for 'Pitch' (0,0) and 'Bank' (0,0), along with a checked 'Altitude is AGL' checkbox. A blue-bordered section labeled 'Flags' contains four unchecked checkboxes: 'No Autogen Suppress', 'No Fog', 'No Crash Detect', and 'No Shadow'. The 'Location' section at the bottom features input fields for 'Latitude' (40,080335818), 'Longitude' (-83,068566196), and 'Alt [Meters]' (0), accompanied by a green 'Set Manual' button. At the very bottom are 'OK', 'Force Skip Compile' (unchecked), and 'Cancel' buttons.

Figure 10-3: Generic Building Properties Window

Using the properties window, you can adjust the width, length, image complexity, pitch, heading, altitude and skip compile of your generic buildings.

The display of generic buildings in the Flight Simulator can be prevented via “**Exclusion Rectangles**”.

For details see [chapter 14.12 Exclusion Rectangles](#).

10.1.5 Importing Generic Buildings

Although you cannot yet create generic buildings in ADE, you can import existing generic buildings from other airports and place them in your own project. To import a generic building from another airport, follow the steps below:

1. Open the airport in ADE that contains the generic building you want to import
2. Locate and select the generic building
3. Select "Save Generic Building" from the Rightclick Menu. If this option isn't available from the Rightclick Menu then the building is already stored in the Generic Building Manager.

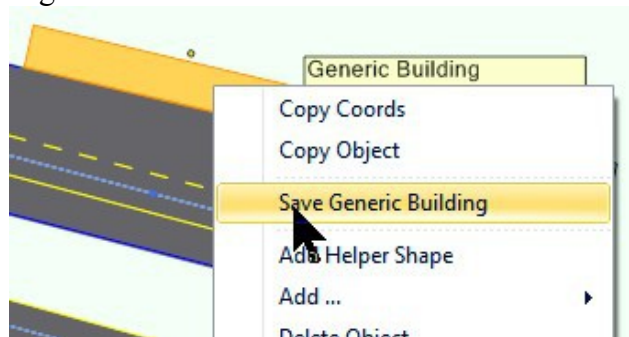


Figure 10-4: Selection of "Save Generic Building"

The following window opens for some editing

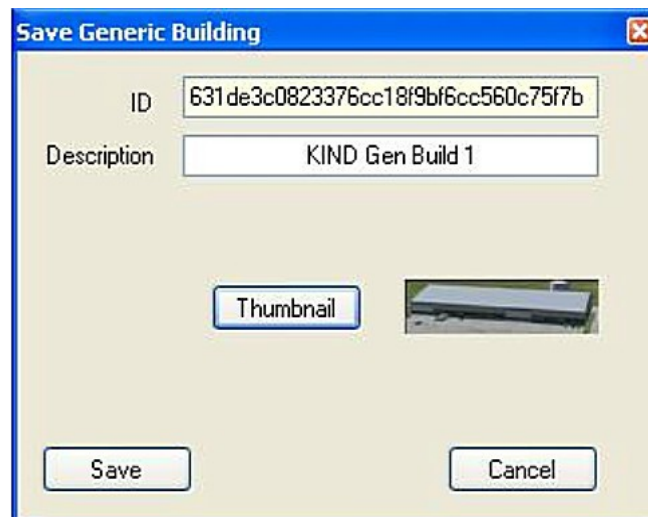


Figure 10-5:

4. Provide a description for the generic building. The ID is automatically assigned by ADE based on the building's type and dimensions
5. If you are connected to both the FS and ADE, you can also provide a thumbnail for the generic building by pressing the Thumbnail button ([see chapter 14.17 Thumbnails and Screenshots](#) for more information).

6. Click Save to complete the save / import process. To view your newly imported / saved generic building, use the Generic Building Manager under the Tools Menu.

10.1.6 Generic Building Manager

The Generic Building Manager is a feature of the "Tools" Menu. It stores all the generic buildings available to you. ADE comes with a whole set of generic buildings on install, but you can save / import additional buildings by following the procedures enumerated above.

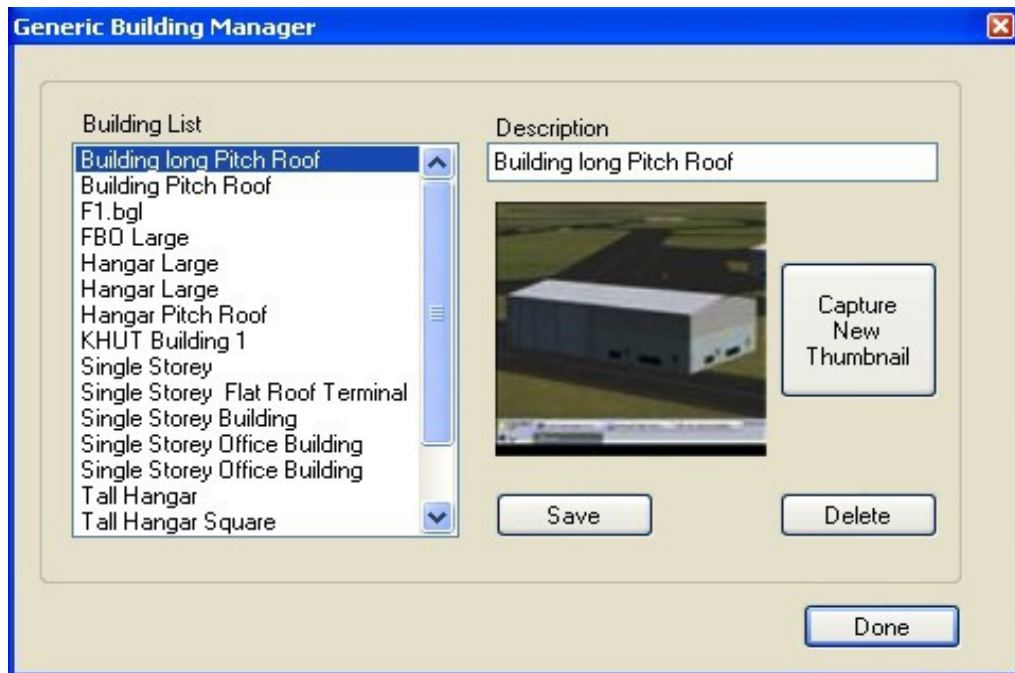


Figure 10-6: Generic Building Manager

For more information about using the Generic Building Manager, refer to the "Utilities" chapter and there to [chapter 13.5 Generic Building Manager](#).

10.2 Library Objects

ADE contains around 3,700 common library objects that are found at airports. These may come from the stock airport. You can also add them yourself. By default, ADE colors these yellow and will display them based on your Scenery Complexity setting.



Figure 10-7: ADE'S Display of Library Objects

ADE also displays autogenerated or location-specific objects. These library objects are shown by default as a semitransparent yellow rectangle representing the footprint of the object. These objects are positioned with a heading of 0.0. Many of them are not facing this direction in FS9/FSX because the heading of the object was designed into the model.

We assume this was done by Microsoft to make the placement of these objects easier. The result is that you cannot tell the true orientation of the object from ADE.

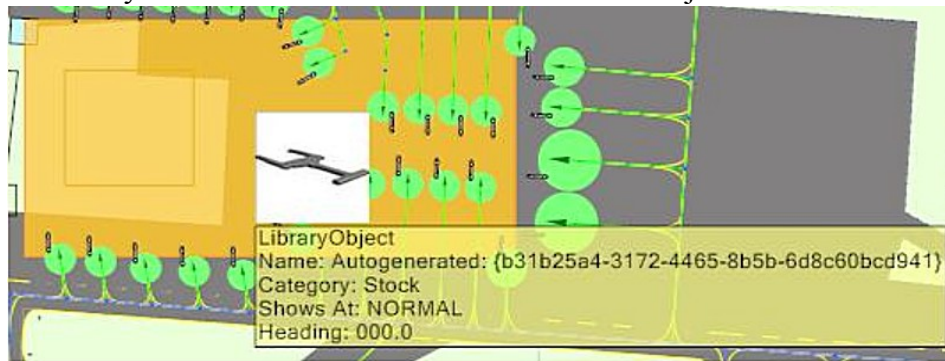


Figure 10-8: Autogenerated Objects

Also the footprint of the object is based on the footprint data in the object .mdl file. If the object is at an angle then this footprint is larger than the object. If the object is complex with projections, it may occupy an even larger footprint than what is apparent.

You can copy, paste, and delete library objects in your airport project like you can with other scenery objects. To copy, select the library object and select Copy from the Rightclick Menu. To paste a copied library object, select Paste from the Rightclick Menu.

10.2.1 Library Object Manager

The Library Object Manager is a feature under the "Tools " Menu. It stores all the library objects available in ADE (excluding location-specific objects).

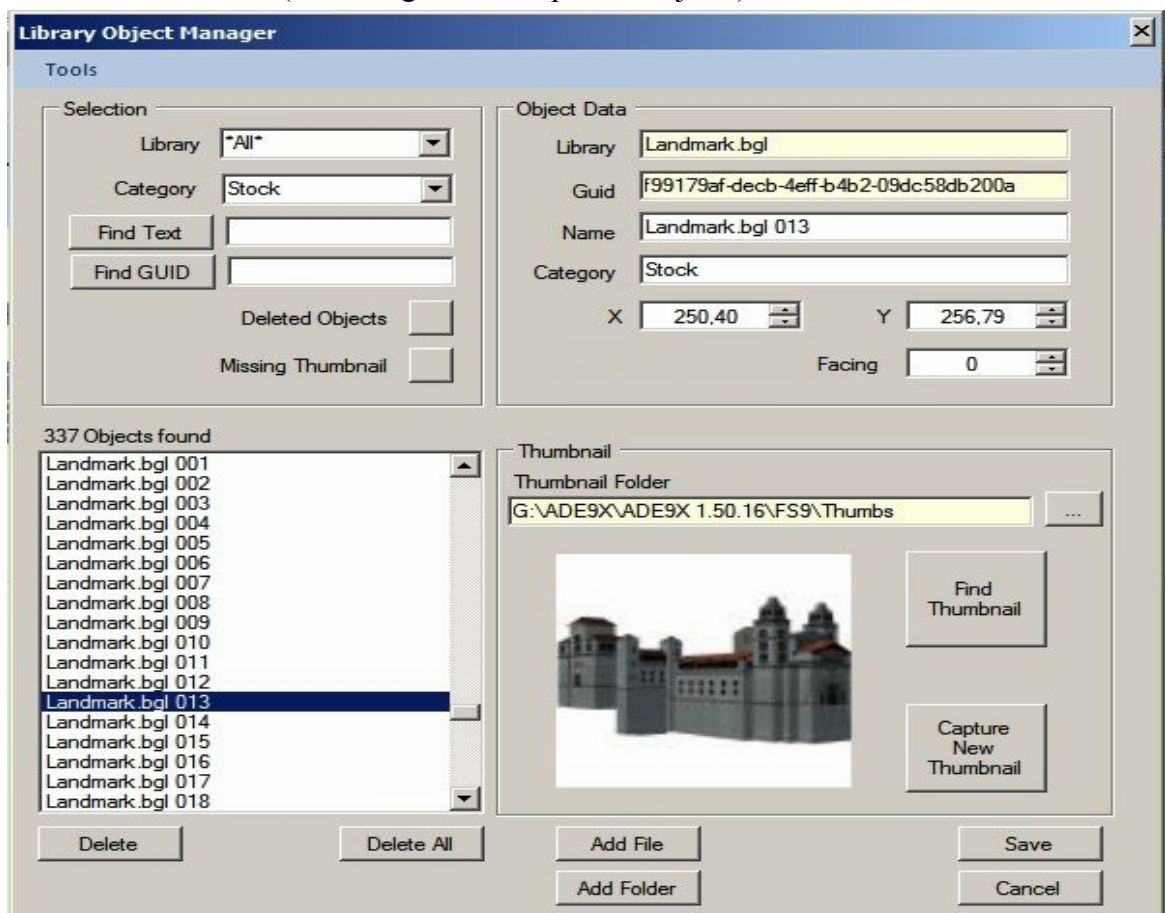


Figure 10-9: Library Object Manager

A complete description of the Library Objects Manager with all available features is given under "Utilities" in [chapter 13.4 Library Object Manager \(LOM\)](#)

10.2.2 Adding Library Objects

To add library objects to your airport project, position your mouse where you want to add the object, and select "Add Library Object" from the Rightclick Menu.

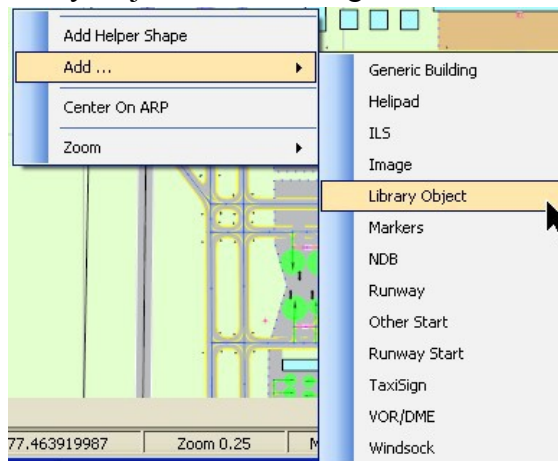


Figure 10-10: Selecting the Option "Add Library Object"

This will bring up a dialog box similar to the Library Object Manager.

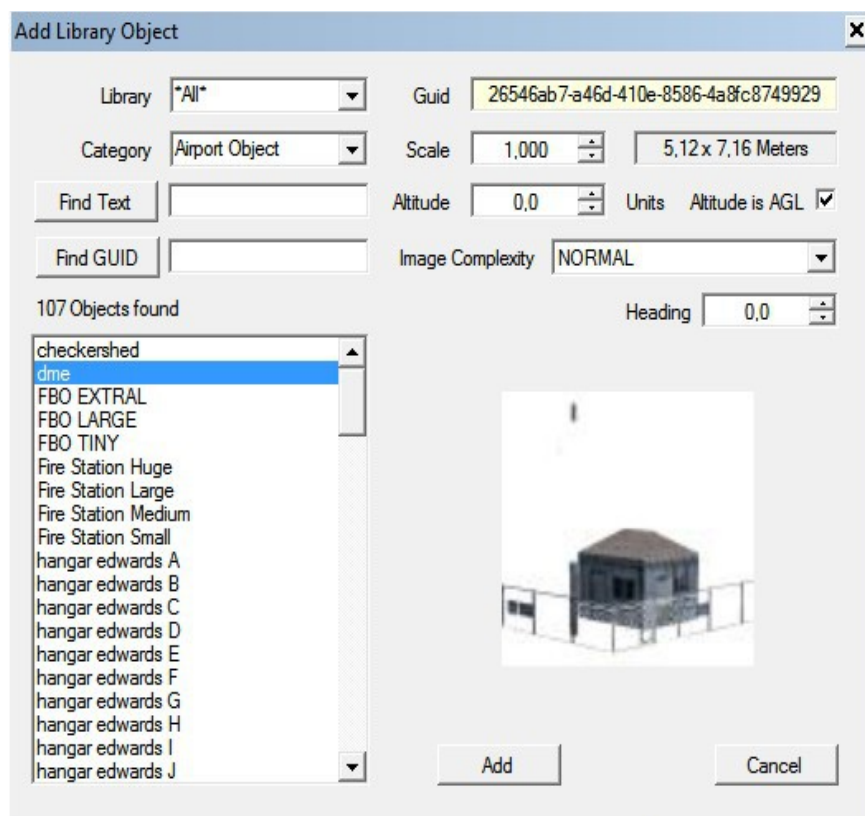


Figure 10-11: Add Library Object Dialog Box

From this window, you can filter library objects by library type, category type, text, and GUID. You can adjust the object's scale, heading, altitude and determine whether the object's altitude is based on AGL (Above Ground Level) or AMSL (Above Mean Sea Level). Finally, you can specify the image complexity of the library object you want to add.

10.2.3 Moving Library Objects

You can move and rotate library objects just like you can with other scenery objects. To move a library object, select it and move it with your mouse. To rotate a library object, select the object, and use the small handle to rotate it to the desired heading.

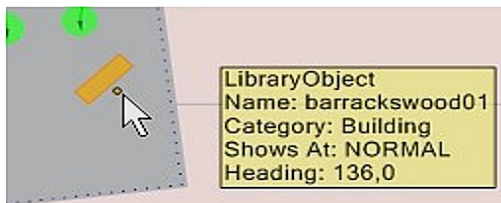


Figure 10-12: Rotating a Library Object

You can also change the heading via the properties dialog box.

10.2.4 Library Object Properties

To view and change a library object's properties either double-click on the library object or select Edit Object from the Rightclick Menu.

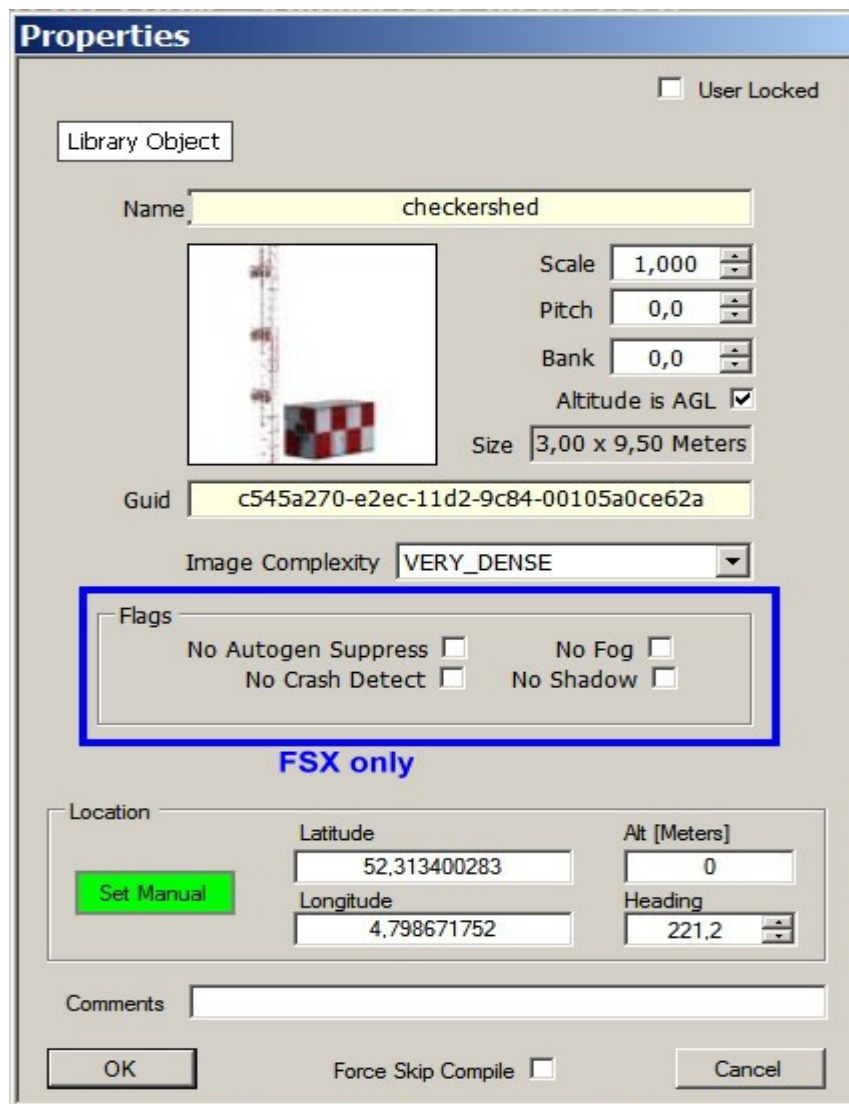


Figure 10-13: Library Object Properties Dialog Box

From the properties dialog box you can change several library object characteristics:

- **Scale** – Increases or decreases the size of the library object
- **Pitch / Bank** – Pitch determines the object's North / South inclination, Bank determines its East / West inclination.

This function is available only with **FS9**.

In **FSX** it works only with Service Pack 1 (SP1) and SDK SP1a, but not with Acceleration/SP2.

- **Image Complexity** – Similar to other scenery objects, you can select the image complexity assigned to the library object
- **Altitude is AGL** - Specifies that the altitude property is based on Above Ground Level (AGL) versus Above Mean Sea Level (AMSL)
- **Do Not Suppress Autogen** – Checking this box allows autogen created objects to appear near the library object.
- **Do Not Cause Aircraft Crash** – Checking this box allows aircraft to cross the object's boundary without causing the FS to register a crash. This option is usually checked for static (non-automated) jetways and open hangers.
- **No Fog** - Fog does not affect the object at render time (useful for the virtual EFIS objects that draw in the sky)
- **No Shadow** - Objects do not create a shadow. **FSX only**

The display of library objects in the Flight Simulator can be prevented via “**Exclusion Rectangles**”. For details see [chapter 14.12 Exclusion Rectangles](#).

10.2.5 Display Options for Library Objects

- o **Small Library Objects Display** - Some library objects such as lights can have a very small footprint. These can be hard to see and harder to select. These objects are now given a 'Halo' to make seeing and selecting them easier. The display of this halo can be activated in the "Settings" Menu by activating the entry "Show Small Objects Halos" (see [chapter 12.8.7 Show Small Objects Halo](#)).

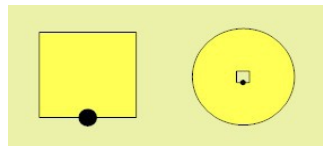


Figure 10-14: Small Objects Halos

- o **Adjusting the Halo Size** - You can adjust the halo properties by selecting any library object and then Right Click => Display Options. The following window is opened:

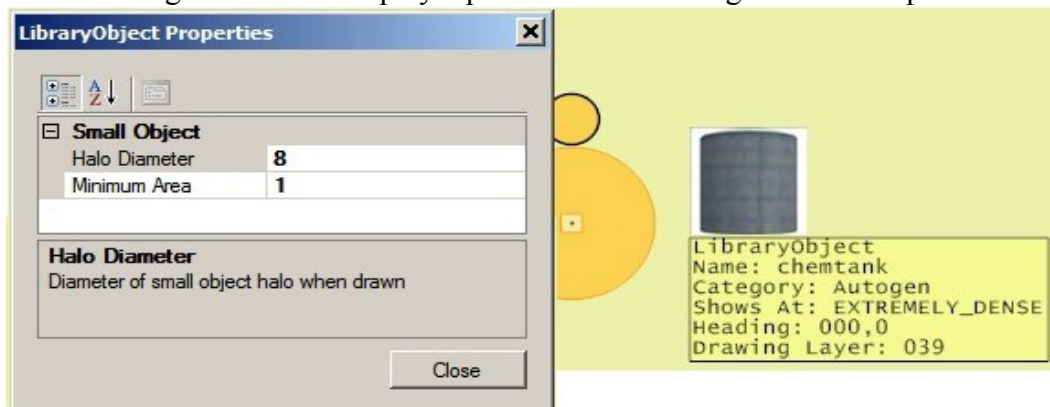


Figure 10-15: Display Options for Library Object

- Halo Diameter

This value will set the diameter of the small object halo when drawn. The value is always in meters. By default this is 5 meters

- Minimum Area

This determines the minimum footprint area of a library object below which the halo will be drawn. This takes account of the scale of an object and represents the area the object covers in the ADE display. ADE calculates the display area by multiplying the footprint width and length and scale. The default value is 1 square meter.

10.2.6 Third Party Object Libraries

There are cases when you find a series of objects added to a project, whose origin are unknown. Some of them may be stock objects and others come from third party libraries. You want to know which libraries are used so that you sure that you have them installed in the Simulator.

ADE has in the "Lists"-Menu a small tool, which provides the library, the name and the GUID of all "Third Parties" objects found in the current project.

10.3 User Models

Users sometimes want to add a model (mdl) file directly to ADE. This is a good way to do things if you have a model that is specific to a particular location or you do not want to publish a library alongside your airport. ADE supports using model files directly and they are compiled into the ADE BGL file(s)

User models are usually created with tools such as Gmax or FSXS, and you can import them directly into your airport projects via the Models list under the List Menu.

10.3.1 Managing User Models

NOTE: The management all your models is done exclusively using the Models list from the Lists Menu.

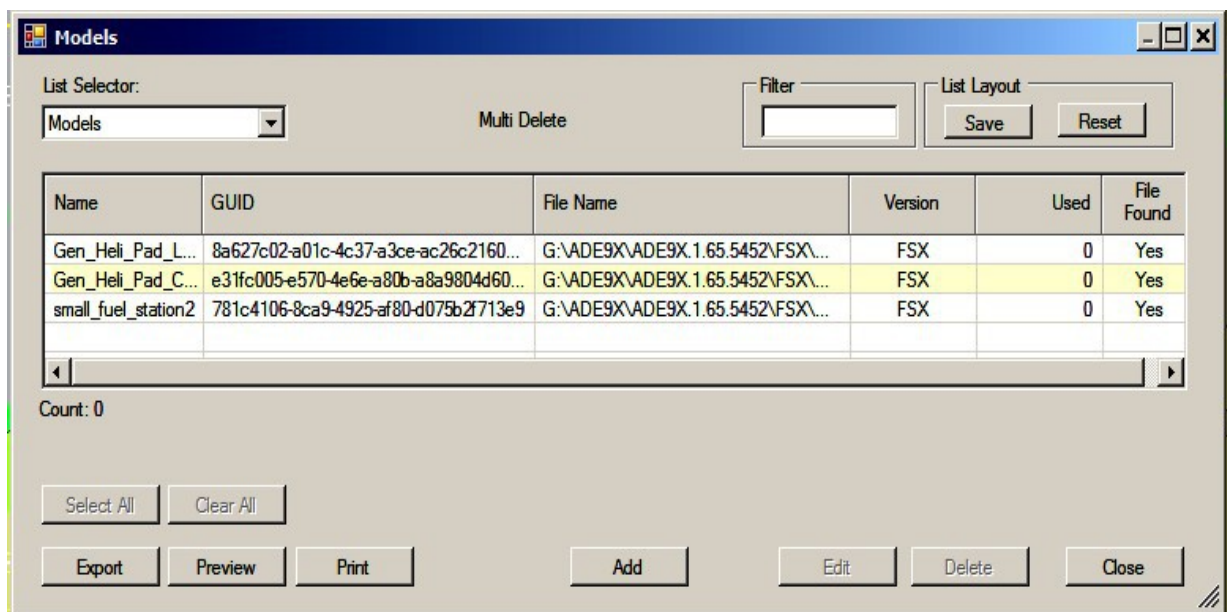


Figure 10-16: Models List

From the Models list, you can add and delete models. You cannot delete models from the list that are being used in your airport project, and the 'Used' column will indicate that. After you remove the model from your airport schematic, select Delete from the Models list to permanently delete the model from your project.

10.3.2 Add User Models to a Project

By clicking the "Add"-button at the bottom of the List you are invited to add models (their mdl-files) from any library to the list. When selecting such a mdl-file the following window opens:

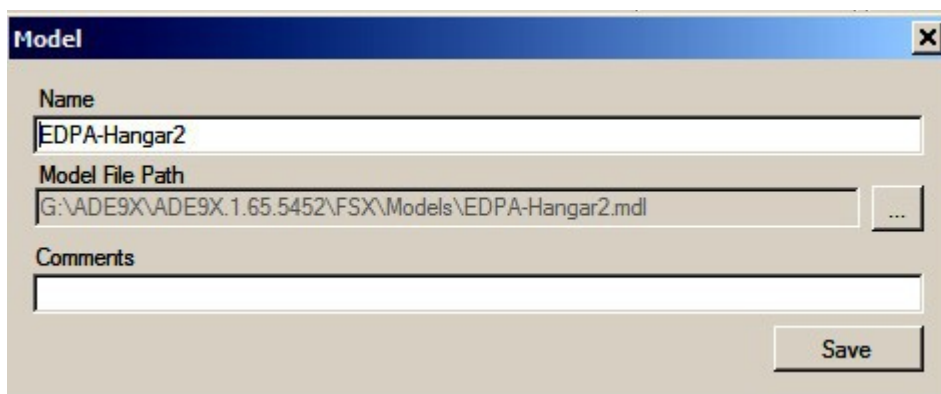


Figure 10-17: Name and File Path of a Model

NOTE that in FS9 models do not have a name.

Therefore ADE places under "Name" by default "ModelData". Before saving, the name and a comment can be inserted, which will be shown in the Model List

Once you have added models to your airport project via the Models list, you can begin placing them in your airport project. To place a model, select "Add" and then "Model" from the Rightclick Menu. This will bring up the Add Model Dialog Box.

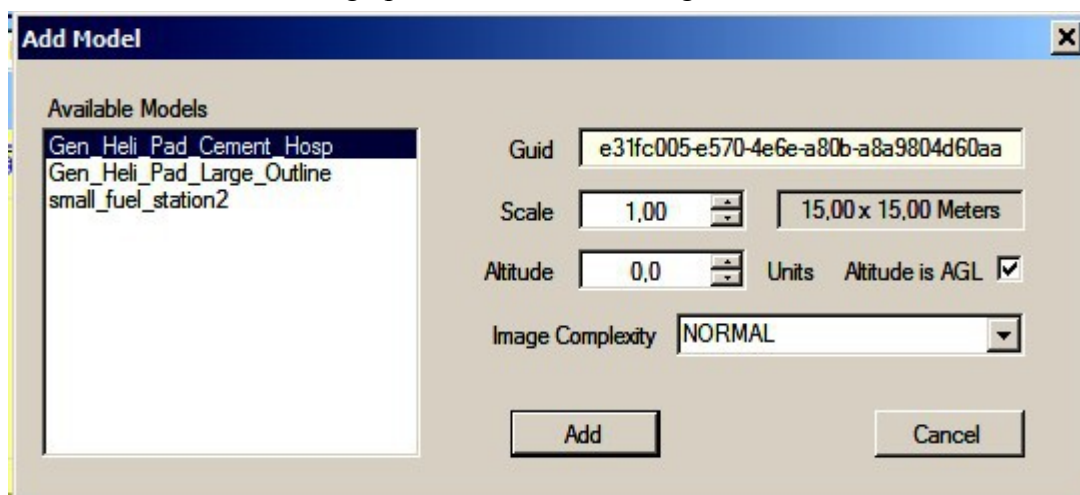


Figure 10-18: Adding a Model

From the Add Model window, select the model you want to place, adjust its scale, altitude, and image complexity, and click "Add". Once you place the model, ADE will treat it as a regular library object.

Please **NOTE** that if you plan to distribute your airport project to others and it contains a user model, you will need to include the textures for the user model along with your other files.

10.3.3 Editing User Models

It happens frequently that folks move their models and then ADE can't find them. The Issue Manager will show a RED status in the Status Bar of the main display (see [chapter 13.2.4 Real Time Issue Manager](#)), if a model file path is missing so a user is warned to fix it

ADE is using the reference that is in the model list since it is placing only a reference to this model. The model itself is not there but if one removed any placement code that refers to models whose path is wrong he could wipe out an airport or object when all that is needed is for the user to correct the paths.

This is possible by changing the path in “Lists Menu => Models”.

In the list select the model whose path is wrong and click “Edit”. In the new window the second line contains the wrong path reference.

By clicking the “...”-button on the right side you open the Explorer, where you can locate the correct path. By opening it, the new path is inserted.

Just save this and save the airport. The status button of the Issue Manager will turn to green.

10.3.4 Display Color Of User Models

The color, by which a user model is displayed in the ADE-display, can be selected in the “Settings”-Menu under “Colors => User Model”, the latter in the left list.

Once the new color is saved, it will become active after a new loading of the airport-project.

10.3.5 Properties Window of User Models

The properties window is identical with the one for a Library Object (see Figure 10-13). Only the heading is different

The display of models in the Flight Simulator can be prevented via “**Exclusion Rectangles**”. For details see [chapter 14.12 Exclusion Rectangles](#).

Part 3

Menus, Utilities, Tools and Controls

11.0 ADE Project Files

11.1 ADE Folder and File System

ADE has grown over the years and has become a complex system of folders and files. In principle there is no need to bother about them when operating ADE from the user interface. But there are a few exceptions, which make it advisable to get acquainted with the basic structure after all.

The following Windows Explorer view shows the folder and some of the /files, which are used by ADE in general, regardless, whether the FS9- or FSX version is loaded.

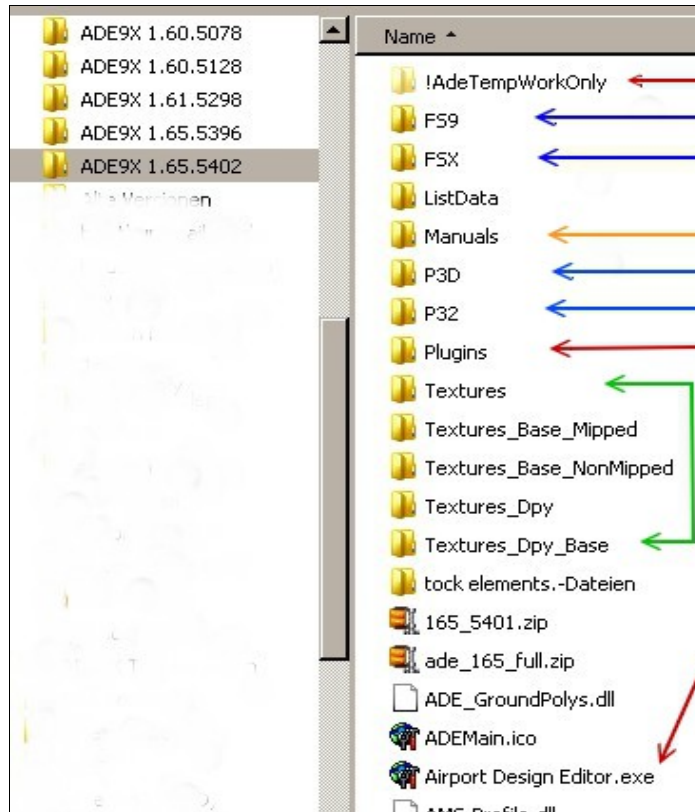


Figure 11-1: ADE System Folders

Of interest are only folders and files which are marked with an arrow.

- o **Airport Design Editor.exe (red arrow)** – is the main program file to run ADE
- o **!AdeTempWorkOnly (red arrow)** – is ADE's temporary work folder and should not be used by users
- o **Plugins (red arrow)** – contains all Plugins (.dll-files) used by ADE

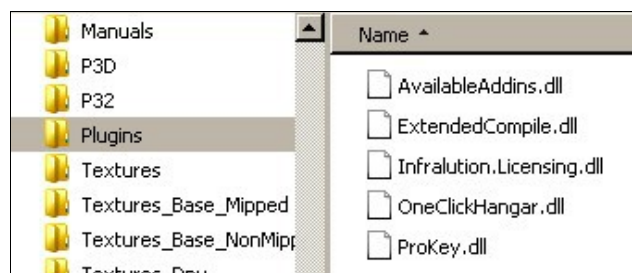


Figure 11-2: Plugin Files

Among the Plugins the “ProKey.dll” is important. After purchasing the “ProKey” add-on this .dll-file has to be placed by the user in this folder in order to activate the ProKey features. For details see [chapter 13.7 ProKey](#).

- o **Manuals (orange arrow)** – is a place, where special manuals and supporting information is stored. The ADE-manual is not here since it is shipped with ADE as a separate package.
- o **Textures (green arrows)** – contain textures for Ground Polys. Their use is explained in the “ADE-GP – User Manual.pdf” in the “Manuals”-folder
- o **FS9, FSX, P3D, P32 (blue arrows)**– are folders which contain specific files and data belonging exclusively to one of the flight simulators. Directly after the installation of ADE these folders contain only two sub-folders and a few basic files and standard lists.

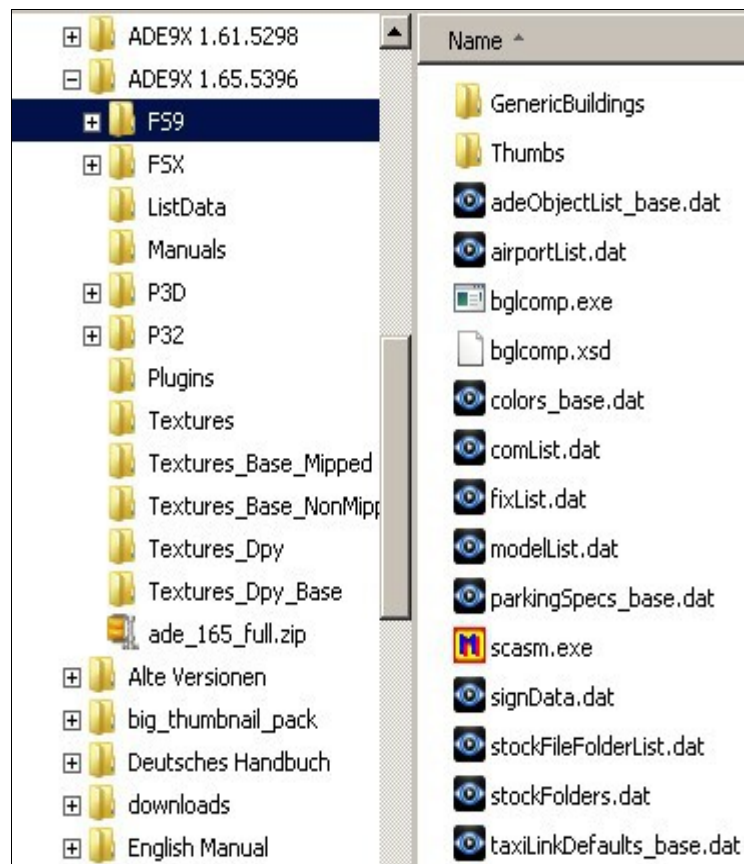


Figure 11-3: ADE9 Folder Structure Before First Start

This is changed drastically, once an ADE-version is started and the basic settings are completed, as can be seen in the subsequent figure.

- o Most of these files are used for the storage of items implied by their title., e.g. “**BGL**”, “**XML**”, “**Images**”, “**Models**”, “**Shapes**”.
- o “**Projects**”, “**Work**” “**Master**” are folders, which are not used by ADE. They are places, where users can save the results of their work. The folders are equivalent. The fact, that there are several of them has historic roots.

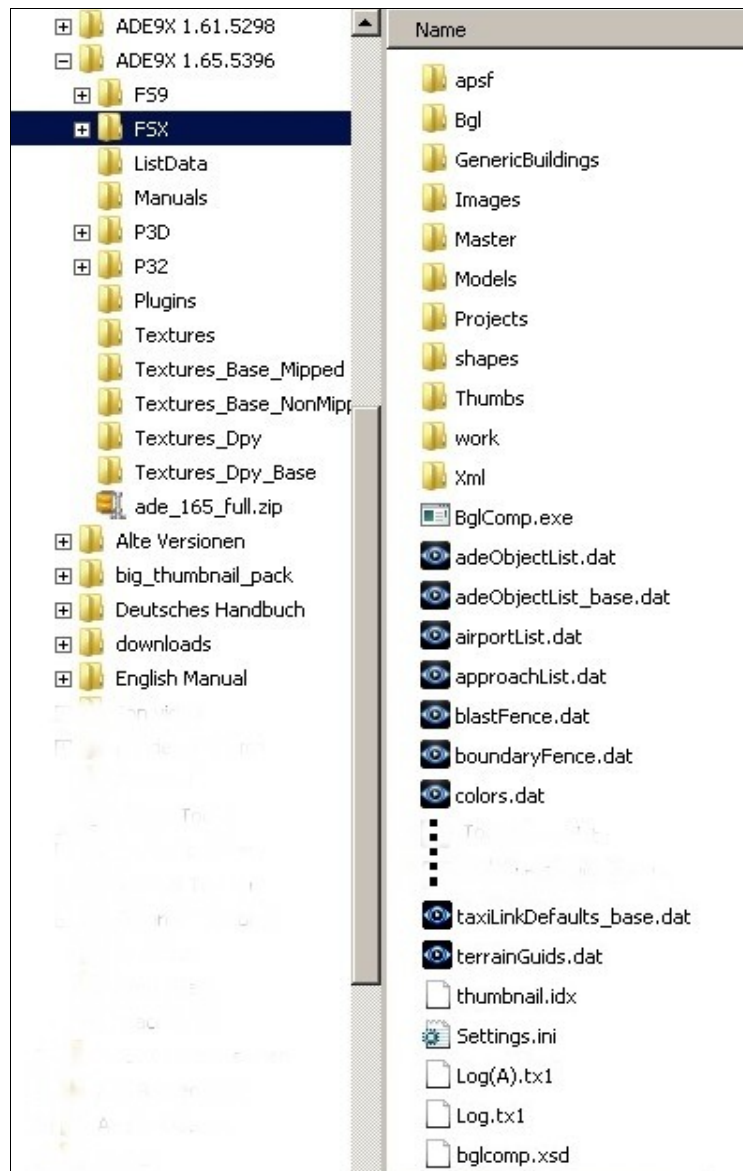


Figure 11-4: ADEX Folder Structure After Full Installation

- o **“GenericBuildings”** and **“Thumbs”** are closely related.
When ADE is installed, it comes with a basic set of Generic Buildings, which are stored here. In the thumbs-folder are the pertinent “thumbnails”.
Both contents can be increased by the user .
- o **“apsf”** is a folder for all “apsf”- files which contain the settings data for each project.
These files are updated when a project is loaded and saved

11.2 ADE Projects

You will see references to ADE project files in many places in ADE, on the forum and in the documentation. It is important to understand what a project is.

A project can be defined as a piece of work that has a specific purpose (such as to find information or to make something new) and that usually requires some planning and may take a long time to complete.

In ADE this work is stored in a project file. There is one project file per project so in that sense the term project and project file are synonymous. Each project file contains the information needed to create a new airport or modify an existing one.

It is not possible to have more than one airport in a project file or to have a project file that does not contain an airport. Project files store the information about the airport in a special format that is understood by ADE but not by any simulator. Over the life of ADE the project file format has changed and there are a number of different extensions:

ade, ad2, ad3 and ad4

The current format is ad4 and this is the one that current versions of ADE will save.

It is possible to load the other project file formats into ADE but not save them in the old format. Generally each format has provided the ability to store more information or load and save that information faster.

11.2.1 Why Does ADE Have a Special File Format?

In other airport editors such as AFCAD or AFX there is no project file and everything is handled in the BGL file format that FS understands. So why don't we? Wouldn't it be simpler all round to just use the BGL format?

Well it might appear simpler to just load and save your project in the BGL format. However there are issues with that.

- Repeated loading and saving a BGL-file has been known to cause coordinate drift in object locations due to rounding errors.
- There are also several types of BGL formats created by different compilers and used for different purposes such as terrain, airports, group polys and so on. So it isn't possible to put everything into one BGL file.
- There are also things which we might want to use like that either cannot be represented in the BGL file format or which we don't want to be shown in the simulator.
- Finally we might want to store information about objects like when they were last changed and that is not possible with the BGL format either
- ADE makes a lot of use of background images, guidelines, helper shapes and so on. These can't be represented in a BGL file and we probably would not want our guidelines and other helpers showing up in the sim in any case.
- ADE has an approach editor and to make this possible it loads and stores information about a lot of nav aids. Although these could be compiled into the BGL file we would not want to be duplicating nav aids and way points over a lot of different files in the sim.

So that is why we have a special project file format for ADE projects. As a rule you should never load and save your work in the BGL format because you will lose a lot of information along the way.

You can tell ADE where you want them saved.

The simulator does not understand ADE project files so you do need to compile them to BGL files before they can be used

11.2.2 Project Handling

- o **Save a New Project** – when a new project is saved via the “File”-menu (see [chapter 12.1.13 Save Airport As](#)) the user is asked for the storage location. This location can be pre-set from “Settings-Menu => Option => Project-tab” (see [chapter 12.8.1.6 Project Options](#)).
- o **Find and Open a Project** – if you want to open a project, but you are not sure where it is stored, you can use the “Find Project” function.
“Find Project” is opened from “Project Menu => Find” (see [chapter 12.7.1 Find Project](#)) . This opens a window which contains all projects which have been opened and saved till then. A particular project can opened directly from this window.
- o **Project Settings** – in “Settings-menu => ”Options => Projects-tab) you can check that the project properties have been set up correctly for you. If not you can change them for this particular project See [chapter 12.8.1.6 Project Options](#)) for details.
- o **Project Tree** – the “Lists”-menu contains an option called “Project Tree” which is very useful for finding and/or editing objects, since the tree displays all user editable objects in a project. It is explained in detail in [chapter 14.20 Project Tree](#).
- o **Project Statistics** – all airport items contained in a currently opened project can be seen at one glance in a table called “Airport Statistics”.
This table is accessible from “Project-menu => Statistics”. For details see [chapter 12.7.2 Airport Statistics](#)
- o **Project Backup** - ADE has several ways to back up your project and protect against losing valuable work. The first is auto save, the second is a bak file and the third is the Project Backup Tool
 - **Auto save** is timed and you can set how often you want it to happen
For setting the time interval see [chapter 12.8.1.1 General](#) .
For more details on Auto Save see [chapter 14.18.1 Autosave](#)
 - **.bak-file:** Each time you save a project ADE will rename the pre-save file with .bak.
This really only helps with the last changes. However if your current project file becomes corrupt or you delete it by mistake then you can get a recent copy by removing the .bak from the backup file name
 - **Project Backup** is a function which allows you to take a backup of the project at any time and include back ground images and model files if you wish. The files are stored as zip files and have timestamped names. See [chapter 14.18.2 Local Backup File](#) for details.
At the moment the back ups are manual but we are planning to add some scheduling in a later version that will automate the process.

12.0 ADE Menus

The menu can be accessed in the Main Menu Bar on the top of the main ADE display as shown in [chapter 2.8.1 ADE Main Display](#).

12.1 File Menu

The File Menu gives you access to ADE's opening, saving, compiling, and printing functions.



Figure 12-1: Entries in the File Menu

12.1.1 New Airport

There are over 26,000 airports in most versions of the simulator. Even so, there is going to be at least one that you might want to create and add. Sometimes this will be a local strip that is not in the simulator. At other times it could be a new fictional airport. New Airport allows you to create a new airport that does not exist in the FS9 or FSX/P3D database.

In the Help-document ("Shift + F1") there are two tutorials on this subject – just search for them with "new airport". They contain detailed descriptions of this option.

When you select this option, ADE presents you with the New Airport Dialogue Window.

Figure 12-2: New Airport Dialogue Window

From the dialogue window you can enter the basic information about your airport:

- o **Latitude / Longitude** – This sets the location of the Airport Reference Point. The airport reference point is the approximate centre of the airport for navigation purposes. If you are creating a new airport you can usually use the Airport Location from the published charts for the airport.
If that is not available then you can use the button “Get From Sim “. This requires, that the Flight Simulator is running and connected to ADE
- o **Altitude** – This sets the airport elevation above mean sea level.
- o **Magnetic Variation** – The magnetic variation for the airport can be found from published airport or aviation charts. This value is used for runways and nav aids at the airport and it will appear on the GPS display and Map View for the airport. It is unknown what additional use FS makes of this parameter but it is unlikely that it is applied to your aircraft compass, as deviation data for that comes from a general magnetic map. By default, Auto Set Mag Var is checked, which means ADE will determine the new airport’s magnetic variation automatically based on the latitude / longitude you entered. If you know the magnetic variation, you may deselect Auto Set Mag Var, and enter it in manually.
- o **Airport ID** – This is the International Civil Aviation Organization (ICAO) code (e.g. KLAX, EGLL) for larger airports or the regional airport code for others. ADE uses a maximum of four letters and/or numbers. For a really “new” airport a non-existing code must be used.
- o **Country State / Province / City** – This is the location for an airport that will appear in the “Go To Airport” window in FSX or FS9. When creating a new airport you can put in anything you want in these fields; however, it is best to use the standardized spellings employed by FS9 or FSX. If you do not, there will be two entries for a country in the country list, with different spellings, and the same for state and city.

- o **Airport Name** – This is the name for an airport that will appear in the “Go To Airport” window in FS9 or FSX as well as the Map View and GPS window. You can put in anything you want in this field up to 48 characters.

- for FSX only

- o **Traffic Scalar** – The Traffic Scalar is a “throttle valve” for AI Planes only. Its purpose is to avoid traffic jams, which could develop when the ratio of parking spots to a minimal taxiway infrastructure or what is called choke points is too low. FS9 used a hardcoded throttle valve ratio of parking spots to the amount of AI traffic at any given airport. For FSX we exposed a scalar to allow throttling AI Traffic at certain airports. The TrafficScalar set to a default in the Airport record and the TrafficDatabase compiler (0.70 percent) is supposed to help eliminate this problem.

- o **Test Radius** – ADE displays this parameter as a red circle around the airport reference point.

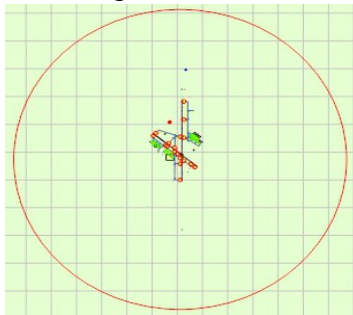


Figure 12-3: Test Radius

By default, ADE sets the test radius at 5,000m. The BglComp compiler uses this value to issue a warning if objects associated with the airport (taxi signs, etc.) are located outside the test radius. It does not affect compilation.

12.1.2 Open Stock Airport

Stock airports are those that already exist in the FS9, FSX or P3D scenery database. Selecting this option opens the “Airport List” Dialogue Box, which provides several ways to find the airport you want to use.

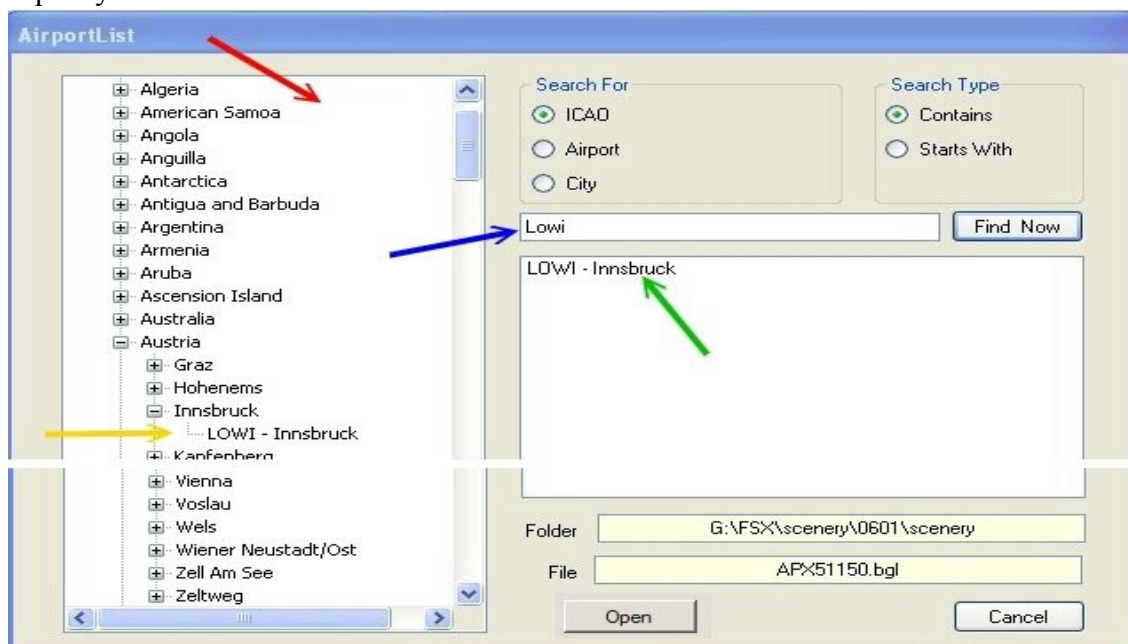


Figure 12-4: Stock Airport List

NOTE that the first time you open this window the Airport List tree to the left will be closed up with a “+”. You can use either the airport list tree (red arrow) or the “Search For” boxes on the right to find an airport.

If you use the airport list tree, select the airport (yellow arrow), press the "**Enter**" key or double-click the name.

If you use the search criteria boxes, you can enter (blue arrow) part of an ICAO, airport name, or city. Press the "**Enter**" key while in the text box or click the Find Button.

A list of found airports will appear. Select the airport and either press the "**Enter**" key or double-click on the name or use the “Open”-button to load the stock airport.

12.1.3 Open Airport

Opens a dialogue so that you can select an ADE airport project by double-left-click.

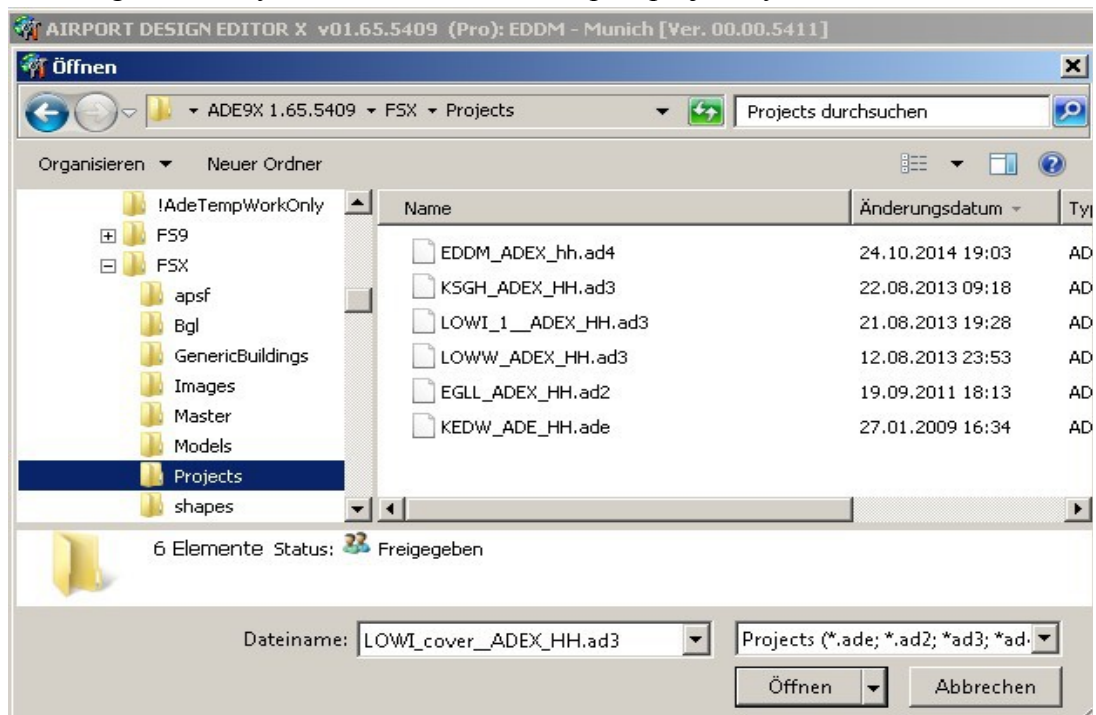


Figure 12-5: Selection of a Project File

When you have “ProKey” then ADE remembers the last folder you looked in and will open that folder the next time you open an airport. You can change this by deactivating the checkbox “Load Last Airport” in the Settings menu under “Options => General” (see chapter 12.8.1.1 General)

When you try to open an invalid airport project, you may see one of these messages if you are trying to open an ADE project file (file with .ade, .ad2, .ad3 or .ad4 extensions) :

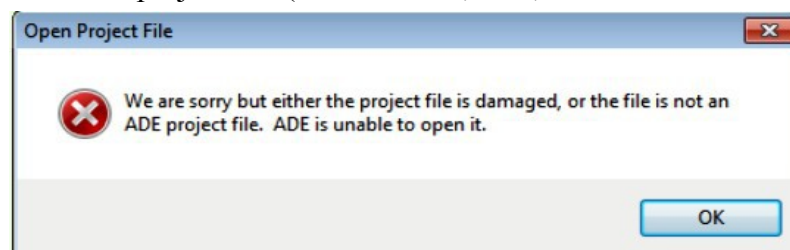


Figure 12-6: Opening refused

If you do see this then it may be that the file is not an ADE project (the extension “.ad” is also used by Microsoft Access); or the project file is damaged.

Unfortunately there is no way to recover a file in this situation. You are more likely to see this message.

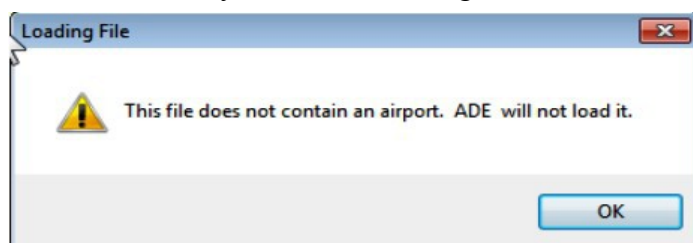


Figure 12-7: File without Airport

ADE is an airport editor. It therefore expects to find an airport in the file. If it does not then it will not load the file. This is because it cannot set up the project if there is no airport. The most common reason is that you are trying to open a BGL file that does not contain an airport.

12.1.4 Open Airport from BGL

If you have an airport or airports that are compiled in a .BGL file then you can open them from this menu option. ADE treats a .BGL file as a new airport and will ask you to save it if you change airports or exit the program.

CAUTION: Do not load from the bgl file if you have the project file. If you have the project file that created the bgl file then always load and save that.

The path from which the BGL was opened, is shown in the tooltip of the Airport Reference Point.



Figure 12-8: Tooltip of Airport Reference Point

ADE remembers the last folder you opened to get a .BGL file and will open that folder the next time you select this option.

The BGL file is only going to be opened if there are one or more valid airports in the file.

ADE does not automatically load stock data for airports created from .BGL files. You can add stock data manually to an .BGL airport via Tools => Load Stock Data.

12.1.5 Open Airport from XML

There may be times when you have an .XML file containing an airport. ADE will load this provided that the file is compliant with the current BglComp for FS9 and FSX. The path from which the XML was opened, is shown in the tooltip of the Airport Reference.

ADE remembers the last folder you used to load an .XML file. When you select this option and choose the .XML file, you see a Validating XML message while ADE validates the file. If you have both version of FS installed then you will need to use the Version Selector to tell ADE which version you want to open the file for. However it is only going to be opened if there are one or more valid airports in the file.

If there are errors in the .XML file, ADE will display the error log that BglComp would produce. You will need to correct those errors outside of ADE.

ADE does not automatically load stock data for airports created from .XML files. You can add stock data manually to an .XML airport via Tools => Load Stock Data.

12.1.6 Import ADE Objects

This function was developed so that users collaborating on an airport can share their work by sending objects back and forth. That implies that it is not possible to import anything from a different airport.

Objects which are suitable for import must have the “.adto” file format

Presently the following objects can be imported:

- o **Scenery Objects** - Beacon, Effect, Generic Building, Library Object, Windsock
- o **Custom Ground Polygon Objects** - Lines, Polys
- o **Terrain Objects** – **Terrain Polygons**, **Terrain Vectors (FSX only)**, **Flattens (FS9 only)**

When an ADE Object is imported, a dialog-window asks for a folder- and .adto-file- name. The object will be imported to it's original location, from where it was exported.

NOTE that there is no check as to whether the imported objects are already present. There is no undo available for imports. All imported objects will be treated as user added

12.1.7 Import BGL

This function is intended for experienced airport designers only. Extreme caution should be taken when using this function because improperly imported BGL files will corrupt your airport project. Import BGL allows you to import certain objects into your ADE airport project from other BGL files. However, there are certain restrictions when importing BGL or XML files into ADE:

- o Any data in the BGL or XML file that is already present in the current ADE project is discarded
- o Imported objects that are outside the airport test radius of the ARP are ignored and not imported. If you want to include objects that are beyond the test radius, you should increase the test radius in the airport properties from the File Menu.

12.1.8 Import XML

This function is intended for experienced airport designers only. Extreme caution should be taken when using this function because improperly imported XML files will corrupt your airport project.

The Import XML function works similarly to the Import BGL function described above.

12.1.9 Import Ground Polys

When an airport, which contains custom Ground Polys, is compiled, besides the .BGL-file also an .asm-file is created. This asm-file can be used via the “Import Ground Polys”-option to share it with other users.

Those of you who have previously created FS2002-style ground polys for your airport using Gmax and FS2002 MakeMDL (or some other set of tools) may now wish to integrate those ground polys into your airport ad4-file with the Import Ground Polys function.

Just identify the .asm file (not the _0.asm file) - tweaked or un-tweaked - containing the ground polys and click Open on the File Open dialog. (If un-tweaked, you'll be asked to specify the layer number to be assigned.). Your ground polys should immediately appear on your ADE display.

This, and some more detail are described in the separate “ADE-GP – User Manual”, which is as a PDF-file contained in the “Manual”-folder of your ADE 1.65 program file

12.1.10 Airport Properties

This entry opens the following window:

The 'Properties' window is titled 'Properties' and has a 'User Locked' checkbox in the top right corner. It features two tabs: 'Airport' (selected) and 'Services'. The 'Airport' tab contains several sections:

- Airport Identification:** Fields for Airport ID (EHAM), Country (Netherlands), State/Province, City (Amsterdam), Airport Name (Schiphol), Mag Var (1.50), and Region ID (EH).
- Traffic Scalar:** A numeric field set to 0.70.
- Test Radius:** A numeric field set to 5000, followed by the unit 'Meters'.
- Project Name:** A text field containing 'EHAM_ADEX_hh'.
- Project Folder:** A text field containing 'G:\ADE9X\ADE9X.1.65.5409\FSX\Images'.
- Version:** Fields for Major Version (0) and Minor Version (0).
- Location:** Fields for Latitude (52.308055647), Longitude (4.764166921), and Alt [Meters] (-3.352). A green 'Set Manual' button is located to the left of these fields.
- Comments:** A text area for user comments.

At the bottom of the window are 'OK' and 'Cancel' buttons.

Figure 12-9: Airport Properties Window

Here all actual parameters of the current airport are shown.

Those parameters, which are not greyed out, can be edited here. For details of this see [chapter 4.1 Airport Reference Point \(ARP\)](#)

12.1.11 Export ADE Objects

This function was developed so that users collaborating on an airport can share their work by sending objects back and forth.

Objects, when exported, will be formatted to the “.adto” file format

Presently the following objects can be exported:

- o **Scenery Objects** - Beacon, Effect, Generic Building, Library Object, Windsock
- o **Custom Ground Polygon Objects** - Lines, Polys
- o **Terrain Objects** – Terrain Polygons, Terrain Vectors (FSX only), Flattens (FS9 only)
- o First an object must be selected in the ADE-Main Display.
- o Next from the “File”-menu the option “Export ADE Objects” is activated.
- o This opens the “Save”-dialog window for indicating where the export-object should be stored.

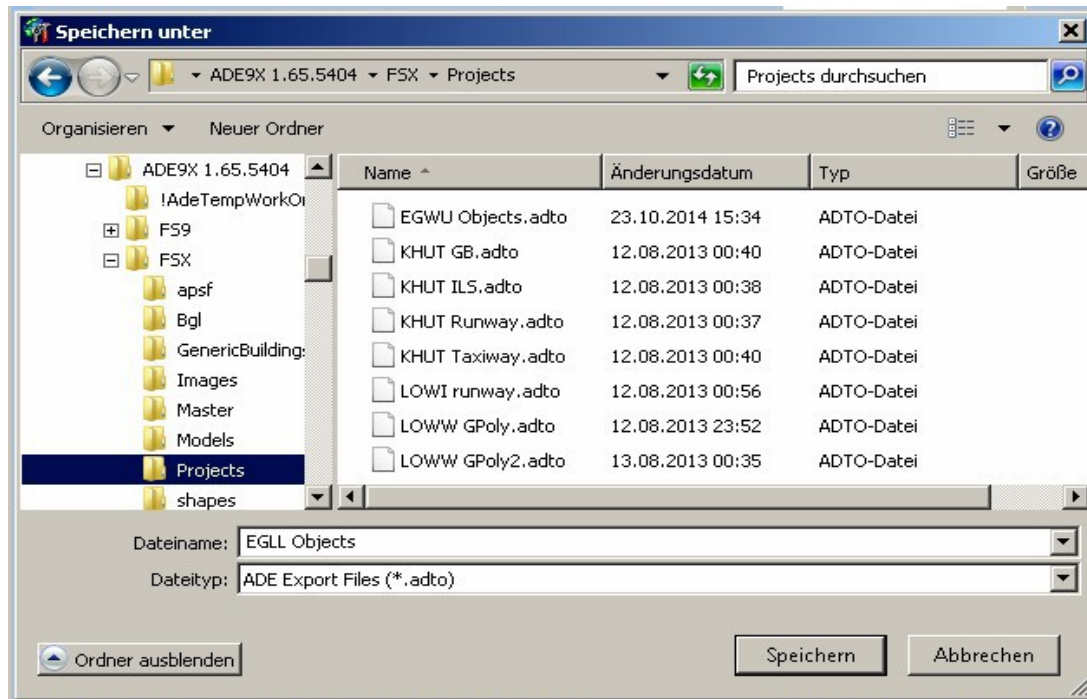


Figure 12-10: Saving Export File

After this the user is informed, whether the export was successful or not

12.1.12 Save Airport

This will save any in ADE currently opened airport as a “Project File” (for a definition of projects see [chapter.11.0 ADE Project Files](#)).

ADE will use the existing name and the folder of the project file When a project file does not exist yet, ADE will propose the “default” name, that was set in the New User Wizard or Settings > Options > Project Tab

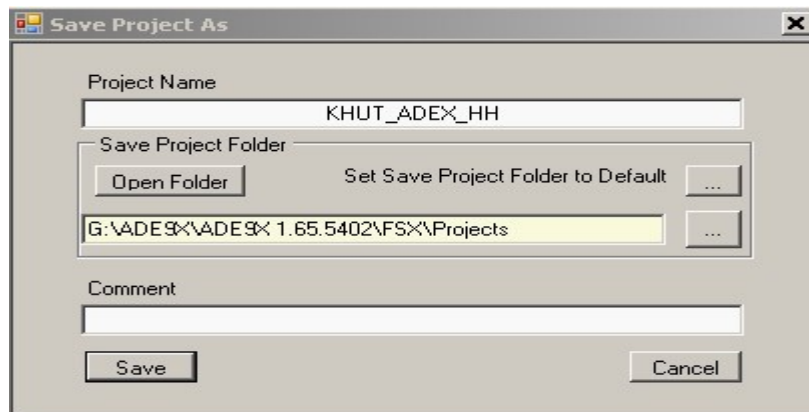


Figure 12-11: File Name and Save Folder

This dialog window will open to let you change the name and save folder for the file.

- o **Project Name** – this can be anything you like. ADE only will add the extension “.ad4”
- o **Save Project Folder** - This is the folder that the file will be saved to.
If this is the first time that you have saved this project then this will be the default folder that you set in the New User Wizard or Settings > Options > Project Tab.
You can't change this by typing but you can change it via the next two options.

- o **Open Folder** - This will open the dialog window “Save As”.

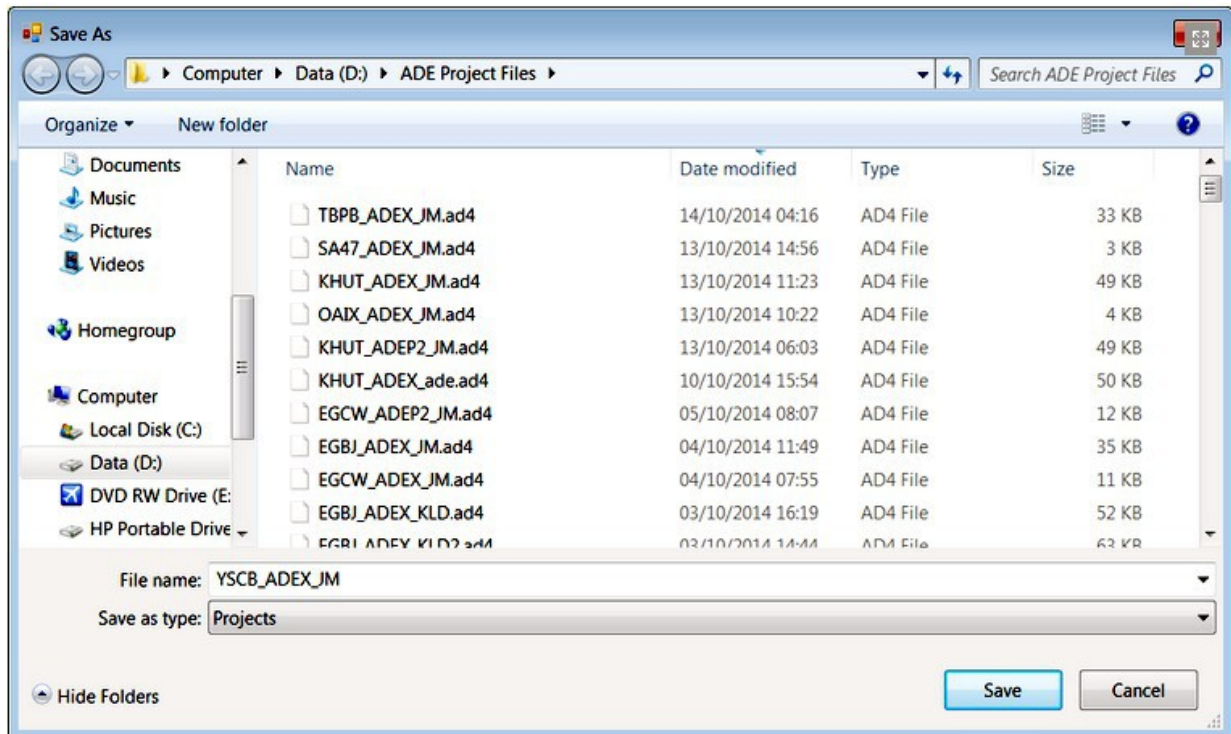


Figure 12-12: Save As Dialog

Here you can change the folder as you wish or create a new one. You can also edit the name or even select an existing project to over write.

- o **Comment** - ADE saves information about your project settings and if you want to make a comment about the project file for future information then you can enter that here
- o **Set Save Project Folders To Default** – goes back to the folder that was set in the New User Wizard or Settings > Options > Project Tab.
- o **Save** - Click the Save button and after a few moments you will see a message confirming the file is saved.
If you try to save the file with the same name and folder as an existing file then you will see this message. If you do not want to save it then just click the No button.

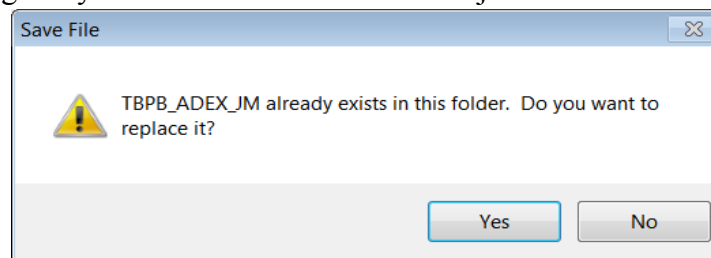


Figure: 12-13: Warning Message

- o **Cancel** - If you change your mind about what you are about to do then click Cancel. Airports that are opened from the ADE project format will save without asking for a new file name. ADE will also remind you if you need to save a file.

NOTE: ADE will save automatically the currently running airport in time intervals, which are set in **chapter 12.8.1.1 General** (Settings Menu) under “Auto Save Every”.

More details on this Auto Save function can be found in **chapter 14.18 Recovery from Crash**

12.1.13 Save Airport As

There are cases, when the option “Save Airport” is greyed out.

When the user nevertheless wants to save the airport, for instance with another file name, this option “Save As” will open the dialogue window (Figure 12-11) to start the save-process.

12.1.14 Compile Airport

This option compiles the ADE Airport Project to a .BGL file. The same can be done by clicking the button “Compile” in the right hand corner of the ADE-Main Display or by using the key combination “CTRL + C”

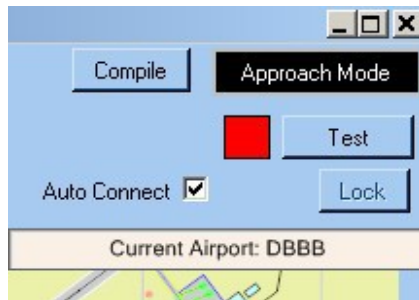


Figure 12-14: Compile Button

NOTE :compiling an ADE airport is a separate activity from Saving (unlike AFCAD or AFX).

12.1.14.1 Compile Basics

When the entry "Compile Airport" is chosen, the following window is opened:

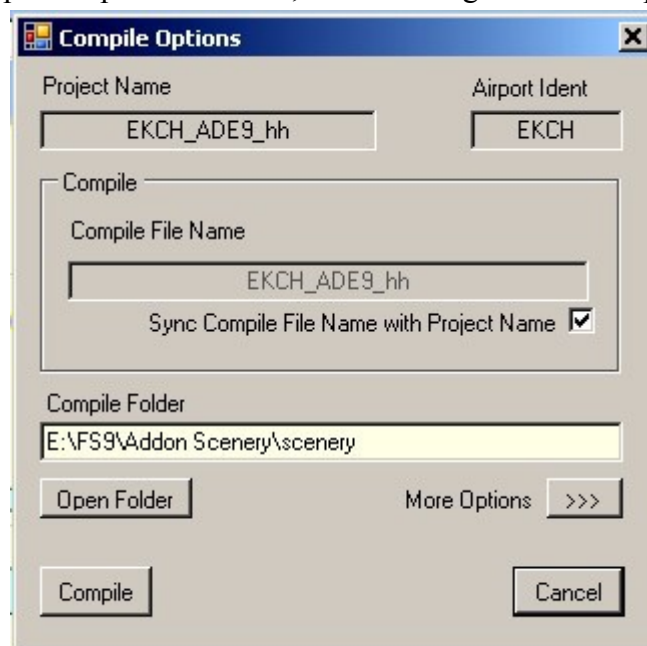


Figure 12-15: Compile Options

- o **Project Name** and **Airport Ident** - are shown only for information and cannot be changed here
- o **Compile File Name** - This is the current name for the compiled BGL files. This name cannot be changed here.

- o **Sync Compile File Name with Project Name** - is checked by default. Keep this checked and the compile file name will always match the project name. If you want to change the compile name yourself, then un-check this and the Compile File Name box will be enabled so that you can set the name yourself
- o **Compile Folder** shows the folder that the compile will be saved to and which will be used as specific folder for this project.
 - when the current airport was opened, edited and is compiled for the first time, then this path is set as default by ADE to the folder “Addon Scenery => scenery” of the Flight Simulator.
- o **Open Folder** – this button opens the “Save As” - window:

The file save dialog does not actually save anything!

- The folder opened will be the current compile to folder - whatever that is.
In this example it is the Addon Scenery Folder of the FSX.
- This window offers the simplest solution, when the user decides to change the folder for compiling. You can place the compiled file where you like.
- A new folder will be kept as compile folder for this particular project (airport).

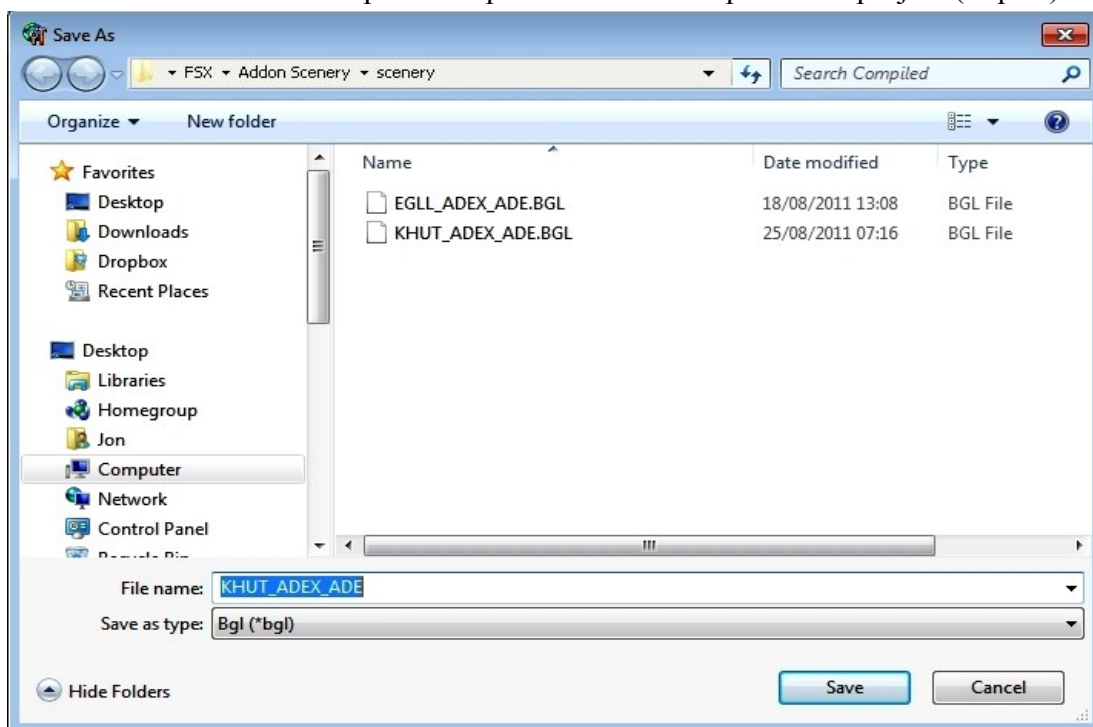


Figure 12-16: Selecting Folder for Saving the BGL-File

- o **Compile** - Click this button to execute the compile or **Cancel** if you change your mind
NOTE Changes of the these options will only be saved if you do compile.
 Cancel will also cancel changes to the options
- o **More Options** – this button opens a new dialogue window
 In the upper part of this window the user can define (change) the paths for the compile folders.

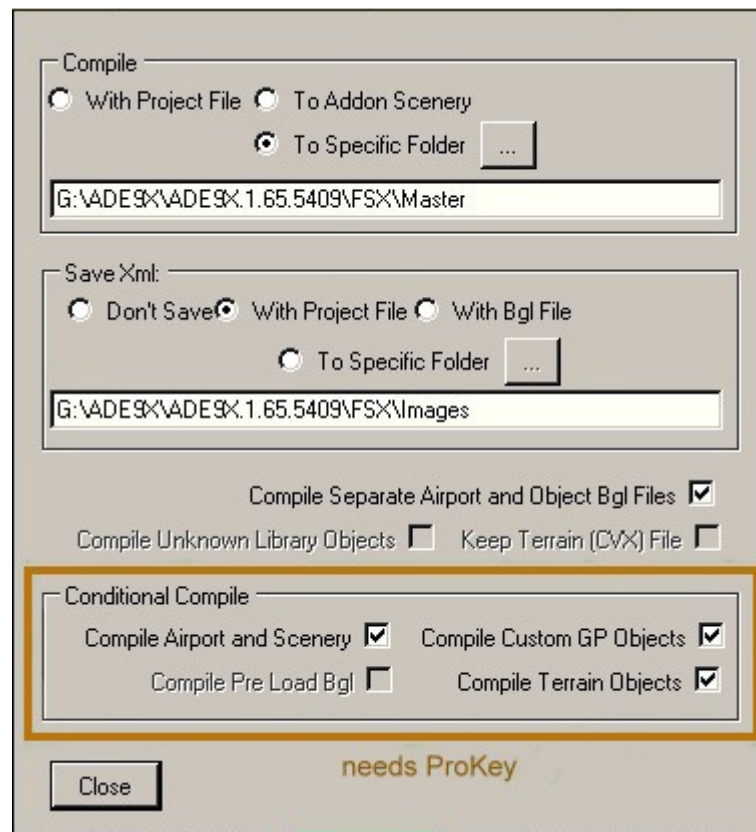


Figure 12-17: Extended Compiler Options

- * **Compile** offers three folder options for compiling:
 - with project file – to the same folder as the .ad4-file
 - To the FS Addon Scenery folder
 - To a specific folder, which can be inserted manually or searched using the browsing button
- * **Save XML** – when compiling, the project file (.ad4) is converted to a XML-file. The XML-file is compiled to a BGL-file, the only format recognized by the Flight Simulators. This feature here lets the user decide what to do with the XML-file.
 - Don't save – no path will be required
 - with project file – to the same folder as the .ad4-file
 - with BGL File – wherever the BGL-file is placed
 - To a specific folder, which can be inserted manually or searched using the browsing button

In the lower part of the window there are more options for compiling, intended for experienced ADE-users.

- * **Compile Separate Airport and Object BGL Files** – activates the so called “Split-Compile” (see [chapter 12.1.14.2 Split Compile](#) below)
- * **Compile Unknown Library Objects** - This option applies to specific airport projects. By default it is disabled and you won't be able to change it. However if you load a project that contains library objects that ADE does not know about (Black Box Objects) then you will get a dialog asking you if you want to compile them with the project or not. This checkbox will then be enabled with your choice. If you decide to compile them then this will be checked. Once you have answered the initial question then you will be able to change your answer any time here

- * **Keep Terrain File** - Again this option only applies to specific projects and will be disabled by default. ADE creates a terrain (CVX) bgl file if you have terrain elements in your project file. If no objects are found in the project file but there is a CVX bgl file on disk then you will be asked whether you want to keep the CVX file or not. This may be especially useful if you open an Airport BGL file created by someone else that has a terrain file with it. You won't be able to see the terrain data in ADE. ADE will ask you if you want to keep the CVX file. This checkbox will then be enabled with your choice. If you decide to compile them then this will be checked. Once you have answered the initial question then you will be able to change your answer any time here.
- * **Conditional Compile (requires ProKey)** - is a simple mechanism to allow users to decide whether to compile all the different elements of a project (compile groups) or just some of them. Of course if all compile groups are unchecked then nothing will get compiled. So generally you need to compile each group at least once. To make things easier if you change something in a group (Add, Edit or Delete) then ADE will automatically check the group so that it gets compiled.

There are four compile groups available: :

- **Compile Custom Ground Poly Objects** – does what it says. Details of compiling Ground Poly objects are covered in the “ADE-GP-User Manual”, which can be found in the folder “Manuals” of ADE
- **Compile Pre-Load BGL** - “Pre-load”-files, also called “Stub”-files are those that must load before the stock airport. They includeALT.bgl files, which are used to change the airport altitude and reference data such as name, city, state and country.
(see “ [chapter 12.6.1 Change Airport Reference Data](#))
- **Compile Terrain Objects** – Terrain Objects are [Terrain Polygons](#), [Terrain Vectors \(FSX only\)](#), [Flattens \(FS9 only\)](#)
- **Compile Airport and Scenery** – is a function – when not activated -to suppress the compilation of anything except those three options above when they are activated.

Active compile groups are enabled. This means that there are objects belonging to that group in the project that can be compiled. If the checkbox is checked then this group will be compiled.

Inactive compile groups have nothing to compile. This means there are no objects for that group, or in the case of the pre-load file, the airport has stock values and the altitude of the airport is stock. These are greyed out and always appear unchecked

Caution: when all four options are inactive, nothing at all will be compiled.!

Notes

- (1) Before compiling you should ensure, that the Flight Simulator when running at the same time does not use the same airport as ADE is about to compile. Best is to close FS before the compile is started.

This is because FS locks the BGL-file which it is using and Windows does not permit to update a locked file.

There is no warning when this failure is about to occur, because BglComp just absorbs the error and does not report it. The user has no way of knowing that their changes were not implemented when they compile.

- (2) A warning is issued to stop users from compiling to the “Stock Folder” of the Flight Simulators (FS =>Scenery=>.....) or to one of its files and the compile will be cancelled. If a new file name is used, one has to bear in mind, that the FS acts on multiple BGL-files for the same airport in alphabetical order. If the original BGL-file name is used, the original BGL-file would be overwritten, with possible grave consequences. Therefore in such a case ADE issues a warning and prevents the compiling.

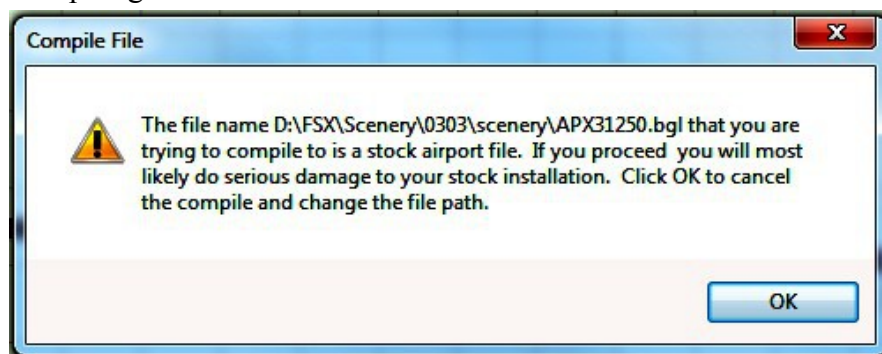


Figure 12-18: Compile Warning

12.1.14.2 Split Compile

You can compile airport projects into either a single .BGL file or two .BGL files. The single .BGL file option will contain the airport, objects, and models. The two .BGL file option will compile the airport into one file and the stock object exclusions, stock and user object placements and user .mdl files into another file.

The scenery object file has OBJ at the end. Thus, if the airport .BGL file is “KHUT_ADE_hh.bgl”, the scenery object .BGL file will be “KHUT_ADE_hh_OBJ.bgl”.

The following table show, what each BGL-file contains:

ProjectName.bgl	ProjectName_OBJ.bgl
Services (fuel)	Exclusion rectangles
Runways	Library objects
Tower	Generic buildings
ILS	Windsocks
Start	Trigger
Communications	Models
Taxiways	Beacons
Jetways	Effects
Aprons	
Taxiway Signs	
Edge lights	
Boundary fence	
Approaches	
Terminal navaids	

The split compile option is set by activating “Separate Airport and Object BGL Files” When using the split compile option, the airport .BGL file retains the ICAO code, ADE, and user’s initials nomenclature.

12.1.14.3 Compiled Files

ADE can generate up to ten .BGL-files depending on your settings and other actions:

- o **The Airport File** (ABCD_ADE_hh.bgl) - which may also contain scenery elements depending on your setting as described above
- o **The Object File** (ABCD_ADE_hh_OBJ.bgl) - if you selected to split the compile,
- o **The Terrain File** (ABCD_ADE_hh_CVX.bgl) – if the project file includes exclusions, terrain polygons or terrain vectors (for FSX only)
- o **The Airport Reference Data Adjustment File** (ABCD_ADE_hh_ALT.bgl). - This is created if you have modified the airport altitude and/or name, city, state and country. It must be stored in the "Scenery\World\Scenery" folder of FS9 or FSX.
- o **The Flatten File** (ABCD_ADE_hh_TER.bgl). - This is created when there is a “Flatten” in the project file (for FS9 only)
- o **The custom Ground Poly File** (abcd_ADE_hh_GP.bgl) – is created when a Custom Ground Line or Custom Ground Poly is added to the project file
- o **The Extended Compile Files** – for FS9 only
(see chapter 12.1.15 Extended Compile)

12.1.14.4 Failed Compiling

When the .ade-project file does contain data, which are not acceptable to the Compiler, the compiling action will be rejected and a compile failure message will appear.

At the same time the “Issue Manager Status” button (left lower corner of ADE main display) will turn from green to red.

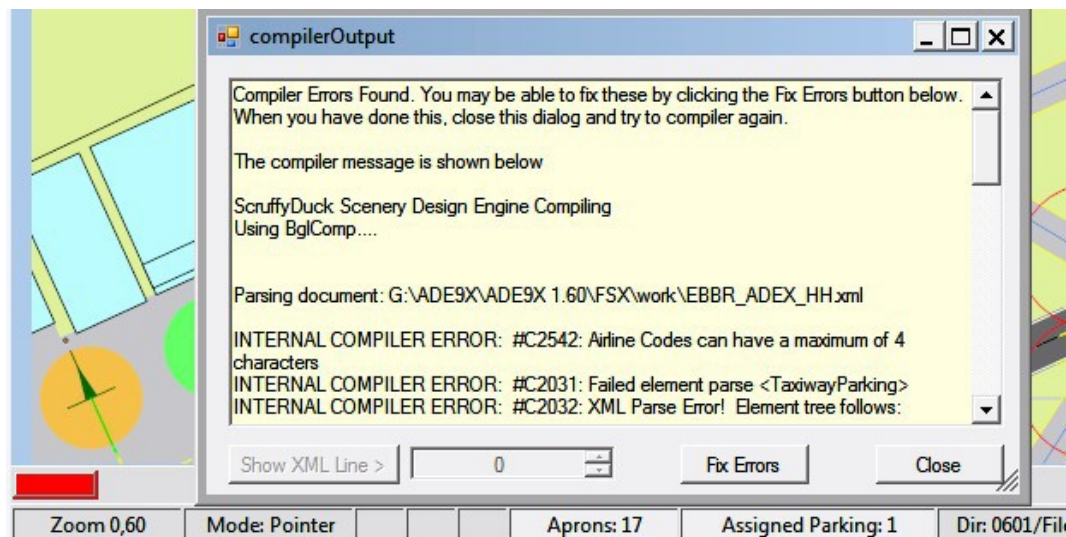


Figure 12-19: Compile Error

The message can be quite lengthy, but it explains explicitly the cause for the failure to compile. One can touch the red issue button with the cursor and it too will display in pink the cause for failure.

Now when the red button is clicked, the Issue Manager (which is described in detail in chapter 13.2 Fault Finder) will open, display the nature of the error and offer to fix it.

The various compile failure sources are discussed in the related chapters.

12.1.14.5 Skip Compile (requires ProKey)

By default ADE will compile everything in the project file except for those objects that are included for information such as nearby airports and stock nav aids. There is an internal mechanism which works out whether something should be compiled or not. This is called “skip compile” and is recommended only for experienced users.

It may be useful sometimes to stop ADE from compiling a specific object or group of objects. You can do this using the checkbox “Force Skip Compile” in the “Properties”-window of the airport elements.

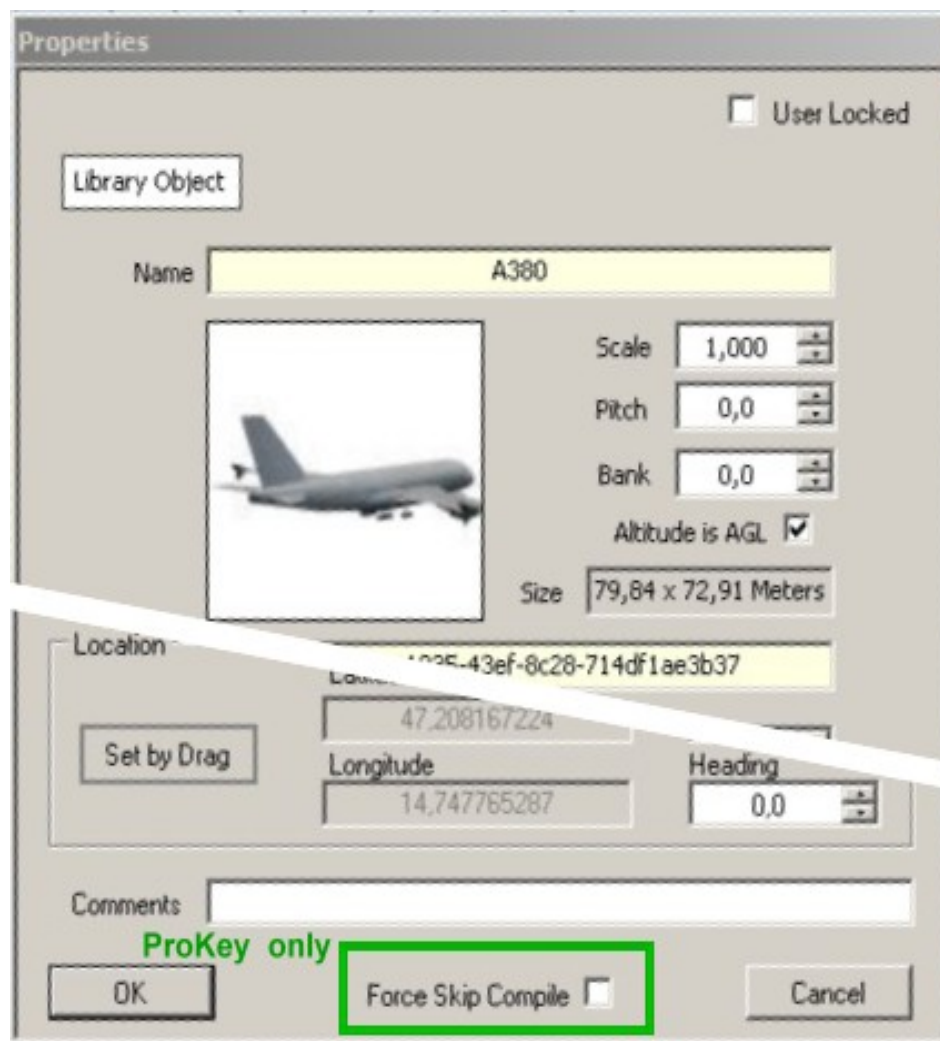


Figure 12-20: Skip Compile of a Library Object

When this box is activated, ADE will not compile the object irrespective of the internal mechanism. If this is not activated then ADE uses the internal skip compile mechanism. So deactivating Force Skip Compile is not a guarantee that any object will be compiled. All you can say for sure is if it is activated then ADE will Not compile the object under any circumstances.

“Skip Compile is not available for all object groups. It makes no sense to have it for helper shapes, background images and so on because they are not included in the compile. It is also not available for the taxi and parking network - it would be difficult to predict the effect of not compiling some part of that. Finally it is not available for custom Ground Poly objects and for Terrain Elements.

12.1.15 Extended Compile

Extended Compile is a special feature for Airport Design Editor FS9 version). It does not work with the FSX version.

The purpose of it is to extend the options available for compiling FS9 airports.

Users have requested that we provide a way to generate a BGL file that is compatible with AFCAD. We have also identified a problem with the Microsoft FS9 compiler which will fail at certain airports with complex or large numbers of aprons. This problem is caused by a limited amount of space (buffer) available to the compiler. AFCAD/AFX compilers do not show this limitation. This function may help to split the airport in such a way to overcome this problem.

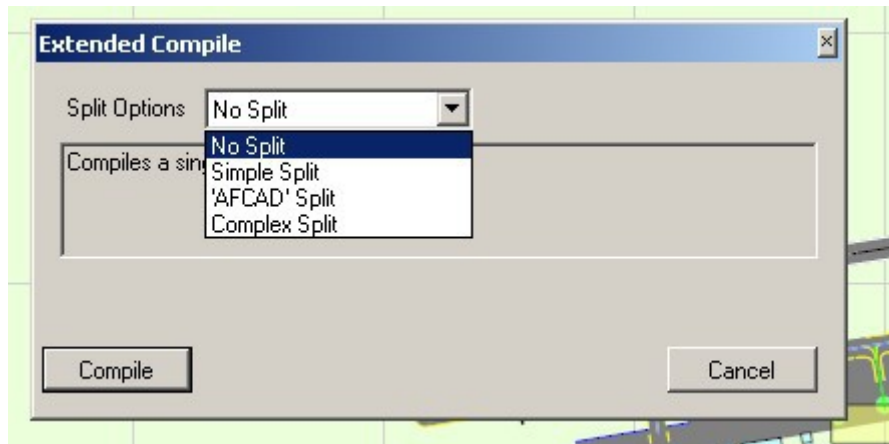


Figure 12-21: Extended Compile Functions

There are four options available:

- **No Split.** Compiles all elements into a single BGL File
- **Simple Split.** Splits the airport and scenery elements into two BGL files
- **AFCAD Split.** Splits into four BGL files which have the following endings:
 - AFCAD compatible Airport No extended name
 - Scenery Objects OBJ
 - Approaches APR
 - Taxi signs SGN
- **Complex Split.** Splits into six BGL files which have the following endings:
 - Scenery Objects: OBJ
 - Aprons: APN
 - Approaches : APR
 - Taxi signs: TSN
 - Taxi Network & Runways: TXN
 - Airport File : No extended name

NOTE that runways must be compiled with the taxi network to avoid compiler errors. In addition ADE will produce a BGL file with _ALT and place it in the Scenery\World\Scenery folder if the airport altitude has been modified.

NOTES

- Extended Compile will clean up all existing files if you change this split-option.

- It is strongly recommended that if you have this split-option available, that you do not use the regular compile option. This knows nothing about the extended file options and will not clean up any files. Thus if you mix compile methods you may well end up with unexpected and undesirable results
- Do not mess around with the extended names. Exclusion rectangles are split into the _OBJ file and may not work to remove stock signs if you change the naming convention

12.1.16 Print

Prints the currently displayed area to the current Windows printer.

12.1.17 Save Image

Saves an image of the currently displayed area using the currently defined image settings. See [chapter14.16 Airport Image](#) for more information on changing your image settings.

12.1.18 Recent Files

Shows a list of the last six ADE Airport Project files (.ad4, .ad3, .ad2 format only) you worked on. The last saved project is always at the top. Different versions of ADE will no longer share the same Recent-Files-List. Clicking a project in this list will open it.

12.1.19 Clear Recent Files

This option offers first a warning, that this action will clear the list of recently opened files. Only when “Ok” is clicked, all the entries in the Recent Files list will be removed.

12.1.20 Exit

Closes Airport Design Editor. If your work is unsaved, you will be asked if you wish to save it before the program closes.

12.2 Edit Menu

The Edit Menu gives access to the following three functions.

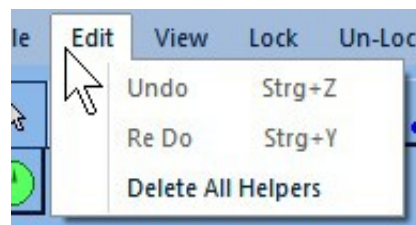


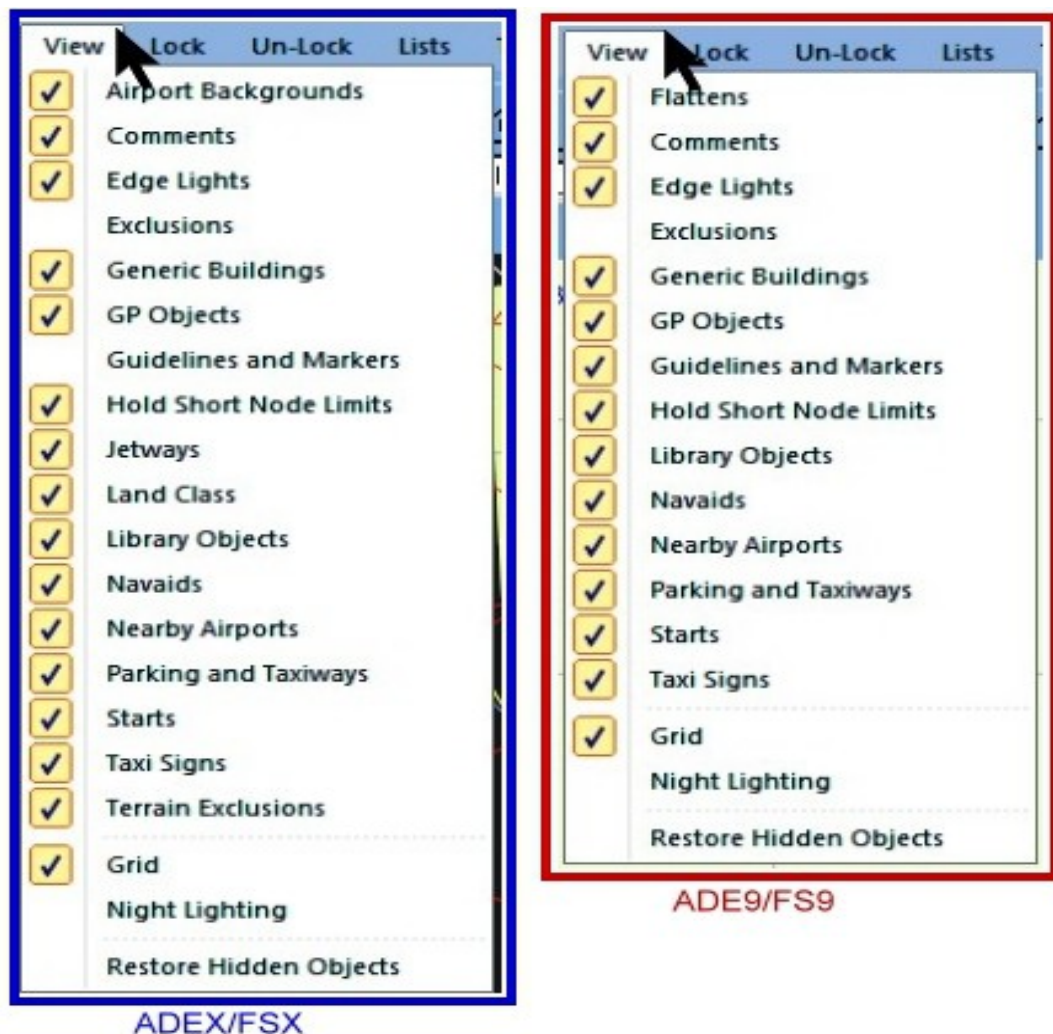
Figure 12-22: Edit Options

- o **Undo** – Reverses the last action. This function is identical with the "Undo" in Microsoft Window and can be done also with the key combination "**Ctrl**" + "**Z**".
- o **Redo** – Re-instates the last action. This function is identical with the "Undo" in Microsoft Window and can be done also with the key combination "**Ctrl**" + "**Y**".

- o **Delete All Helpers** – deletes all Guidelines, Markers and Helper Shapes.
 - Guidelines and Position Markers are tools contained in the Toolbar (**chapter 14.9 Guidelines and Position Markers**)
 - Helper Shapes are another tool to be accessed via the Rightclick Menu (**see chapter 14.10 Helper Shapes**)

12.3 View Menu

The options available in the View Menu identify which objects you will see on the airport schematic. Those that will be displayed have a tick next to them. To change the display just



click the menu option. ADE will remember these settings from session to session.
Figure 12-23: View Menu

Five elements in particular deserve particular specific mention:

- o **Nearby Airports** – This can be used to hide the small symbols with the airport Ident that are displayed to show where other airports are in relation to the one you are working on. In some cases where airports are very close these can get in the way
- o **Parking and Taxiways** – This turns on and off the whole parking and taxiway network including parking spots, taxiway points, and links. The operation can take a few seconds to complete especially at complex airports. A wait cursor will show that ADE is working on it.

- o **Grid** – This turns on and off the grid on the ADE Main Display
- o **Night Lighting** – This changes the ADE display to show a view of the airport at night.

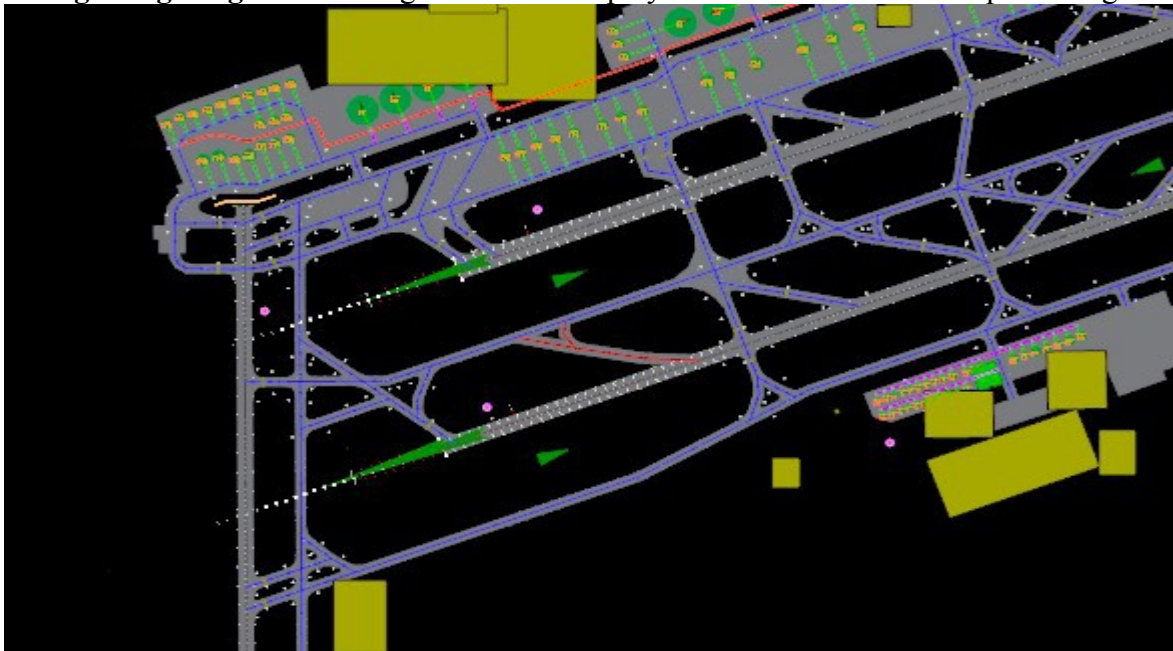


Figure 12-24: The airport at night showing the lights

Besides doing this in this menu here it can be done also by keyboard. Pressing the 'L' key will toggle the day/night mode. It will also set the check status of the menu item so the two methods are inter-linked.

Most objects can still be selected edited, moved and so on in this mode

- o **Restore Hidden Objects** – (requires ProKey). This function clears the list of all hidden objects and makes them all visible again.

12.4 Lock / Un-Lock Menu

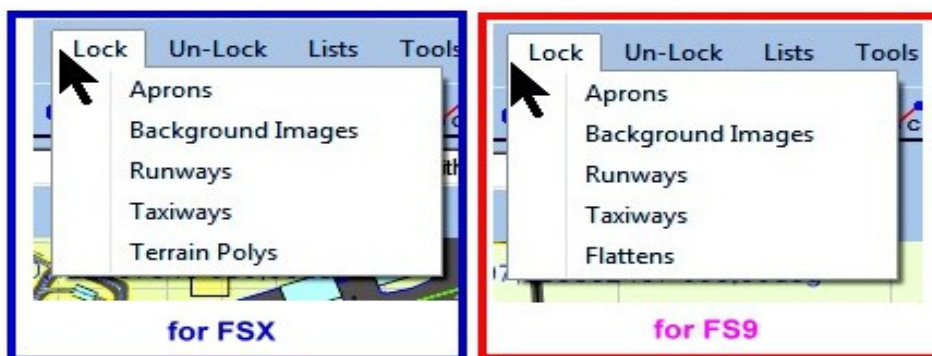


Figure 12-25: Lock Menu Entries

Under the Lock-/Un-Lock-Menu, you can choose to enable and disable project-level locking for Aprons, Background Images, Runways, Taxiways, **Terrain Polygons (FSX only)** and **Flattens (FS9 only)**.

Once one of them is locked, you will not be able to move, delete, or edit the element until you unlock it using the Un-Lock Menu. ADE saves these project-level lock settings and will keep them from session to session.

The "Locked"-status can be seen when touching the object in question with the tooltip. The tip will be displayed in red and have a pertinent text.

12.5 Lists Menu

Lists provide an alternative way to look at and manage airport elements. The List Window can be re-sized to accommodate user requirements



Figure 12-26: Lists Menu Entries

There is a wide range of lists to help you:

- o **Aprons** – This list contains all aprons of the airport, showing surface type, number of vertices and draw flags.
- o **Comms** – This list is the place to add and/or edit communication frequencies. The list shows the frequencies for the airport currently open in ADE (Black headphones icon) and those of nearby airports (Grey headphones icon). You can add, delete, or edit the frequencies for the open airport but the others are read only.
- o **Exclusions** – Lists all user-created exclusion rectangles, showing their coordinates and the type of objects, which are excluded. .
- o **GP Objects** – This list shows the Ground Polys with type (polygons and lines), texture width and layers.
- o **Helpers**– is the collective name for Guidelines, Position Markers and Helper Shapes. The list contains helper type and their coordinates
- o **Images** – Shows the list of images currently associated with the airport. **NOTE** that image information is stored in the .ad4 file format. This list allows you to show or hide the image and also change the order in which ADE displays the images.

- o **Jetways** – The list of jetways provides some information that is useful in checking for errors. The distance (offset) from the associated parking spot is shown.
If jetways are too far from the parking spot they will be seen to travel across the airport when needed including crossing taxiways and runways. The fault finder will also identify those that are too far (based on common distances used in stock airports) from their parking spot. **(for FSX only)**
- o **Models** – Displays a list of user models you are using in the airport project. User models are usually .mdl files created with tools such as Gmax or FSDS.
- o **Nav aids** – This list shows those nav aids associated with the current airport as well as other nav aids within a 60nm radius. You can edit nav aids associated with the current airport but not the others. The list shows the distance of the nav aid from the reference point of the current airport.
- o **Nearby Airports** – You might be interested to know what airports are located within a 25nm radius of the current airport. This list shows those airports and how far away they are. Selecting an airport in the list will move the display to that airport. ADE displays the reference point and the code for that airport.
- o **Parking** – Lists all the parking ramps and gates at the airport. Select one to center the display on that spot.
- o **Runways** – Lists the runways at the airport.
- o **Scenery Objects** – Lists all airport and stock objects, generic buildings, triggers, windsocks, and other user objects in the current airport project. When a library object or generic building is selected a small thumbnail will be shown if one is available.
- o **Starts** – Navigate around the Start locations with this list. You can edit the details here as well.
- o **Taxi Designators** – Here you can look at the list of taxiway names in use. They are sorted alphabetically, Selecting one will highlight the paths associated with that name.
NOTE that you can have several taxiways with the same name. FS9/FSX/P3D (and ADE) sort them out based on a unique index number. You can add and delete taxiway designators from this list.
NOTE that if you delete a designator ADE will give all the paths associated with it the BLANK designator.
- o **Taxi Links** – Displays a list of taxi links. You can display each one in turn by selecting it in the list. This list, along with all other lists, can be sorted on any column heading. It also shows surface draw flags
- o **Taxi Points** – Shows all the taxi points at the airport. Select one in the list to show it at the centre of the display. You can edit the properties of the point from the list if you wish.
- o **Taxi Signs** – Lists all the signs at the airport.
- o **Terrain Polygons** – Shows all the airport background, exclusion, and land and water class polygons at the airport **(for FSX only)**
- o **Libraries Used** - There are cases when you find a series of objects added to a project, whose origin are unknown. Some of them may be stock objects and others come from third party libraries. You want to know which libraries are used so that you sure that you have them installed in the Simulator.(see **chapter 10.2.6 Third Party Object Libraries**.)

Of course the objects are only listed when they are used in the current airport project. If you see a library heading of “Unknown” this means that the objects are from a library that is not loaded into your Library Object Manager.

- o **Project Tree** - This shows a tree of the project. It shows only objects editable by the user. It is intended to provide another way to access the project information and also gives access to things like the Tower viewpoint that are not accessible from any other list. Its use is explained in [chapter 14.20 Project Tree](#).

12.5.1 The List View

Although the list displays for different items vary significantly, depending on the properties of an item, there are nevertheless a couple of control features common to nearly all lists.

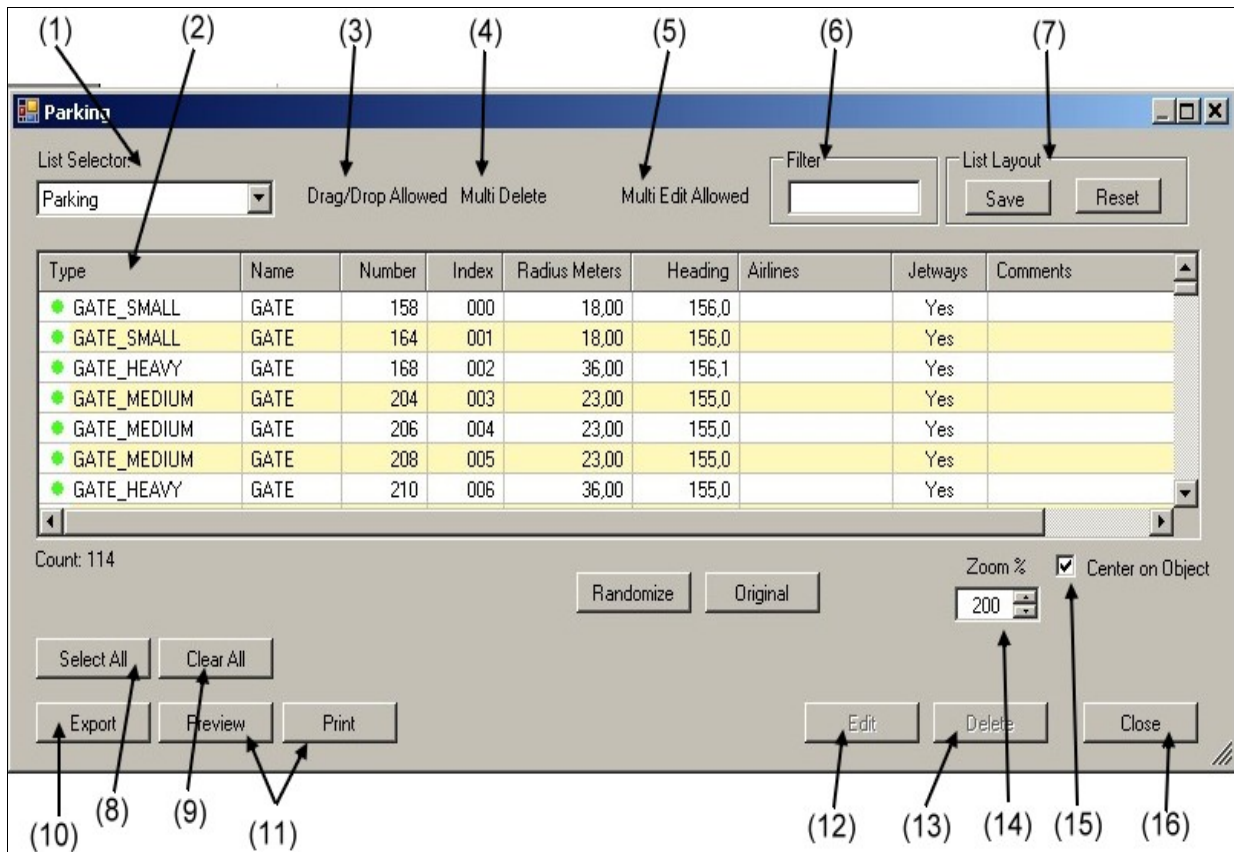


Figure 12-27: The List Display

1. The List selector allows different lists to be displayed
2. Columns can be re-ordered by dragging them into a new place
3. Drag/drop of rows are allowed when this is visible
4. If this is visible then you can select and delete multiple entries in the list
5. You can select and edit multiple entries in the list when this is visible.
This will use a multi-edit function
6. Enter some text in here and the list will be filtered to entries containing the text.
Do not confuse this "filtering by text" with "filtering by columns" explained below in chapter 12.5.3
7. The layout can now be customized for each list, so you can have a different setup for parking, links etc. Click Save to have ADE remember the current layout and this will be remembered in future. Reset will return the list to the default layout as installed.

8. If multi selection is available then this button will select all the entries
9. and this will clear any selections
10. Clicking this button saves the content of the List window as an Excel-table to a CSV-file
11. A print preview and print function is available to make a hard copy of the list
12. The edit button will be active when a user selects items in the list.
ADE will look at the selected entries to determine if they can be edited
13. The same applies to the delete button. This will only be active if the items selected can actually be deleted
14. A zoom value can be selected, for the display of a selected item in the list provided this box is activated
15. ADE centers the main display on an objected which was selected in the list
16. closes the window

12.5.2 The Column Right-Click Menu

Right click on any column header to get some display and configuration options

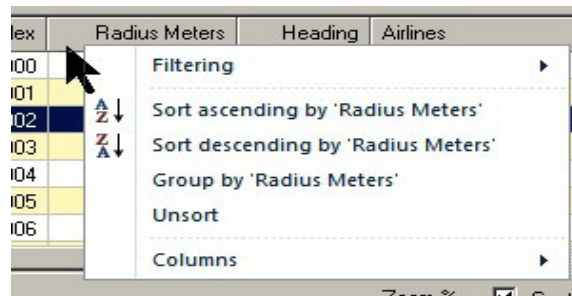


Figure 12-28: The Column Menu-point

Since in the picture above the column-heading “Radius” was chosen, the sorting and grouping will be done by radius.

You can sort the list from here - although clicking on the column header is probably quicker
Grouping can be useful to group entries by the values in the selected column

12.5.3 Filtering by Column

Right click on a column and expand the “Filtering” menu on the top.

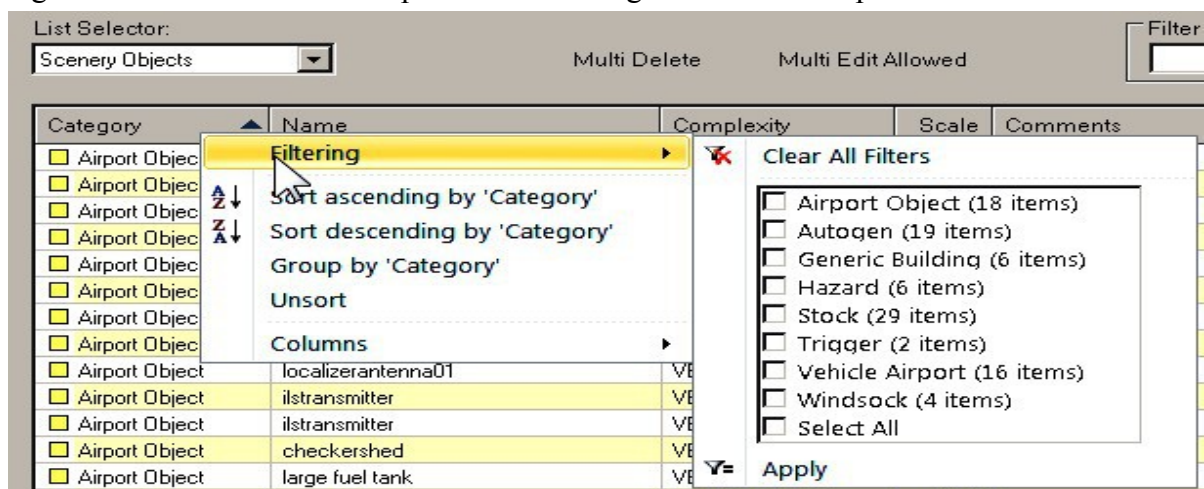


Figure 12-29: Filtering by Column

This provides a list of values in the column that you can check to select. Apply the filter and only objects meeting the filter will be displayed. You can clear all filters from this menu at any time

12.5.4 Columns

Right click on a column and expand the “Columns” menu on the bottom. This provides a list of available columns.

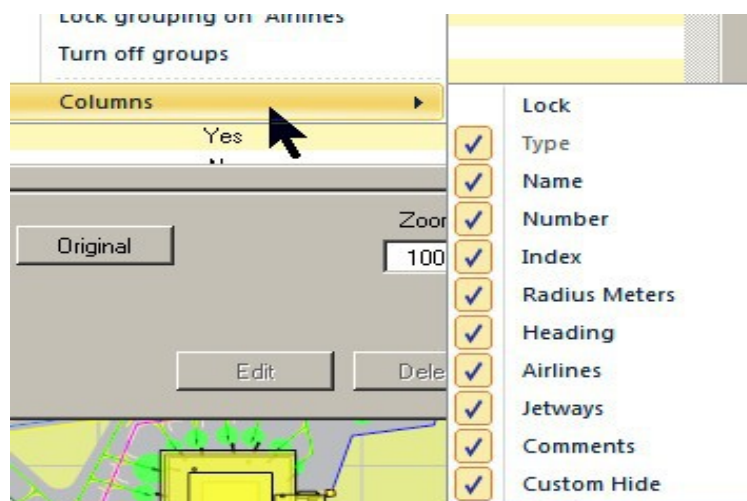


Figure 12-30: Columns Roll Down Entries

Those with check marks will be displayed. You can uncheck any columns that you do not want to see or check undisplayed columns (such as “Lock” in this case)

12.5.5 Save The Customized List Layout

Using the option Nr. (7) in Figure 12-27 ”List Display” and clicking the “Save” button will ADE remember the list arrangement for this list

The “Reset” button will forget the customized layout and return it to the default layout

12.6 Tools Menu

The Tools Menu contains useful features to help you configure your ADE installation, fault check your current airport, manage scenery objects and more. The tools menu is always accessible, even when no project is loaded

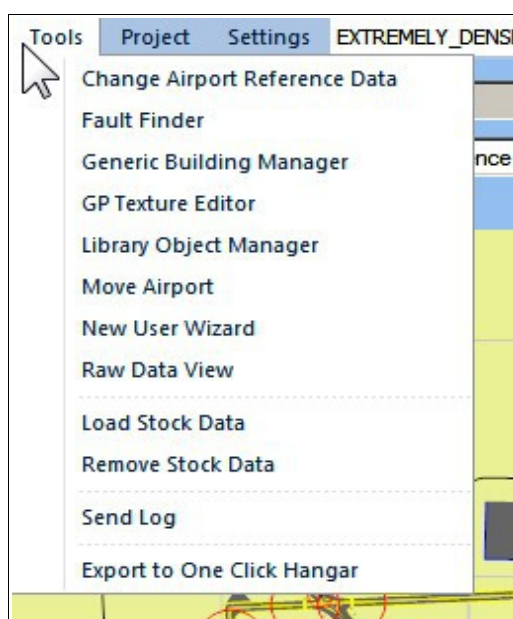


Figure 12-31: Tool Menu Options

12.6.1 Change Airport Reference Data

It is not possible to change the name or altitude of a stock airport via the normal .BGL-files (installed by default in the FS addon scenery folder).

Therefore the airport properties window does not permit to make these changes

This first option in the Tools-Menu provides a method to do it after all, opening the following dialog window:



Figure 12-32: Change Airport Identification and Altitude

- o **for Stock Airports** – in order to change identification and altitude a special small .BGL file called a “**stub-BGL**” is needed that loads before the stock .bgl file that contains the airport data. ADE will create this stub file for you and also adjust all the airport elements that have an altitude to the new altitude.
Once you have changed the altitude at an airport via this dialog window, ADE will always tell you if the project has an altered altitude (i.e. both the airport property dialogue box and the title bar will state *Revised Alt*).

YSCB - Canberra *Revised Alt* [Ver. 00.00.5480]

NOTE: If the airport has airport Background Polygons or "Water Terrain Polygons (**FSX**) or Flattens (**FS9**), their altitude will not be changed. They have to be brought to new airport altitude manually.

ADE will issue a corresponding warning

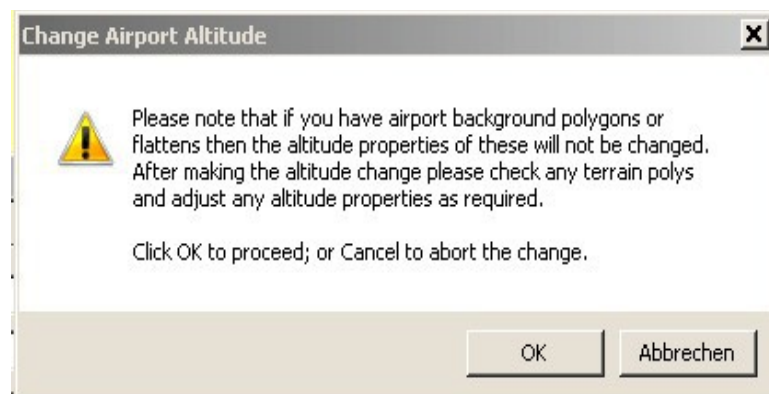


Figure 12-33: Warning

When you compile an airport after changing the altitude, ADE will generate the small stub-bgl file with an "_ALT" extension, and place it automatically in the "...\\scenery\\world\\scenery" folder of the Flight Simulator. Consequently, if you plan to distribute an airport with a revised altitude then you will need to distribute the stub file as well and tell your users where to place this file to ensure that the change is made.

- o **for User Created Airports** – that is an airport that has no ident in the stock list – the stub BGL is not required and is therefore turned off by default. However some advanced users, who may have several BGL-files related to this airport, might like to have such a stub-file, which will load before anything else. ADE therefore provides a checkbox for this case in the dialog window (for user created airports)

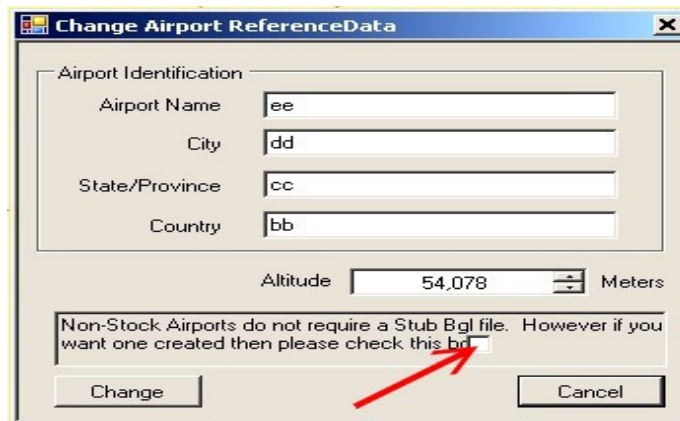


Figure 12-34: Airport Reference Data

12.6.2 Fault Finder

Fault Finder is a utility, which permits a search for errors in the design, which could lead to a compile failure.

It is described in detail in [chapter 13.2 Fault Finder](#).

12.6.3 Generic Building Manager

Generic Building Manager is a utility, which assists in importing, saving, editing and positioning Generic Buildings.

It is described in detail in [chapter 13.5 Generic Building Manager](#).

12.6.4 GP Texture Editor

GP Texture Editor is a utility, which permits modifying and changing the texture of Custom Ground Polygons.

It is described in detail in the "ADE-GP-UserManual", which is part of the ADE package. It can be downloaded as PDF-file in the folder "Manuals" in the main ADE directory.

12.6.5 Library Objects Manager (LOM)

The Library Object Manager provides full access to library objects and allows you to manage their information and edit their properties. This feature includes the ability to make user developed object libraries available in ADE.

It is described in detail in [chapter 13.4 Library Object Manager \(LOM\)](#).

12.6.6 Move Airport (Requires ProKey)

The idea is that a user might want to move an airport to align with some scenery or background image.

NOTE: This function should be used with caution by experienced users.

Microsoft did not provide in their SDKs a mean to move the airport reference point (ARP).

This can lead to unexpected consequences when moving an airport or parts of it.

This dilemma is explained in detail in the following link:

<http://scruffyduck.posthaven.com/moving-an-airport-in-fsx-slash-p3d>

For moving an airport the user has two options

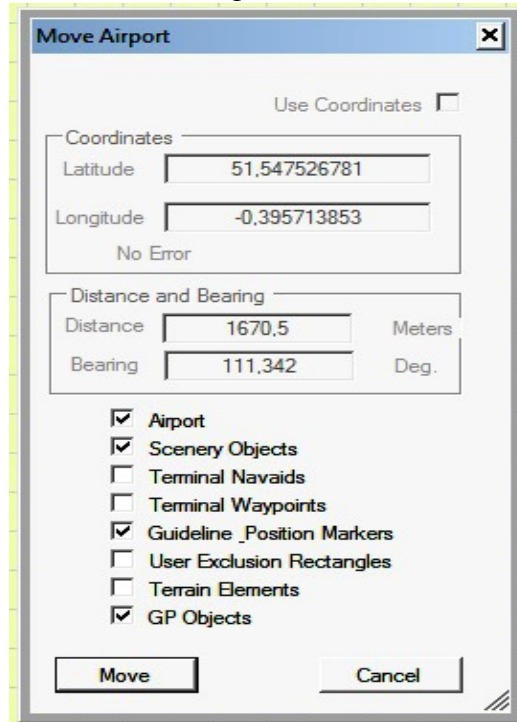


Figure 12-35: Move Airport Dialog

o Move by Drag:

Select a suitable element like a runway from the airport.

Once something is selected hold down the "Alt"- Key - drag the element to the new position with the "Alt" key down and release the left button before releasing the "Alt" Key. You should get the dialogue window "Move Airport".

It tells you the distance and bearing of the drag from the start position and also offer you to select what to move.

Select "Move" and the airport etc. should move in total.

At the moment it makes sense to move airport and scenery elements but you may want to test moving Terminal waypoints and navAids. If you select "Cancel" then the dragged object should return to its start position.

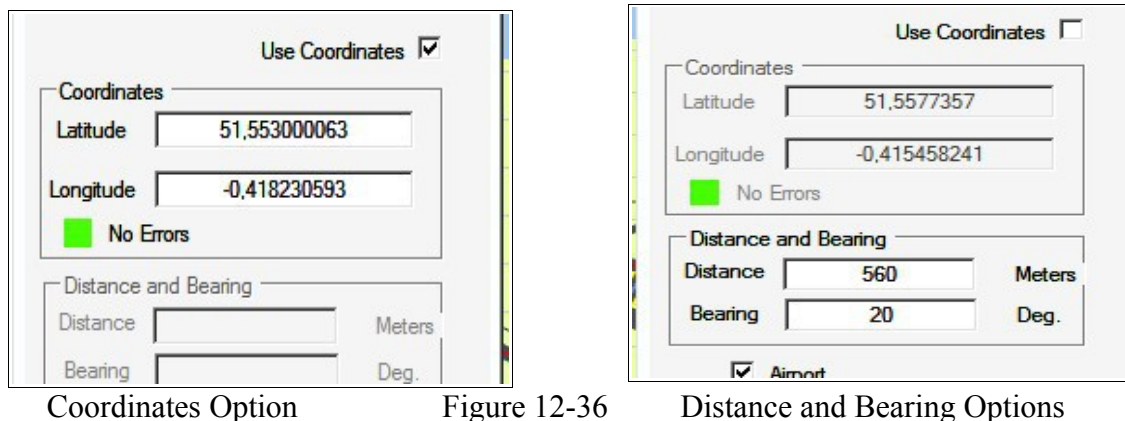
o Move by Parameters

For more precision and if you need to move the airport over some distance then it is better to move the airport using coordinates, or distance and bearing.

This is accessed via the option "Move Airport" in the Tools-menu.

By default the move function will start in the "Use Coordinates" mode with the check box in the right top corner checked.. The coordinates shown are those of the airport reference point. These coordinates can be changed manually with high precision.

Unchecking the checkbox switches the display to the “Distance and Bearing” option:



Entering distance and bearing values will update the Coordinates boxes in real time to show the coordinates of the move location:
This provides a sense check!

The opposite occurs if coordinates are updated. Once again this offers a sense check.
If you know the new coordinates are a few hundred meters from the current reference point but the distance reports several thousand then it is time to check your latitude and longitude.

ADE provides some checks on the coordinates you enter. It understands a number of different formats but if you enter something it does not understand then you will see an error message:

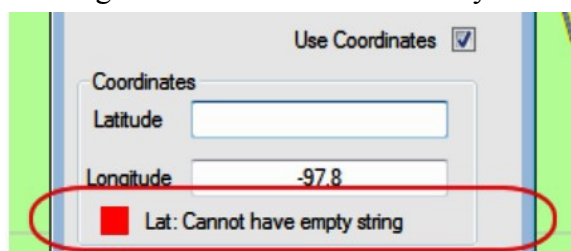


Figure 12-37: Error Message

Finally when you are content with the move location you can select what elements to move:

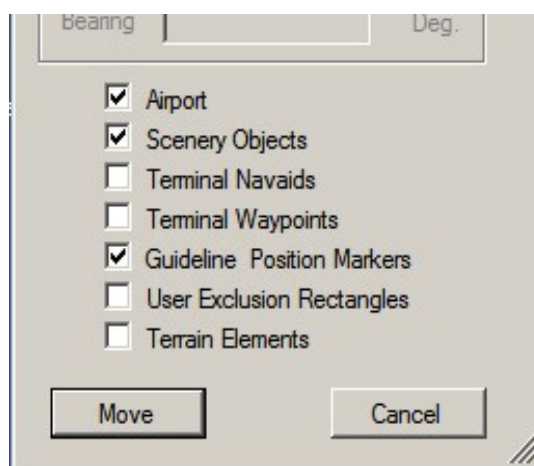


Figure 12-38: Element Selection

Generally ADE will not move stock objects that cannot be moved such as nav aids. Terminal Nav aids and Waypoints are part of the airport and can usually be moved. It is very important after completing any airport move to check and update the approaches.

o Move by Rotation

- (1) Select an object that can be rotated. Use the Alt Key as in “moving the airport” to drag the handle and rotate the object. The following dialogue will open:

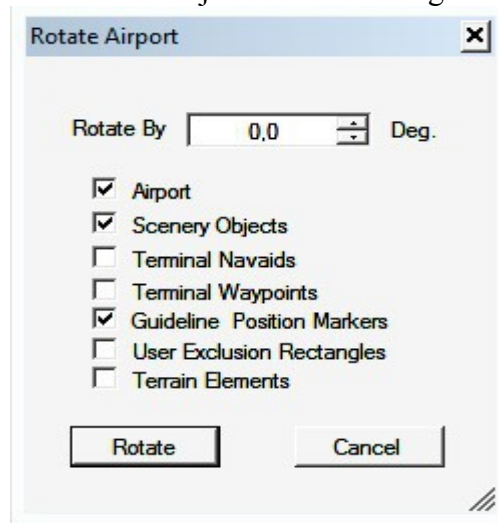


Figure 12-39 Rotating Dialog Window

It will allow you to rotate or cancel. The airport should rotate around the reference point of the object you selected and rotated. **NOTE** that objects with headings such as parking or buildings and aprons etc. should rotate to maintain their relationship to the airport.

- (2) Or position the mouse where you would like the airport rotated around and Right Click: From the rightclick-menu select Rotate Airport and the same dialogue will appear. Set the amount to rotate by (negative to rotate left) and Rotate or Cancel. The airport should rotate about the point you right clicked. So Right Click on the ARP and the airport should rotate around the ARP (see also [chapter 12.11.27 Rotate Airport](#)).

12.6.7 New User Wizard

The New User Wizard appears, when you start ADE for a specific version for the very first time. This first use for a preliminary setting of ADE's configuration is described in [chapter 2.5.1 New User Wizard Welcome](#).

However the Wizard can be used from the Tools Menu here also at a later date for completing or changing the settings. It is described in detail in [chapter 13.8 New User Wizard](#).

12.6.8 Raw Data View (requires ProKey)

We start with a warning that the “Raw DataView” is a powerful tool. Be aware that you can change many parts of the project in the same way editing the XML. There is no undo and you will be able to do things that ADE in its' normal mode does not allow. Therefore getting it wrong is much more likely to lead to compiler errors. On the other hand there are times when the only way to deal with a problem is to access the source data directly.

NOTE that you will only see this menu option if you have the ProKey installed and active.

The window of “Raw Data View” has three panels:

- o Left** is a tree representation of the project file. On start this will be collapsed so you will need to click on the expand icon to get started.

- o **Middle** is all the properties for that object. Some are ADE project properties like Lock Status and Skip Compile. Others relate directly to the object itself. In some cases you can't change properties as they are read-only. Others you can change and changing them will update the XML.
- o **Right** Pane shows the XML source for the object exactly as it will get compiled. You can't edit this directly – do it by changing the properties.

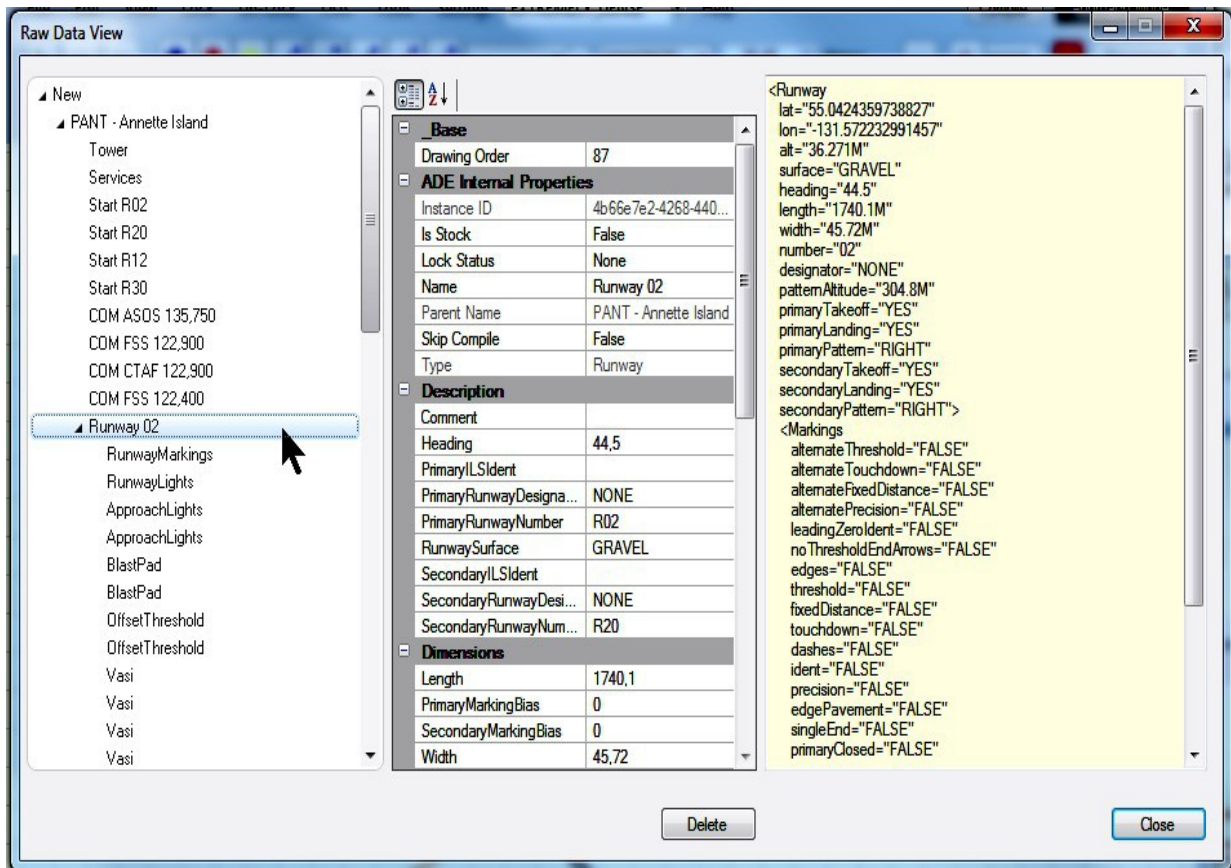


Figure 12-40: The Panels of Raw Data View

Editing Properties

- o Select a property that can be edited. Change the value. **NOTE** after you change it that the XML will be updated to reflect your change. If it does not happen immediately then just select another property, Now and again – mostly with numbers this might not happen at once.
- o There is no undo so if you are not sure then you will need to change the value back again.

Deleting Elements

- o You may delete any element in the tree in this view. Again be very careful! However if you are stuck with duplicate stock ILS or some other unpleasant thing that will not compile and ADE will not let you deal with then this is your best way to solve the problem.
- o You cannot undo deletes. Also do not try to delete the airport. ADE gets confused and will probably still display it.

Non Compiling Items.

The ADE project file contains a lot of things (navaids, waypoints, nearby airports and so on) that are used to enable or enhance the design process but which are not compiled with the airport itself.

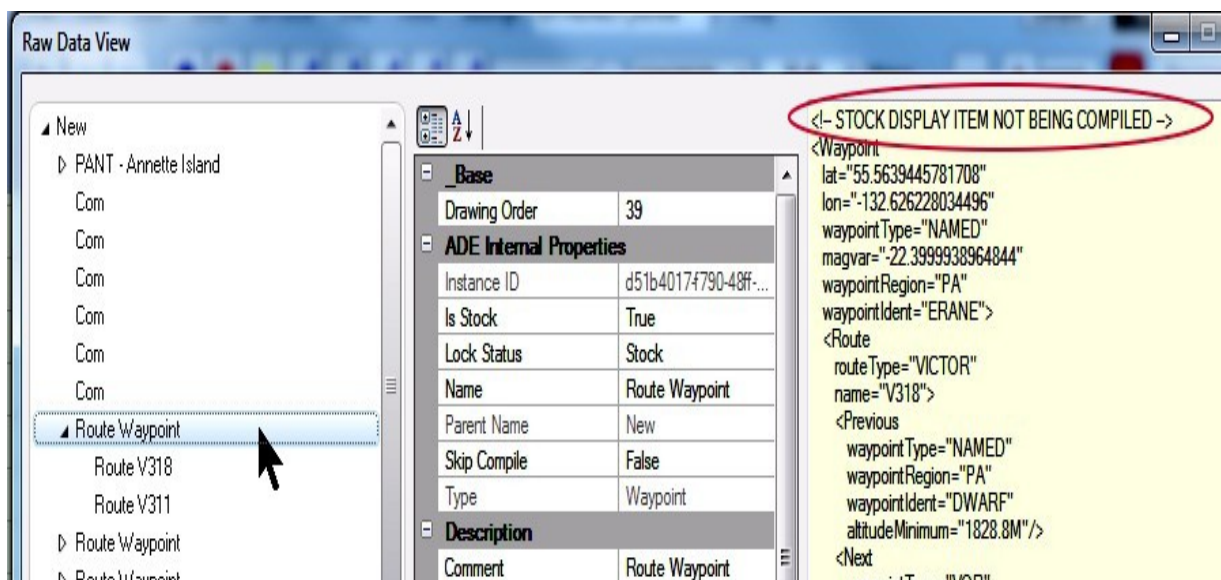


Figure 12-41: Non Compiling

If you see “<!--STOCK DISPLAY ITEM NOT BEING COMPILED-->”, then you are looking at one of these objects. In the picture above it is a Route Waypoint.

Whilst you can change and edit the properties as much as you like, they will not be compiled nor reflected in any output BGL file

Closing the Raw Data View will update your airport. If you removed a runway; or changed the heading of something that should be reflected in the display

12.6.9 Load Stock Data



Figure 12-42: Load Stock Data

The features "Load Stock Data" are really for airports, which are started from a modified BGL-file. It permits to load airport elements such as Scenery Objects, Nav aids, Comms Frequencies etc, which are part of the FS stock data.

Here the user can choose from which groups data shall be imported or removed.

It is important to know, that nearly all airport elements do not come from the stock airport record. The only exceptions are "Approaches" and "Taxi Signs" which come from the stock airport.

This is the reason why their check boxes in the options-window are sometimes greyed out.

12.6.10 Remove Stock Data

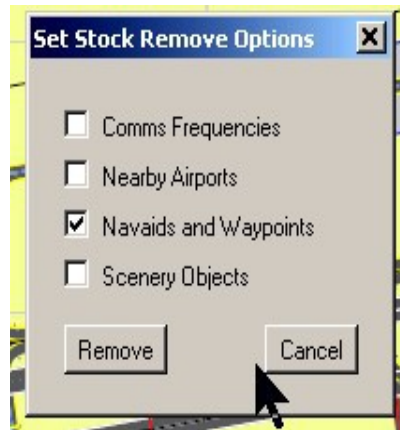


Figure 12-43: Remove Stock Data

This option contains the same objects as Loading Stock Data, except for Approaches and Taxi Signs. The reason for this is, that Stock Data cannot be removed.

12.6.11 Send Log

ADE maintains a log of what is happening as you use it. There is a log for each version of ADE that you open. This log can be used to check when things are going wrong. If ADE crashes then it will automatically record what happened and ask the user to send the log to the support team. There same can be done manually, when the user is confronted with results he did not expect..

Details are contained in [chapter 14.19 Log File](#).

7.6.12 Export to One Click Hangar

In the FSDeveloper Forum a tool is published by Morton B. under the name of "One Click Hangar". For reference see

: <http://www.fsdeveloper.com/forum/threads/one-click-hangar.424466/>)

How it is used and how an export can be handled is described in the documentation of this tool.

12.7 Project Menu

The ADE project concept is explained in detail in [chapter 11.0 ADE Project Files](#).

The Project menu offers three options for the handling of a project.

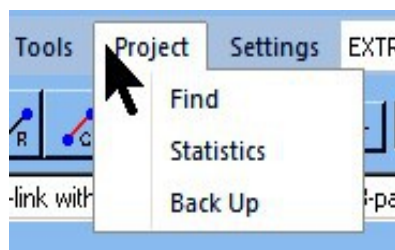


Figure 12-44: Project Options

12.7.1 Find Project

This will open the Find Project dialogue with a list of all the projects that it knows about.

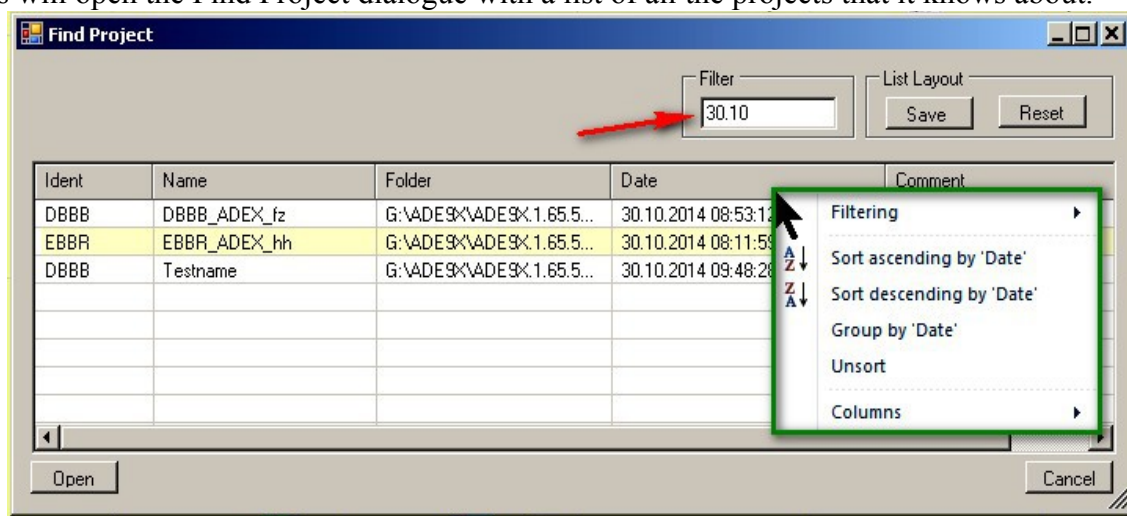


Figure 12-45: Find and Filter a Project File

Select the project that you want to open and

- Click Open or double click the entry
- You can filter down the entries by entering some text in the filter box. (red arrow)
This works on all fields so you can filter for the file, ident or something in the columns field (green box)
- There are a number of different ways to display the information and you can Save your choices here. For information on customizing the list see [chapter 12.5.4 Columns](#).

The find function relies on the new project settings files (apsf) to create the data displayed here. (see [chapter 11.1 ADE Folder and File System](#) and Figure 11-4).

Existing apsf files do not contain enough information to display here but as you load and save projects (remember either to save the project or open the project settings and save them) the apsf file will be updated so that it can be used in this display..

You can position and re-size this window to suit your needs and ADE should remember next time you open it.

12.7.2 Airport Statistics

All airport items contained in a currently opened project can be seen at one glance in the following table:

Project Name: Testname.ad4	
Project Folder:	G:\ADE9X\ADE9X.1.65.5409\F5X\Project
File Size:	19Kb
Total Count: 187	
Airports:	1
Approaches:	9
Aprons:	4
Boundary Fences:	1
Comms:	2
Exc Rectangles:	24
Generic Buildings:	10
Helipads:	1
Helper Shapes:	2
Library Objects:	11
Nav aids:	7
Parking Spots:	13
Runways:	1

Figure 12-46: Statistics of an Airport Project

12.7.3 Project Back Up

This function allows you to take a backup of the project at any time and include back ground images and model files if you wish.

NOTE that this is a manual process.

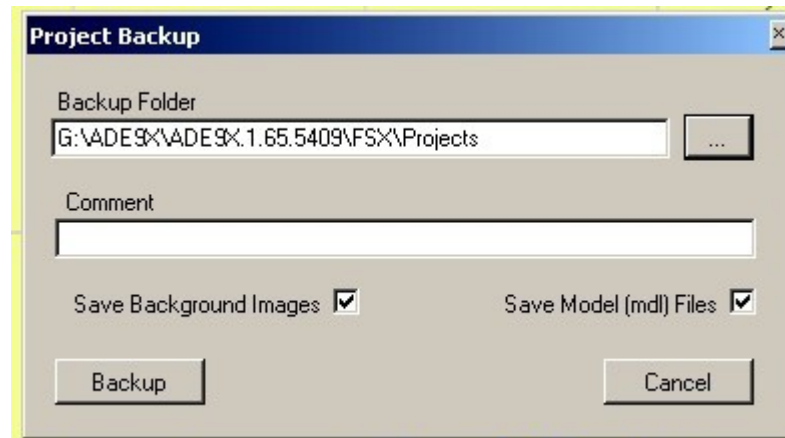


Figure 12-47: Backing Up a Project

This is a simple dialog where you can set your options and ADE will remember them. For more details see [chapter 14.18 Recovery from Crash](#).

12.8 Settings Menu

In the Settings menu the user has the opportunity to configure many parameters of ADE according to his own wishes.

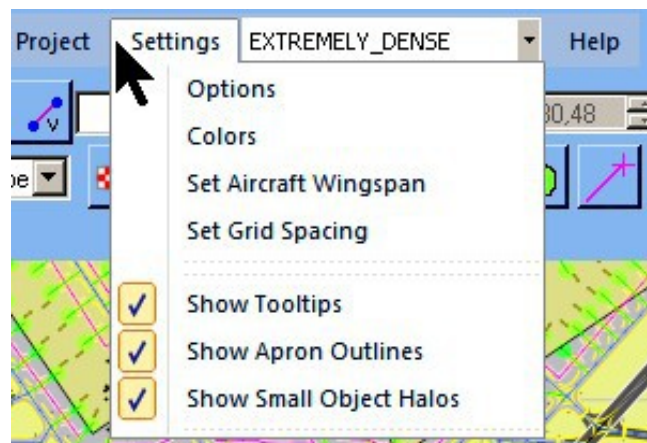


Figure 12-48: Entries in the Settings Menu

12.8.1 Options

“Options” is an extension of the New User Wizard, where not only the initial settings of the Wizard can be changed, but many more.

The Options-window is subdivided in six tabs. It opens with the first tab “General” being displayed.

12.8.1.1 General

The content of the first tab of options is similar to the New User Wizard. However, there are several other options that you can select based on your knowledge of airport design.

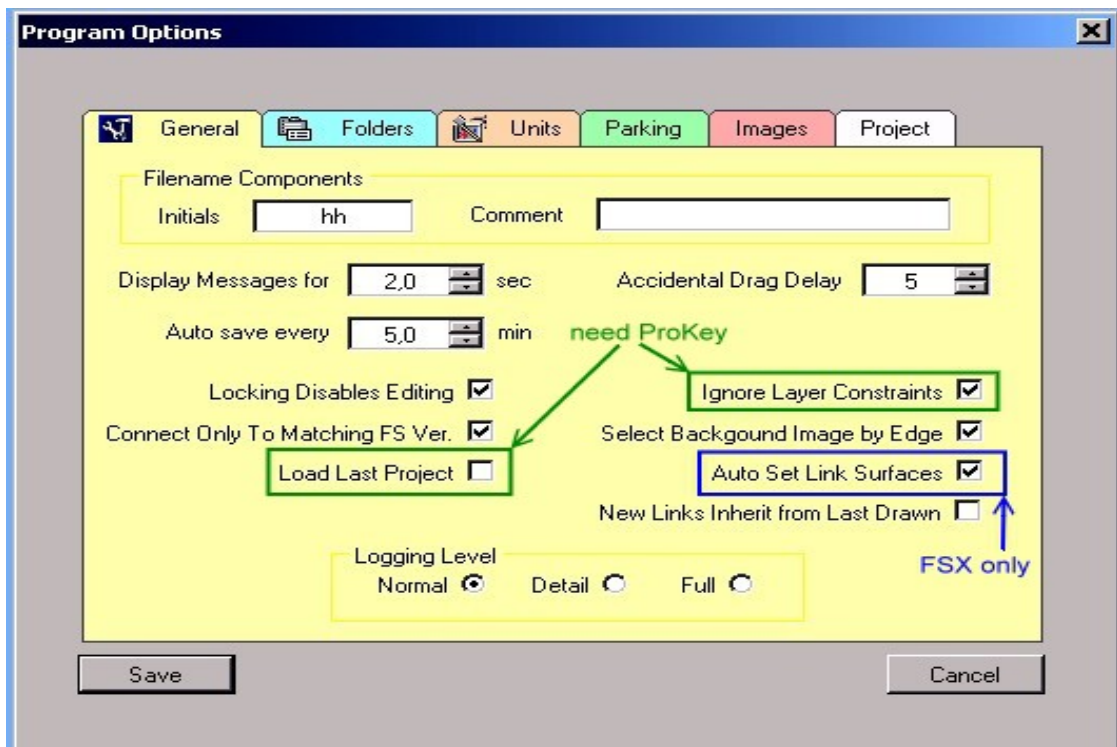


Figure 12-49: General Settings

- o **Initials** – Set or change your initials here. These are used to form part of the file names for an airport project. When this is left empty, the name “ADE” will be inserted automatically.
- o **Display Messages** – Sets the time in seconds that temporary messages like Saved or Compiled will be displayed.
- o **Auto Save Interval** – Set the time between auto saves. Details about “Autosave” are explained in [chapter 14.18 Recovery from Crash](#).
- o **Locking Disables Editing** – If the Locking Disables Editing Check box is selected, you will not be able to edit airport elements you have locked yourself (see [chapter 14.8.3 Editing Locked Objects](#).)
- o **Connect Only To Matching FS Version** – This check box controls the process of connecting ADE to FS9/FSX/P3D. Details are described in [chapter 14.13.2 Connecting to FS9/FSX/P3D](#)
- o **Load Last Project (ProKey only)** - Check this if you would like ADE to load the last project you worked on. The definition of last project is the last project you saved. So if, for example, you open several stock or other airport but only save the first one then it is the first one that will be opened on start up.
- o **Logging Level** – Airport Design Editor logs what is going on to a file called “Log.tx1”. A separate file is created in the sub folder for each version the user works with. This is a very useful diagnostic tool in the case of the program not working as expected and you will be asked to provide this file when reporting a bug or problem. There are three Logging Levels that ADE can use to generate program logs to help diagnose program issues. The default is Normal and should be used unless a problem is encountered. Levels of Detail and Full can be set if required. Full will generate a lot of information and should only be used when requested by the ADE Support team. ADE will remember the log level you have set from session to session. (for details see [chapter 14.19 Log File](#)).

- o **Comment** – Anything entered in here will be added to the file name.
- o **Accidental Drag Delay** – In this box the incidence of an accidental drag when selecting an object can be reduced by choosing the number of pixels that the cursor must move before ADE initiates a drag. A value of zero avoids any delay. (see [chapter 14.4.2 Move By Dragging](#))
- o **Ignore Layer Constraints (ProKey only)** – By default this box is not checked, ensuring that the display of ADE mimics the FS display of overlayed objects. By checking this box all drawing layer rules will be ignored (see also [chapter 14.14.3 Drawing Layers in ADE](#))
- o **Select Background Image by Edge** – The default method is “Surface Selection”. By checking this box it can be changed to “Edge Selection” (as explained in [chapter 14.15.3 Selecting the Image](#))

- o **Auto Set Link Surfaces** – Runway, Parking & Apron Links should not show a surface type, but there is a bug in FSX that will allow this to happen. By selecting this option, ADE will manage Runway, Parking and Apron Link surfaces to ensure that the surface type for these links matches the underlying aprons or runways. Unchecking this gives you more control over the sometimes unexpected surfaces that can appear at certain intersections. Unless you want to handle these surface assignments yourself, you should leave this checked. **FSX only**

- o **New Links Inherit from Last Drawn** - If this check box is checked then ADE will use the 'AFCAD' method which is to inherit properties from the last link drawn. If it is unchecked the links will inherit properties based on the Taxi Link Default Settings.

Properties inheritance depends on whether a link starts on an existing link or not

- If the start node for the new link is not associated with an existing node or link, then ADE will use the properties stored for that link type
- If a link is started from an existing link then provided the parent link is in the same group (Taxi/Closed, Apron/Parking, Vehicle) then the new link will inherit the properties of the parent. If there is no matching parent then the link gets drawn with the relevant last drawn link properties

(see the tutorial "Setting Taxi Link Default Properties" in the Help documentation under https://scruffyduck.screenstepslive.com/s/help_docs/m/20268/1/200252-setting-taxi-link-default-properties)

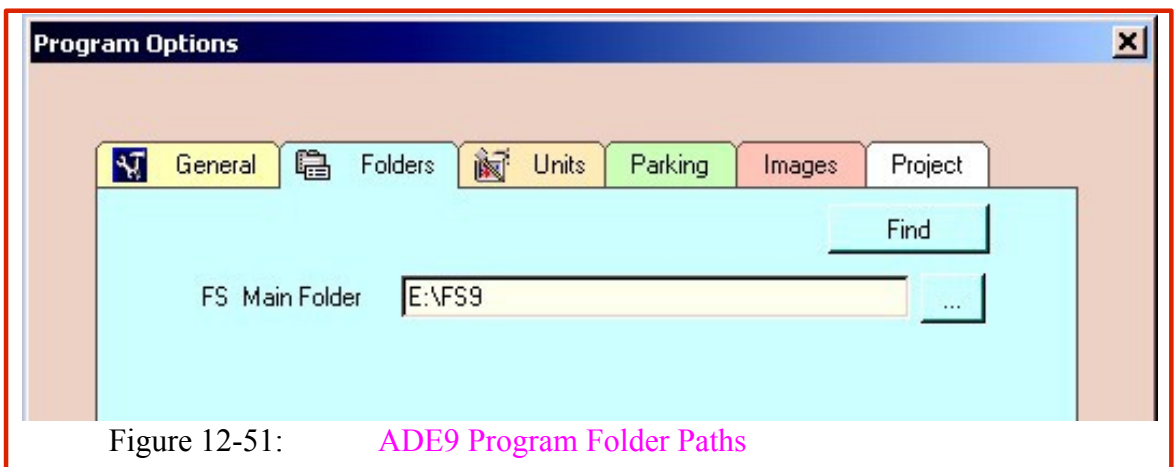
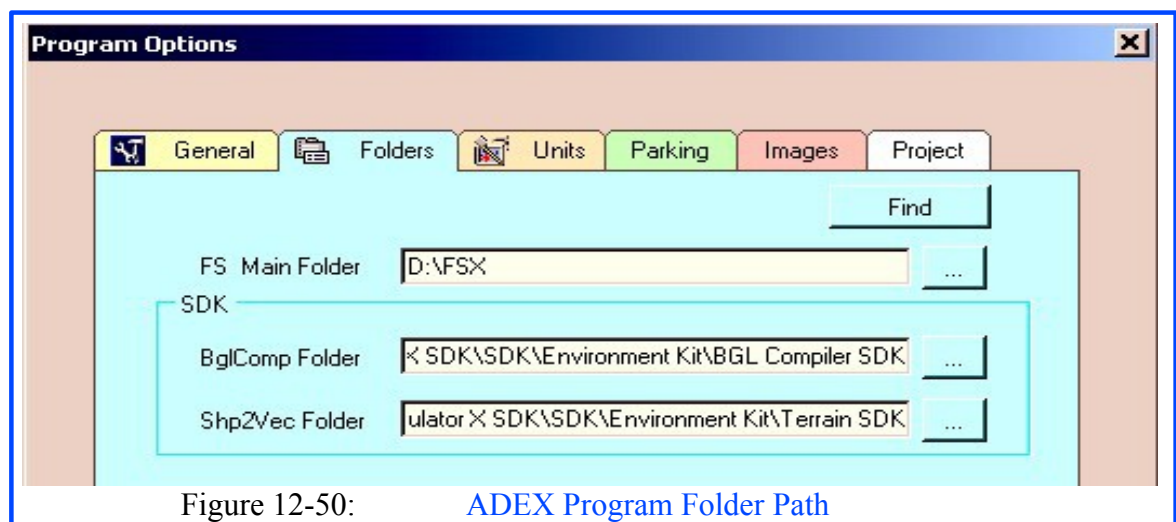
12.8.1.2 Folders

The Folders Options are those that you set in the New User Wizard.

If you want to change these for any reason you can do so here or by using the New User Wizard again.

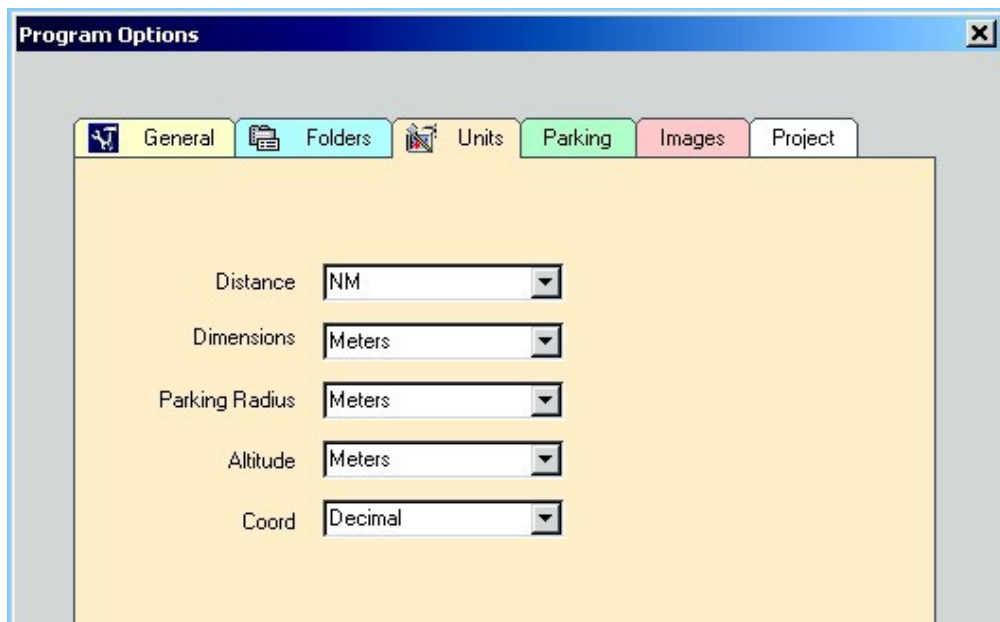
Use the Find button to have ADE search your registry for the paths.

The display for this "Folders Option" is different for FS9, FSX or P3D,



12.8.1.3 Units

The Units Options are the same settings as were entered in the New User Wizard.



12.8.1.4 Parking

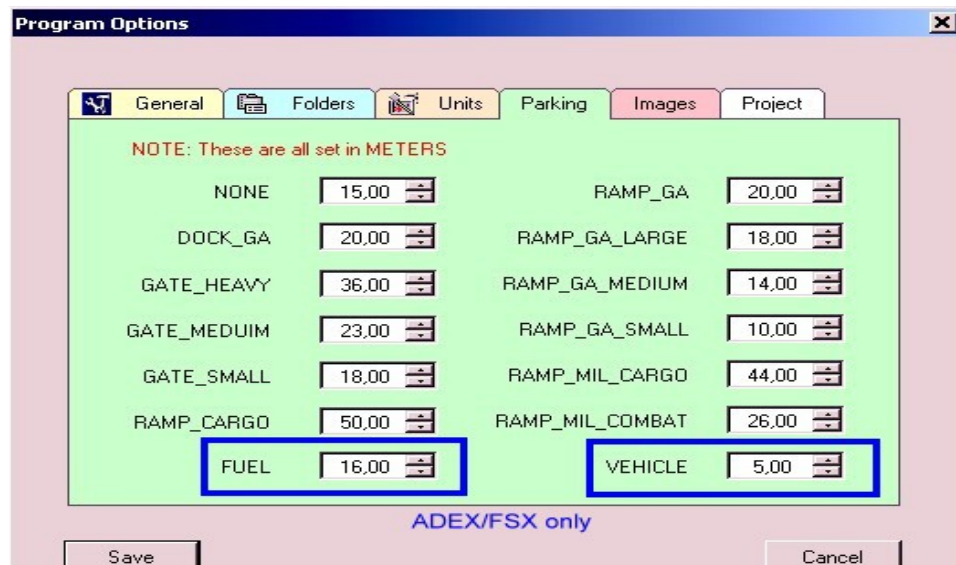


Figure 12-53: ADE Program Parking Options

The Parking Options Tab allows you to change the values that ADE will use for the default radius of parking spots.

NOTE:

Since in **FS9** parking spots with Fuel Triggers and parking for Airport Vehicles do not exist, the ADE display for FS9 does not contain these entries.

The values used by ADE are based on the FS9 or FSX/P3D defaults. You should not change these radius values unless you understand how FS9 and FSX uses them along with an aircraft's **radius (FS9)** or **wingspan (FSX)** to assign aircraft parking.

12.8.1.5 Images

ADE can generate its own screen shot by selecting "Save Image" under the File Menu.

The Image Options tab allows you to set the screen shot's image format and to define how the filename-file name should be constructed.

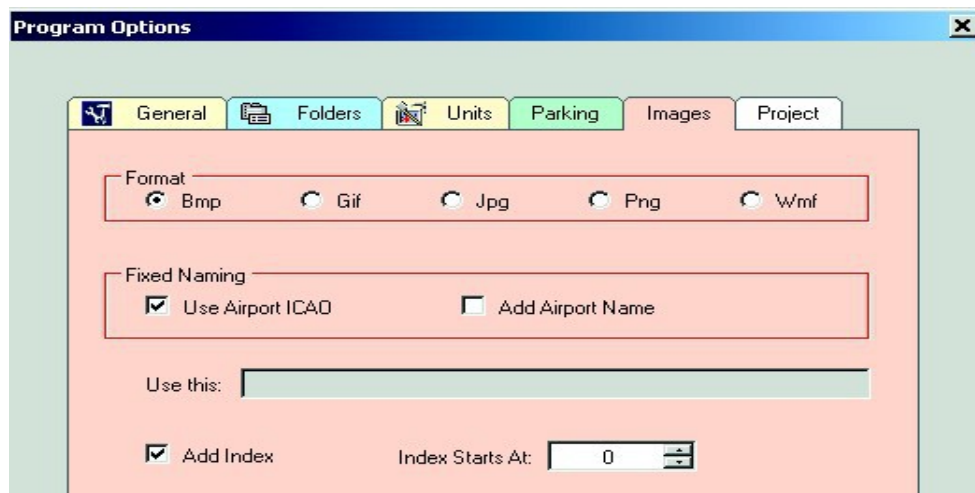


Figure 12-54: Format for Screenshot Images

You can either use the airport ICAO code with or without the airport name or you can choose your own name. In both cases, you can set whether ADE will add an index at the end of the file name and what starting index to use.

Once you have completed your changes, remember to click Save.

12.8.1.6 Project Options

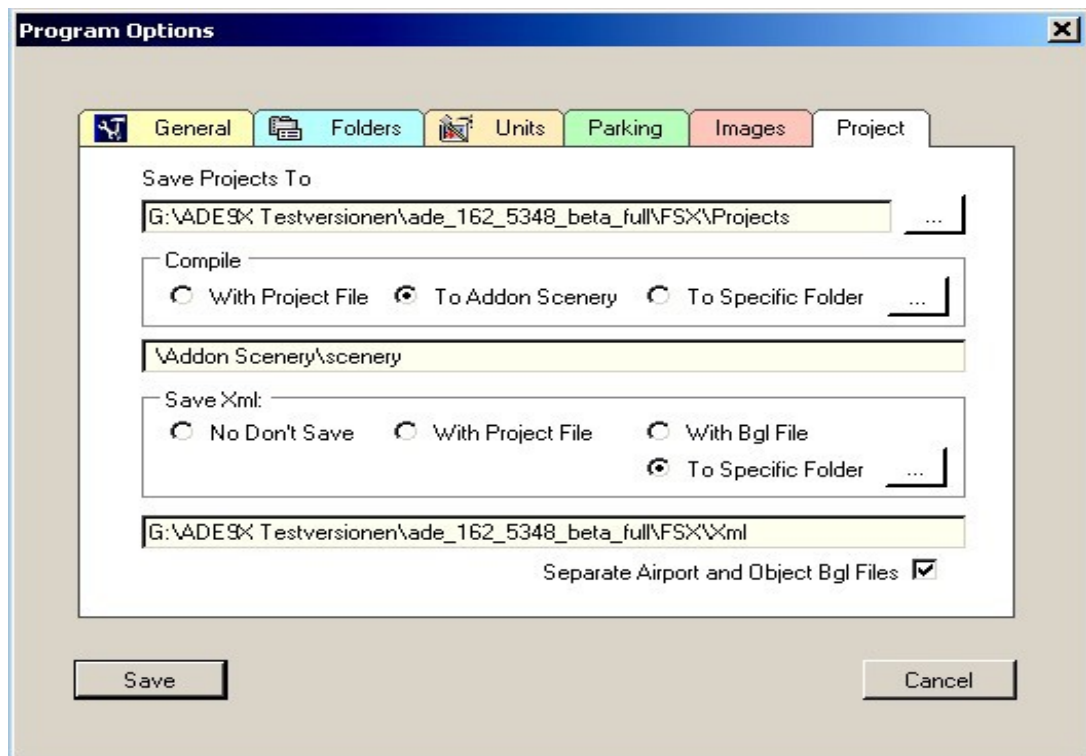


Figure 12-55: Project Files Settings

This tab is identical with the dialogue box in [chapter 13.8.5 Project Settings](#) of the New User Wizard. Here it should be used to change the initial settings, when ADE was installed.

12.8.2 Colors

With this option the color of most items displayed in ADE can be defined by the user, from the background color to the color of the tower viewpoint symbol. A window called "Color Picker" is opened

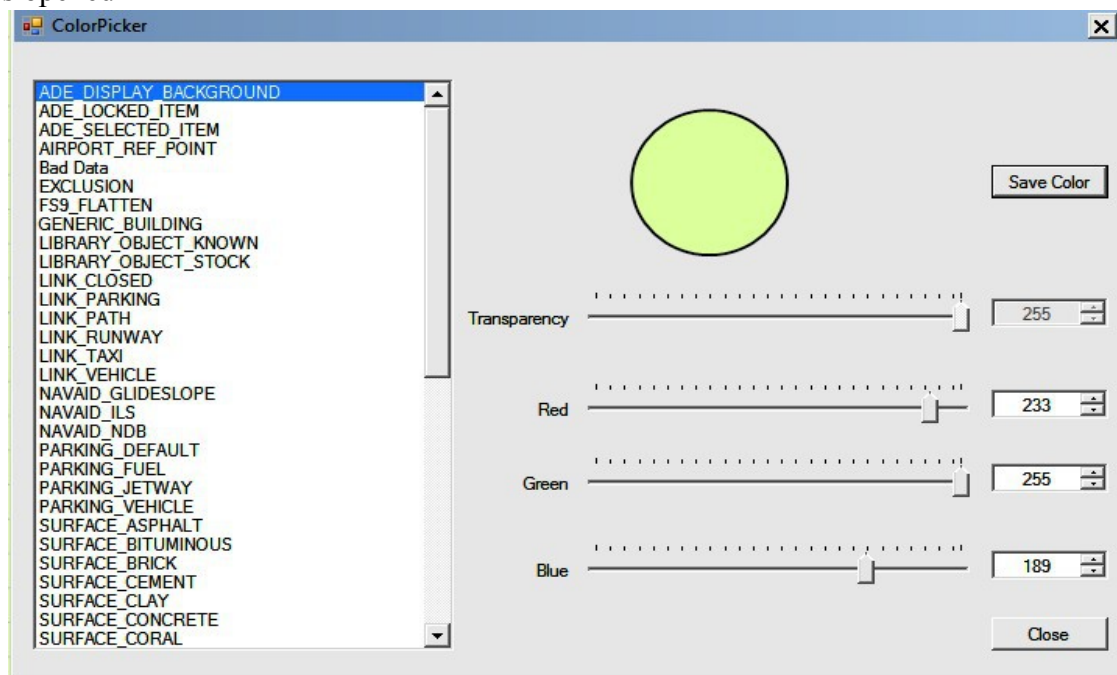


Figure 12-56: The "Color Picker"

By adjusting the Red, Green, or Blue sliders you can customize the colour for each element. There is an additional slider to control its transparency. Changing an element's transparency is especially helpful when you're placing it based on a background image. The same can be done by typing in the relevant color codes into the dialog boxes right of the sliders. Be sure to "Save Color" before closing the Color Picker, or your colour selection will not be saved. Non-standard color changes for specific airport elements are treated in the corresponding object chapters

NOTE that color changes take effect only after re-starting ADE.

12.8.3 Set Aircraft Wingspan

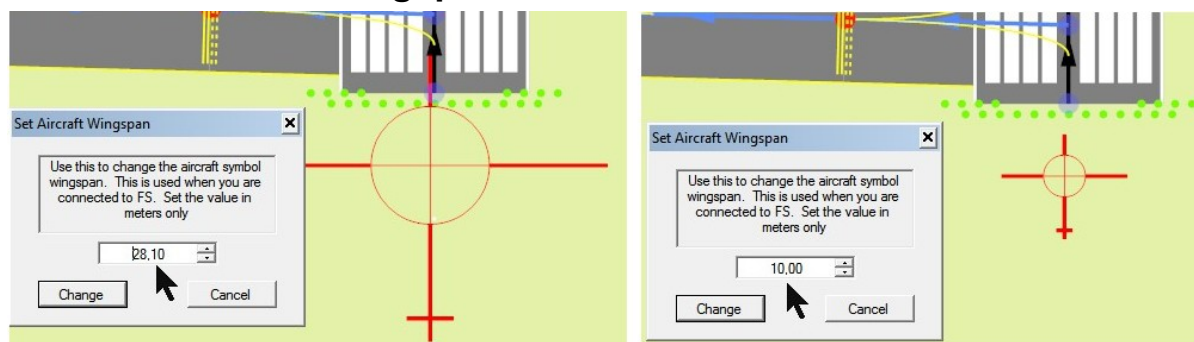


Figure 12-57: Size of Aircraft Crosshair Symbol

When connected to FS a red crosshair symbol is displayed in the ADE-display that depicts the user aircraft. With this option the size of the aircraft symbol can be changed to suit the users requirements.

In the window "Set Aircraft Wingspan" the value (in meters) can be selected and implemented via the "Change"-button.

NOTE: The size of the crosshair symbol does not have any relationship to the actual aircraft wingspan. The Meter value that can be set in ADE for the Settings/Set Aircraft Wingspan is the diameter of the red circle. Thus it can be adapted to the size of the parking spots.

Use the "A"- key to make the symbol smaller and "**Shift** + A" to make it larger. Each step will be half (or double) the previous step. The smallest is 128th of the default size, the largest is 4x the default size. The size is not linked to the zoom factor of the display so you can set it to suit your needs.

12.8.4 Set Grid Spacing

The display grid is now drawn based on a given spacing between lines. The default is 500m (1500ft) however this can be set by the user.

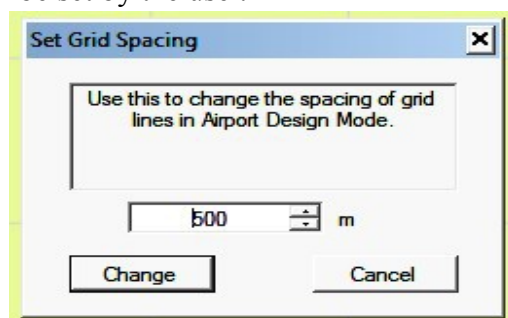


Figure 12-58: Set Grid Spacing

The drawn grid is centered on the current airport reference point and extends 50km in each direction (100km x 100km). The grid can be toggled on and off via the 'G' key or in the "View"-menu..

12.8.5 Show Tooltips

Tooltips are explained in chapter 15.1.1 Tooltips. This option here has a check box, which enables/disables all tooltips. The same can be done with the key combination "Ctrl + T" as a toggle.

12.8.6 Show Apron Outlines

When the pointer (arrow) of the cursor is moved over aprons, their outline is shown with dark-grey lines. This function can be switched on/off with the check box in this option here. It can be done also with the key combination "Ctrl + H".

12.8.7 Show Small Objects Halo

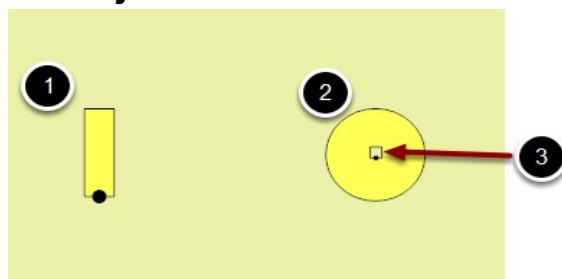


Figure 12-59: Halo for Small Objects

Some library objects such as lights can have a very small footprint. These can be hard to see and harder to select. With this option here a 'Halo' can be given (toggled) to library objects to make seeing and selecting them easier

- (1) is an object large enough not to show a halo
- (2) is a small object with halo
- (3) is The actual footprint of the small object

The diameter of the halo can be adjusted in the "Display Options" for "Library Objects" via the right-click menu. For detailed instructions see chapter 10.2.5 Display Options for Library Objects

12.9 Scenery Complexity

ADE, like FS9 and FSX, has a slider that determines what scenery objects are displayed.

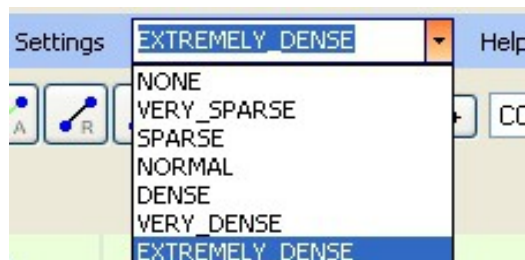


Figure 12-60: Options for Scenery Complexity

Many objects like jetways, library objects, generic buildings, and windsocks have a complexity value associated with them. If their value is greater than the slider value set in FS then the object will not be displayed. ADE mimics this so that you can see what objects and buildings will be displayed in FS at each setting.

A warning box is now displayed on ADE start up where the image complexity setting in ADE is not set to Extremely Dense. The user has the option to ignore the message in future.

There is also an extra setting of NONE in ADE that will turn off all objects. If you think there should be objects at the airport but cannot see them, or if you lose one that you placed earlier then set this to Extremely Dense. At this setting all objects will appear in ADE.

When working on your airport project, you should always set the scenery complexity to Extremely Dense. This ensures that all objects are visible in the display.

Because of this, ADE displays a warning box on start-up, when the Scenery Complexity is not set to Extreme Dense. The user of course has the option to ignore this message.

Use the other complexity levels when the design is complete to see what objects FS will display when the user selects that complexity level in the simulation.

12.10 Help Menu

ADE provides three help-options and one Info option under the Help Menu.

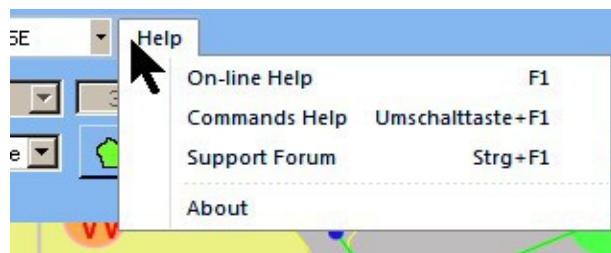


Figure 12-61: The options of the Help menu

- o **On-line Help** – This is a link to https://scruffyduck.screenstepslive.com/s/help_docs/m/20268 which provides a vast amount of articles and tutorials about issues of ADE.
- o **Commands Help** - ADE has a lot of ways to access functions including menus and short cuts (keyboard commands). There are a lot of short cuts. This is the initial release of the Commands Help. If it proves useful then we hope to improve the features over time. To access the Commands help select "Help => Commands Help" or use "Shift+F1" from the keyboard.

These options will open an empty window.

Three methods are offered

- * selecting via the “Keys”
- * selecting via a “Menu”
- * selecting via a text input

Clicking on the triangle of “**Keys**” produces a drop-down list of all keys on the keyboard which currently are allocated to a function.

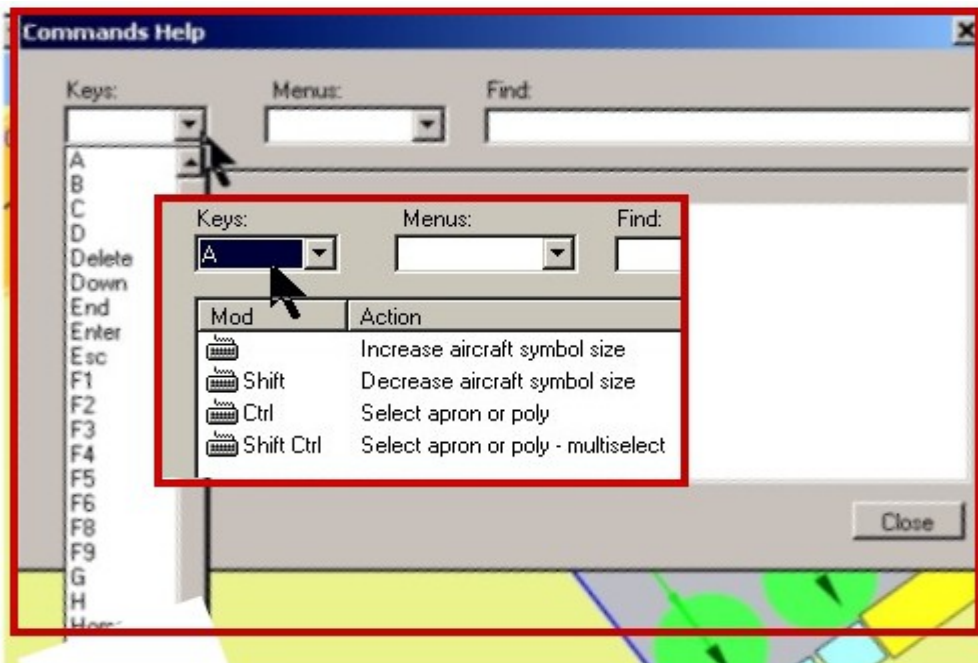


Figure 12-62: Available Shortcut Keys in Command Help (Example: Key “A”)

Clicking one of the letters will produce the available key combinations for this letter and their functions.

Clicking on the triangle of “Menus” produces a drop-down list of all menus which currently contain a usable function.

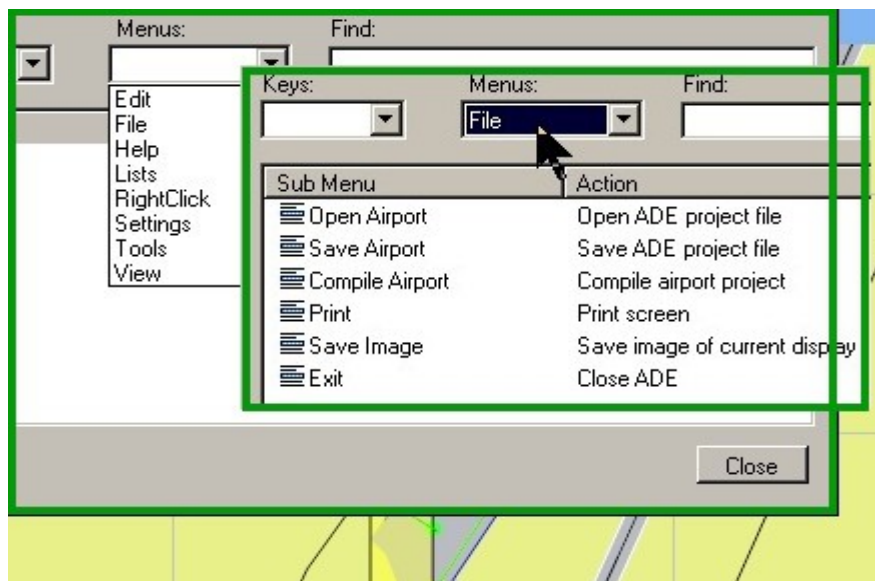


Figure 12-63: Available Menus in Command Help (Example: File menu)

Clicking one of the menus will produce the available functions.

Writing a search word in the line “Find” produces keys and menus with usable functions for the search word. A separate column shows actions which require ProKey.

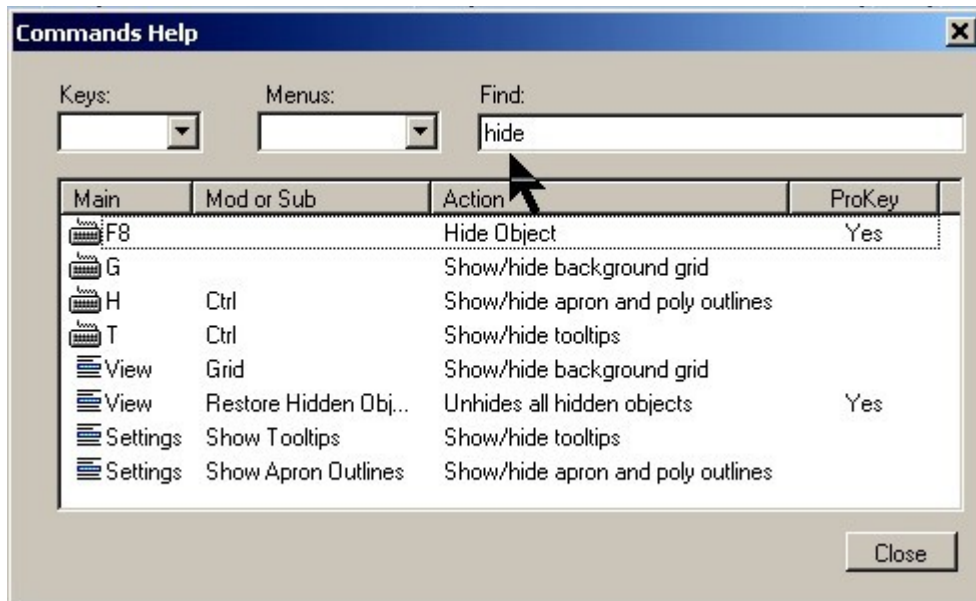


Figure 12-64: Search by Function

- o **Support Forum** – This third option of the Help-menu is a direct link to the ADE support forum within the FSDeveloper Forum.
- o **About** – The “About”- box displays version information about ADE and its components. If you have a query or bug, you should always check this and quote the versions in any e-mail or fsdeveloper forum post.

12.11 Right Click Menu

The Right Click Menu provides easy access to many of ADE's commands, tools and functions.

Most of the time, you will not see all the options shown here. The program will only show options for actions that are appropriate or that make sense for the situation you are in or the element you currently have selected.

These options are explained in the following sections.

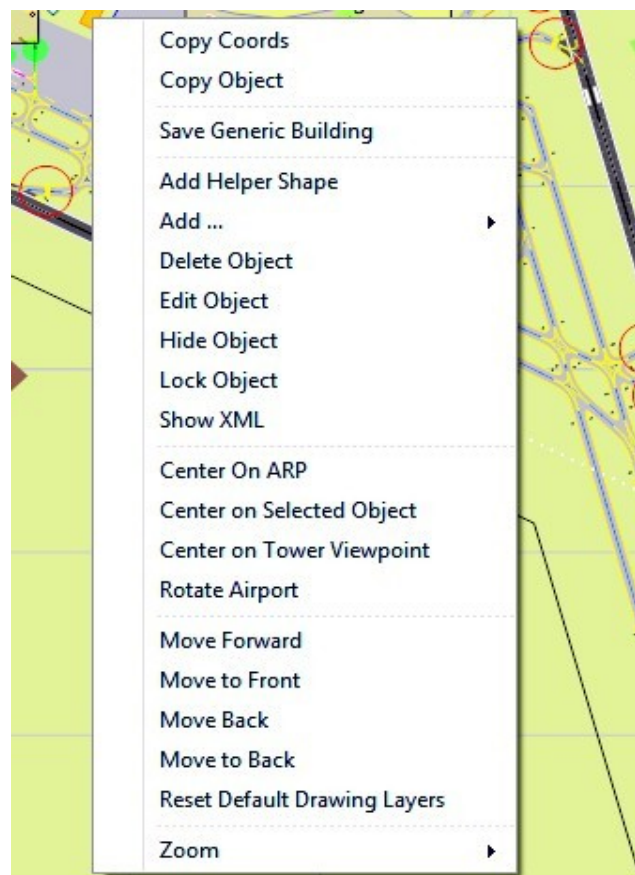


Figure 12-65: Rightclick Menu

12.11.1 Copy/Paste Coord(inate)s (requires ProKey)

This function allows you to copy the coordinates of one object and paste them into another. This can be very useful in placing objects alongside or exactly co-incident with each other. Only objects that have a single reference point can be used for this. So any object made up of vertex points such as an apron cannot be copied from or pasted to.

There are two ways to access this feature, namely by keyboard or via the right click menu. First select an item to copy from or past to.

- o **The keyboard** commands are:

- Copy Coords with Ctrl+Shift+C
- Paste Coords with Ctrl+Shift+P

- o Via the **rightclick-menus**

Right Click and use the Copy Coords and Paste Coords menu entries

12.11.2 Copy /Paste Objects

Makes a copy of the selected element or of its coordinates and allows you to paste it multiple times.

Copy does not work for everything. If an object cannot be copied then Copy will be not be visible in the rightclick menu after you select the element.

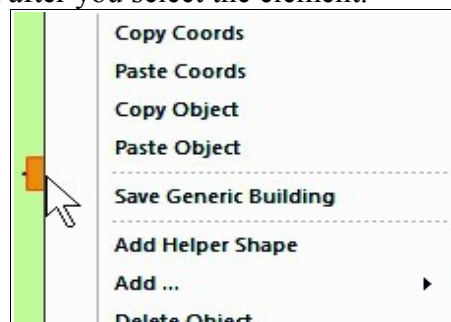


Figure 12-66: Copy/Paste Objects

Paste is only available after you copy an object.

To paste, simply right click where you want the new object and select Paste. An exact copy of the object will be created and placed at the mouse position. It is easy to drag the new object to another location.

12.11.3 Save Generic Building

If you find a generic building at an airport that you would like to save and use elsewhere, this function allows you to add it to your generic building manager. When you select this option from the rightclick Menu, a dialogue box will open.

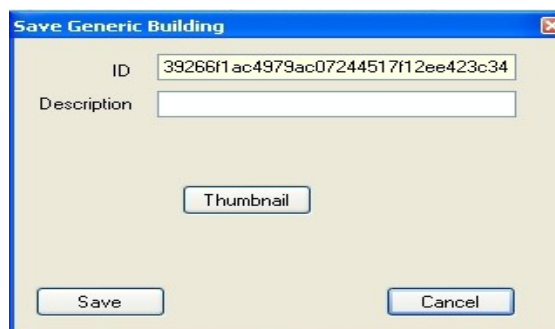


Figure 12-67: Save Generic Building Dialogue Box

ADE supplies the ID, but you can provide both a description and a thumbnail of the generic building yourself. Click Save, and ADE will add this generic building to your Generic Building Manager for you to use elsewhere.

12.11.4 Add Helper Shape

Helper shapes are geometric shapes (e.g. circle, ellipse, arc, rectangle, square, triangle, and polygon) in ADE that help designers place and design aprons, taxiways and ground polygons.

These helper shapes are regular objects in ADE and are saved in the project file.

When used, they are drawn on the top of everything and can be re-sized, rotated, and moved.

Helper shapes are also hollow so you can select what is under them. See [chapter 14.10 Helper Shapes](#) for more information on helper shapes.

12.11.5 Add Comments

Some times it is useful to be able to make a note or 'TO DO' when working on a project.

Nearly all objects in ADE have a comments field where you can store this sort of information.

Comments are displayed in the object tool tip so you can see them when the mouse is over them. Sometimes however it could be helpful to place comments and TO DO's that are not directly attached to an object. ADE now has a comment object that can be placed anywhere on the display and which is saved as part of the project file.

Comments on an airport project are listed among "Helper Shapes" in the "Lists"-menu.

12.11.6 Default Settings (of taxi-links) (needs ProKey)

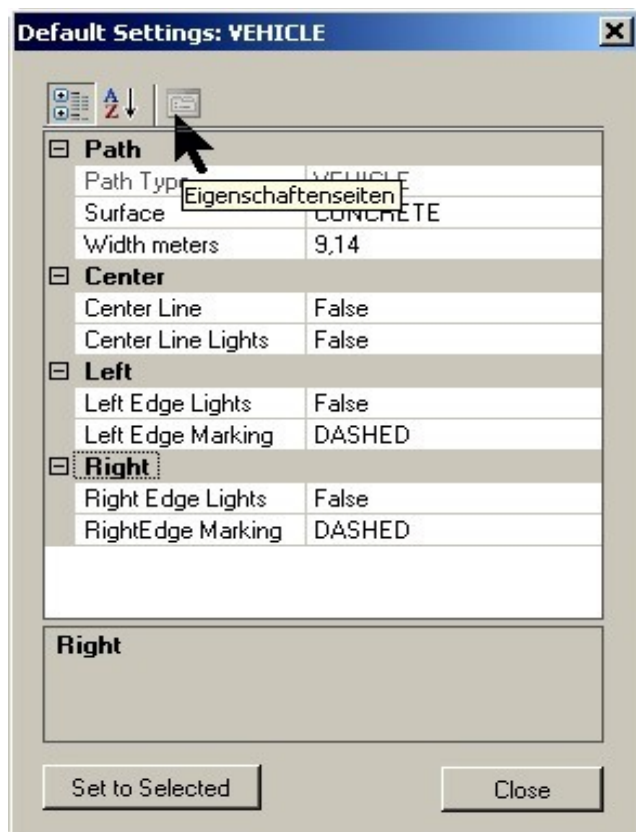


Figure 12-68: Default Settings

This topic is covered in chapter 5.2 Taxiway Links and there in [section 5.2.5 Default Settings](#)

12.11.7 Add

With this function you can add new elements to the airport.

Below is a list of all elements which can be added via this function. **NOTE** that depending on the situation not all of those elements are offered at the same time.

- o **Beacon** – Allows you to add rotating beacons, please refer to [chapter 6.6 Beacons](#)
- o **Effects** – Allows you to add effects, please refer to [chapter 6.7 Effects](#)
- o **Fuel Trigger** – In FSX this option is only available when a fuel parking spot is selected, which does not have a fuel trigger allocated.. It will create a fuel trigger that fits the parking spot with the same heading as the parking spot. **(for ADEX/FSX only)**
In FS9 there are no restrictions for adding a fuel trigger.
See [chapter 6.8 Fuel Triggers](#) for more information about fuel triggers.
- o **Generic Building** – Allows you to add and scale generic buildings that are in the object database. For more information about managing generic buildings in ADE, please refer to [chapter 13.5 Generic Building Manager](#) and [10.1 Generic Buildings](#)
- o **Helipad** – Just position the mouse pointer where you want the Helipad located and select this. The properties dialogue will open so that you can set the properties as you want them. See [chapter 6.2 Helipads](#) for more information about helipad properties.
- o **ILS** – An ILS must be associated with a runway. See [chapter 8.3 ILS \(Instrument Landing System\)](#) .
- o **Image** – Adds a new background image. ADE can have as many images as you like at an airport. The image itself is not stored in the airport file but the file name and location is. You should not move images in the file system once they are assigned to an airport. See [chapter 14.15 Background Images](#)
- o **Jetway** – **(for ADEX/FSX only)** This will only be available if you have a parking spot selected. Refer to [chapter 6.4 Jetways](#) for more information.
- o **Library Objects** – Gives access to ADE's list of objects. This places the selected object at the mouse location. For multiple copies of the same object, place it once and then use the copy/paste functions.
- o **Markers** – Marker Beacons are not used much these days in real world flying because they have been replaced with other types of nav aids. If you want to add one then ADE will do most of the work. From the Add Marker Dialogue you just need to select the runway you want them for, which markers you want, and what distance you want them from the runway. See [chapter 8.2 Marker Beacons](#) for more information.
- o **Models** – Allows you to add user models to your airport project. To see this option, you must first load user models to ADE via the Models list under the List Menu.
- o **NDB** – You can add terminal NDBs – those are NDBs that are part of the airport record in FS9/FSX. You cannot add NDBs that are not terminal.
See [chapter 8.5 NDB](#) for more information.
- o **Runway** – Adds a new runway. It will be centred on the mouse pointer. The property dialogue will appear to allow you to set all the runway parameters before you save it. See [chapter 4.2 Runways](#) for more information.
- o **Other Start** – If you want to place a Start at a place other than a runway (Helipad for example) then use this option. Refer to [chapter 4.7 Start Locations](#) for more information.
- o **Runway Start** – If you want to start your aircraft from a runway you need a Runway Start. It is important to have these (The ADE fault finder will warn you if a runway is missing a start). Refer to [chapter 4.7 Start Locations](#) for more information.
- o **Taxi sign** – Create or modify a taxi sign with ADE's taxi sign wizard.
See chapter [6.1 Taxi Signs](#) for more information on taxi signs.
- o **Tower** – Places a tower viewpoint. You can only have one in FS9 or FSX so if there is already one at the airport then you will not see this option. See [chapter 4.6 Tower View](#) for more information about tower viewpoints.
- o **VOR/DME** – You can add three types of VORs to your airport project using ADE: VOR-only, VOR+DME, and DME-only. See chapter [8.4 VOR / DME](#) for more information on VOR/DME properties.
- o **Windsock** – Places a stock type windsock at the mouse location.
See [chapter 6.5 Windsocks](#) for more information.

12.11.8 Delete Object

Deletes the selected object. Can usually be undone (except for vertex points) using Undo.

12.11.9 Display Options

This option is only valid for the following 5 airport elements:

- taxiway links see chapter 5.2.4 Display Options for Links
- taxi points see chapter 5.1.3 Display Options for Taxi Points
- parking spots see chapter 4.5.2 Parking Properties
- library objects see chapter 10.2.5 Display Options for Library Objects
- vertices see chapter 4.3.5 Changing Size of Vertices

If this option is visible when you select such an element and right click, it does have various display parameters that you can set.

They are explained in the related chapters as indicated above

12.11.10 Edit Object

Opens the properties dialog so that you can change them. If you change your mind after saving the new properties then use Undo. You can also open the object properties by double clicking an object or by using the "**Enter**" key when an object is selected.

12.11.11 Hide Object (requires ProKey)

Sometimes hiding (via the View menu) a whole group of objects such as generic buildings or parking is overkill to deal with those objects that get in the way of what you are doing.

Provided you have a ProKey you can just hide any object that is in the way for a few seconds or for as long as you like (even between sessions).

- o **Hide** - Select the object and either Right Click > Hide Object or press the "**F8**"- key. The object will be hidden from view. **NOTE** that in the case of taxi points or links the background path and markings will not be hidden. This is a small limitation that we expect to remove in a later version. In Approach mode you can hide things like waypoints and Nav aids should you need to but not approach legs. All other objects should go irrespective of whether they are stock objects or locked for any other reason.
- o **Temporarily Show Hidden Objects** - Press the "**D**"- key. While the key is pressed, all hidden objects will be displayed. Release the key and they will be hidden again. **NOTE** that the Right Click rightclick menu cannot be used while the "**D**"- key is depressed. If you try to activate it, it may show for a moment but it is not available.
- o **Restore a Hidden Object** - Left click a 'hidden' object while it is visible with the "**D**"- key down and it will be restored.
- o **Restore all Hidden Objects** - At the bottom of the View Menu is an option to Restore Hidden Objects. Selecting this clears the list of hidden objects and makes them all visible again.
- o **Undo/Redo** - Due to the nature of Undo/Redo if you undertake some action on an object and then hide it; it will re-appear if you use Undo and undo the action on that object. This is going to happen because if you undo an action on something then you should see the effect. The object is still in the "hidden"-status. You may hide it again from view by pressing the "**D**" key momentarily
- o **Saving Between Sessions** - ADE saves the list of currently hidden objects in the project file so when you re-load the project they will be hidden

- o **Priority of Hide** - It is probably obvious but individually hiding an object takes precedence over any group hides. For example if you have specifically hidden a generic building then Hiding and Showing all Generic Buildings from the View Menu has no effect on this object and it will remain hidden. The only ways to restore an individually hidden object is as described above.

12.11.12 Lock Object

Sometimes you might want to stop an object from being deleted or moved. One way is the protection that Undo provides, which will reverse a mistake. However ADE allows the individual locking of the object. This locking is stored in the .ad4-file so it is remembered from session to session. You can also apply project level locking of aprons and runways (refer to Lock Menu in [chapter 12.4 Lock / Un-Lock Menu](#)). This works differently in that once set all aprons and/or runways will be locked in your airport project.

12.11.13 Position Image

When you load an image in ADE you may need to make adjustments to place it at the correct scale and location. This option is available when an image is selected and allows the re-sizing and moving of an image to accurately position it. See [chapter 14.15 Background Images](#) for more information about using ADE to position background images.

12.11.14 Show XML

Airports and their scenery are described by XML code. How this works is laid out in the BglComp SDK. If you are interested in seeing the XML code for any object then you can do so by selecting the object and either choosing Show XML from the rightclick Menu or by pressing the 'X' Key.

NOTE that while you can look at the complete code for the airport this can take a while to generate. A wait cursor will show if the operation is taking some time.

The example shown below is a library object. If you select a terrain polygon you will see some XML but this is not the same as the BglComp code. Rather it is code generated for the excellent Xml2Shp program by Winfried Orthmann.

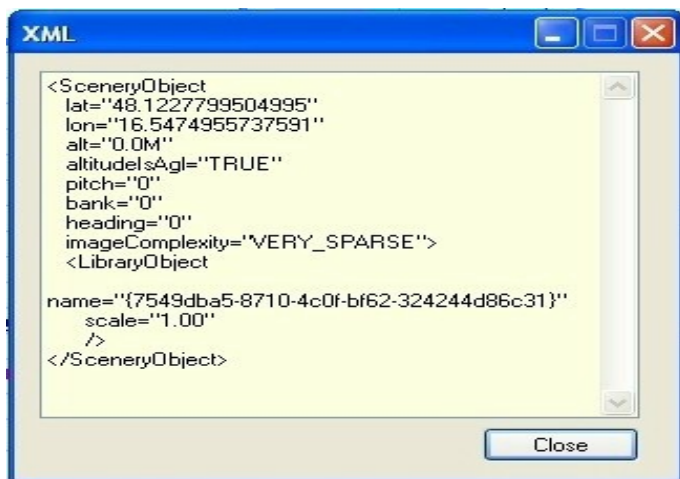


Figure 12-69: Show XML

12.11.15 Center on Aircraft

Available only when "connected" to FS9 or FSX but not "locked". This centres the ADE-display on the aircraft symbol

12.11.16 Center on ARP

Centers the display on the Airport Reference Point.

12.11.17 Center on Selected Object

Pans the display so that the selected object is centered on the screen.

12.11.18 Center on Tower Viewpoint

Frequently the tower viewpoint is off-center of the display. It may well be off-screen. To move the tower viewpoint to the center of the display: Right Click and Select 'Center on Tower Viewpoint'. The display will redraw and place the tower viewpoint at the center. If there is no tower viewpoint in the project then this action will have no effect.

12.11.19 Make Apron using helper shapes

This method is described in detail in [chapter 4.3.2 Using Helper Shapes](#)

12.11.20 Make Custom Ground Line using helper shapes

This method is described in detail in [chapter 9.5 Custom Ground Lines](#)

12.11.21 Make Custom Ground Poly using helper shapes

This method is described in [chapter 9.4.3 Use Helper Shapes for Custom Ground Polys](#)

12.11.22 Move Aircraft Here

Available only when connected to FS9 or FSX. The user aircraft is moved in FS to the location defined by the mouse position in ADE. Refer to [chapter 14.13.2 Connecting to FS9/FSX/P3D](#)

12.11.23 Move to Aircraft

Available only when connected to FS9 or FSX. Any (sensible) airport element, when selected, will be moved to the position of the aircraft in ADE and FS

12.11.24 Reverse Direction

Taxiway paths have a left and right side. This option is only available when you select a taxiway. Details are explained in [chapter 5.2.6 Link Editing](#)

12.11.25 Straighten Links

There may be cases where you want a chain of links to be drawn exactly in line. This function and all the required criteria are explained in detail in [chapter 5.2.6 Link Editing](#).

12.11.26 Reverse Fence

Some fences have angled tops and blast fences have a front and back. If you find you have one facing the wrong way then you can use this option to reverse the way the fence faces. This option is only available when a fence is selected. **(for FSX only)**.

12.11.27 Rotate Airport (requires ProKey)

With a rightclick on any place of the display the Rightclick menu is opened. Select the option “Rotate Airport”. In the ensuing window one can select the angle of rotation and which elements should be rotated. Those elements with unchecked boxes remain unmoved.

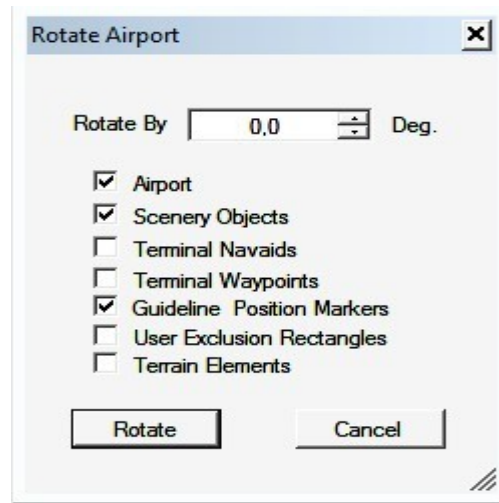


Figure 12-70: Rotate Airport

12.11.28 Move Forward / Move Back

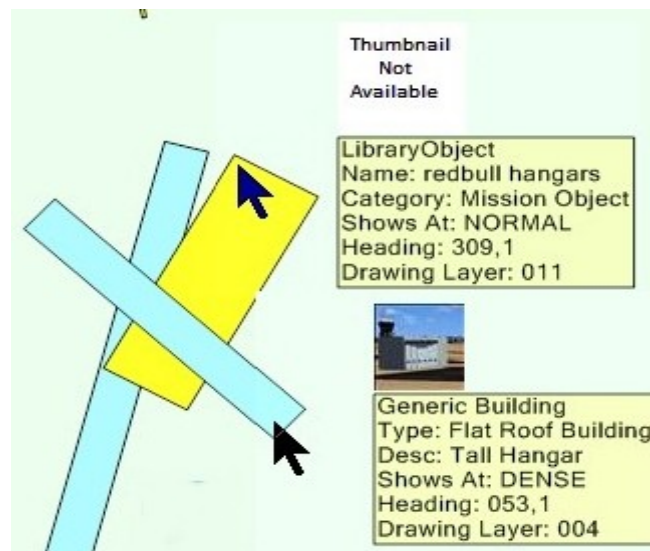


Figure 12-71: Drawing Layers

These options move an object one layer higher / one layer lower.

NOTE that lower layers are drawn over higher layers. This operation is explained in more detail in [chapter 14.14.3 Drawing Layers in ADE](#)

12.11.29 Move to Front / Move to Back

If one object is obscuring another you can change the order in which the items are displayed. These options move an object to the very front / very rear of the drawing layers.

This works only within each layer of the display. For example, taxi surfaces will always be below runways so you cannot move a taxiway above a runway. For more details see [chapter 14.14.3 Drawing Layers in ADE](#)

12.11.30 Reset Default Drawing Layers

In order to get objects properly displayed, the Flightsimulators use a system, where overlaying objects follow a certain fixed display order.

ADE uses a similar drawing layer system, which can be controlled (within limits) by the user, by changing the drawing layer number of an object.

This rather complex function is explained in detail in [chapter 14.14.3 Drawing Layers in ADE](#)

This feature here (within the Rightclick menu) allows to reset the drawing layer numbers to their default values, either individually for selected objects, or totally for all objects of the project.

12.11.29 Zoom

There are several ways to zoom, or scale, the display. The mouse wheel and '+' '-' keys will do this. These are both incremental zooms so if you want to make a large change this option offers a range of preset zoom values from 1% (0.01x) to 500% (5.0x). Select the zoom level you want from the list.

For more information on scaling your airport, refer to [chapter 2.8.5 The Main Display Controls](#)

13.0 Utilities in ADE

ADE offers a small collection of utilities, which have the aim to assist a user in managing the design of airports, to identify and locate faults in his design and to adapt some program settings.

13.1 Approach Designer

As mentioned at the beginning of this manual, Airport Design Editor is a powerful development tool for both beginners and experienced airport developers. One of the most advanced features of ADE is the Approach Designer.

The ADE Approach Designer provides you with the ability to add, modify, and remove various types of terminal approaches, including approach legs, fixes, nav aids, transitions, and waypoints. These are considered some of the “invisible” yet vital elements of airport design. Without properly designed approaches, AI aircraft will not function correctly when landing at your airport.

Because approach design is such an advanced topic, you should consult other resources when working with approaches in ADE / FS. First, you should refer to the terminal approach plates for your airport. These can be found in various locations on the Internet (e.g. www.airnav.com, www.naco.faa.gov, www.nats-uk.ead-it.com/public/index.php.html, www.vatsim.net). Second, you should learn more about approach procedure design from sources such as ARINC 424, Eurocontrol, or other civil aviation websites (e.g. www.casa.gov.au). Finally, when putting it all together and translating it to FS / ADE, you should refer to the SDK documentation and the excellent approach discussions that take place at the fsdeveloper. forum.

13.1.1 Approach Mode

To use ADE’s Approach Designer, you click "Approach Mode" from the ADE Main Display.

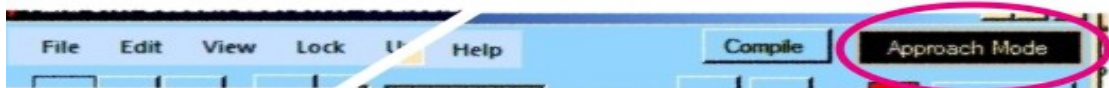


Figure 13-1: ADE Main Menu Bar

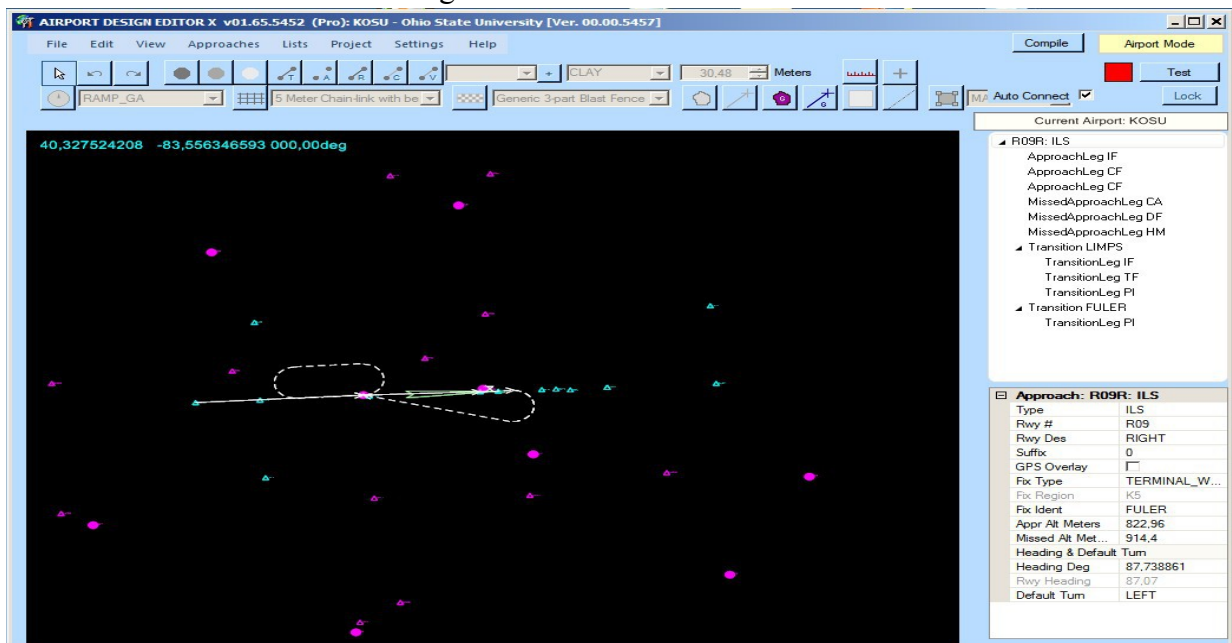


Figure 13-2: ADE's Approach Designer / Approach Mode

Once you click Approach Mode, ADE's Approach Designer will replace the default Airport design schematic view (figure 13-2).

You will use the Approach Designer in the approach mode to do all of your terminal approach work at your airport.

13.1.1.1 Approach Mode Menu Bar

The Approach Mode Menu Bar looks similar to ADE's Main Menu Bar with the addition of an Approaches Menu

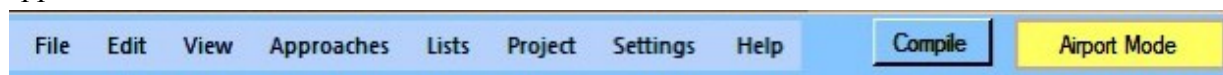
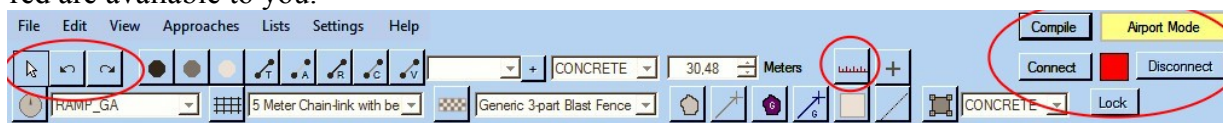


Figure 13-3: Menu Bar

- **File Menu** – Home to ADE's opening, saving, compiling, and printing functions. This menu is identical to ADE's main File Menu (see [chapter 12.1 File Menu](#) for more information).
- **Edit Menu** – Provides access to the Undo and Redo functions. This menu is identical to ADE's main Edit Menu (see [chapter 12.2 Edit Menu](#) for more information).
- **View Menu** – Identifies which objects you will see on the airport schematic
- **Approaches Menu** – Allows you to add approaches and import approach code. See [section 13.1.2 Approach Mode Menus](#) for more information
- **Lists Menu** – Provides an easy way to view and manage the various approach elements in your airport project. See [chapter 12.5 Lists Menu](#) for more information.
- **Projects Menu** – Allows you to search for projects by airport ident, shows project statistics and allows you to take a backup of the project at any time
- **Settings Menu** – Allows you to modify the way ADE works or looks. This menu is identical to ADE's main Settings Menu (see [chapter 12.8 Settings Menu](#) for more information).
- **Help Menu** – Provides access to the Manuals and program version information. This menu is identical to ADE's main Help Menu. See [chapter 12.10 Help Menu](#) for more information.
- **Airport Mode** – Toggles ADE's display between airport design mode and approach design mode

13.1.1.2 Approach Mode Toolbar

Most of the main ADE Toolbar functions are disabled in approach mode. Only those marked in red are available to you.



- **Pointer Mode** – The basic mode in both airport and approach modes. You need to be in Pointer mode to select or drag objects.
- **Undo / Redo** – Allows you to undo or redo your last actions.
- **Add Guidelines** – Use this function to create guidelines to help position approach elements. Guidelines in approach mode are measured based on nautical miles. See page 62 for more information on how to use guidelines.
- **Connect to FS9/FSX** – Use the FS along with the Approach Designer to accurately position approach elements and test approaches. See [chapter 14.13 ADE Connected with Flight Simulator](#) for more information.
- **Compile Airport**

13.1.2 Approach Mode Menus

Most menus in Approach Mode are identical with those in Airport Mode.

Only two menus are different - the Approaches Menu and the Lists Menu. They contain a new approach functionality. You will need to familiarize yourself with these menus if you want to become proficient with ADE's Approach Designer.

13.1.2.1 Approaches Menu



Figure 13-5: Entries of Approaches Menu

From the Approaches Menu, you can add an approach, import approach information, and choose to show optional leg properties

- Add Approach

Selecting "Add Approach" from the Approaches Menu allows you to create a new approach at your airport. When you select "Add Approach", the New Approach dialog box will open:

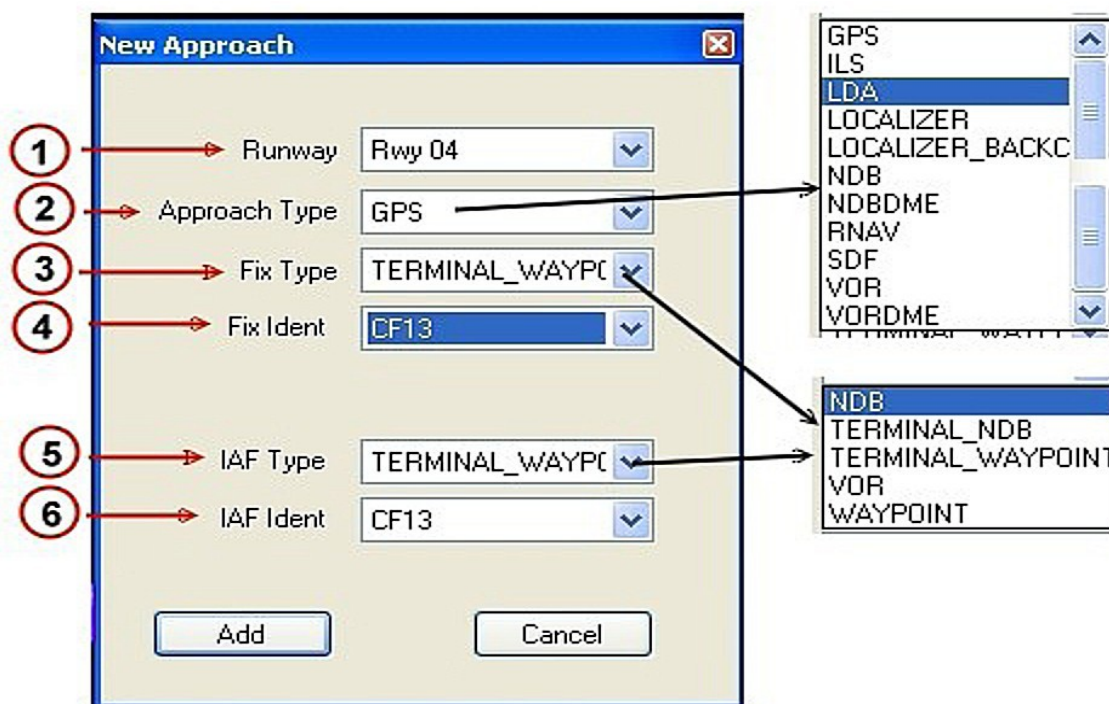


Figure 13-6: New Approach Dialog Box

There are six approach settings that you need to select to create a new approach:

1. **Runway** – Choose the runway to which the new approach will belong
2. **Approach Type** – Select one of the eleven approach types you want to create
3. **Fix Type** – Select one of the five fix types that will serve as your Final Approach Fix (FAF)

4. **Fix Ident** – Choose the waypoint you want to designate as the FAF
5. **IAF Type** – Select one of the five fix types that will serve as your Initial Approach Fix (IAF)
6. **IAF Ident** – Choose the waypoint you want to designate as the IAF

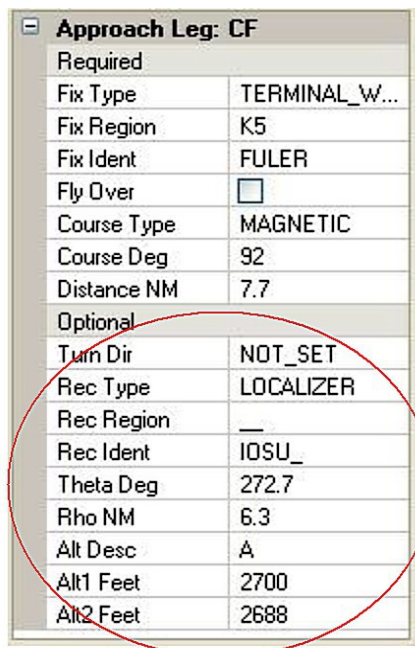
After you have made your selections, click Add to create your new approach or Cancel to discard your new approach.

- Import from BGL or XML

These two import options allow you to import approach data from an existing airport file, whether it is a BGL or XML file or from a FS9 or FSX stock airport.

- Show Optional Leg Properties

This option under the Approaches Menu controls the level of detail you will see in the Approach Designer for the various approaches at your airport. Only the required approach properties are necessary to make the approach elements fully functional, so you may decide to hide these optional properties.



Approach Leg: CF	
Required	
Fix Type	TERMINAL_W...
Fix Region	K5
Fix Ident	FULER
Fly Over	<input type="checkbox"/>
Course Type	MAGNETIC
Course Deg	92
Distance NM	7.7
Optional	
Turn Dir	NOT_SET
Rec Type	LOCALIZER
Rec Region	—
Rec Ident	IOSU_
Theta Deg	272.7
Rho NM	6.3
Alt Desc	A
Alt1 Feet	2700
Alt2 Feet	2688

Figure 13-7: Optional Leg Properties

To hide the optional leg properties, de-select the Show Option Leg Properties.

13.1.2.2 Lists Menu

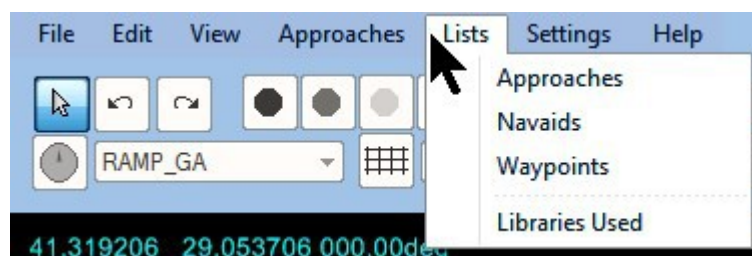


Figure 13-8: Lists Menu

The Lists Menu contains the three approach elements that you can work with in approach mode: approaches, nav aids, and waypoints.

- Approaches

The Approaches List shows all the current approaches available at your airport.

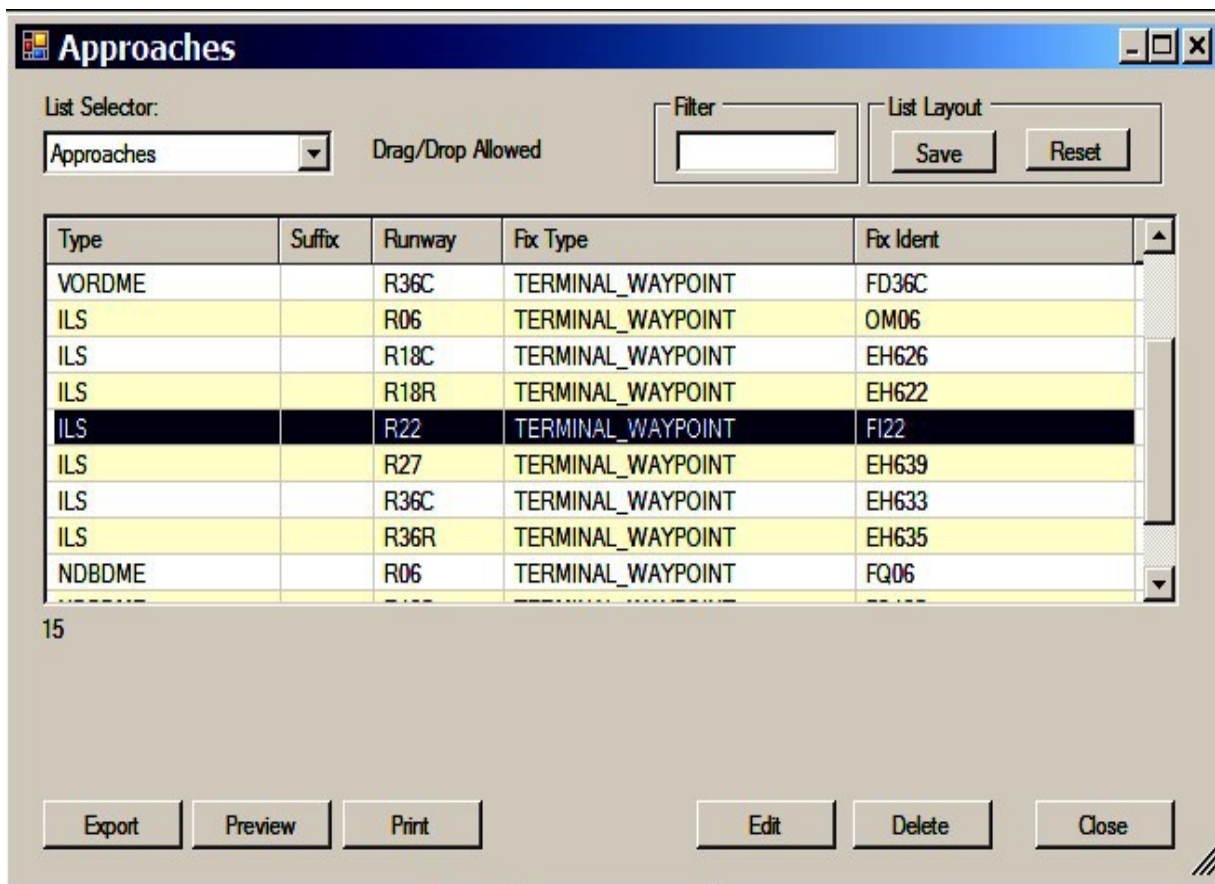


Figure 13-9: Approaches List

The list details each approach's type, assigned runway, and the fix type and ident of the approach's FAF. To edit an approach, select the approach and click Edit. To delete an approach, select the approach and click Delete. Please **NOTE** that if you want to delete an ILS approach, you should delete the ILS apparatus in airport design mode. When you delete the ILS components, ADE will also remove the associated ILS approach code. Deleting an ILS approach in approach mode will only remove the approach code, not the actual ILS and DME components.

- Nav aids

The Nav aids List shows all the nav aids within a radius of 60 nm around your airport.

o for FS9 only

ADE generally remembers the stock location of nav aids and waypoints. The Nav aids and Waypoint List contains a column "Moved Nm". It either shows '-' which means the information is not available or relevant or it contains the distance in Nm between the current location of a stock nav aid and its stock location as defined in the stock BGL file.

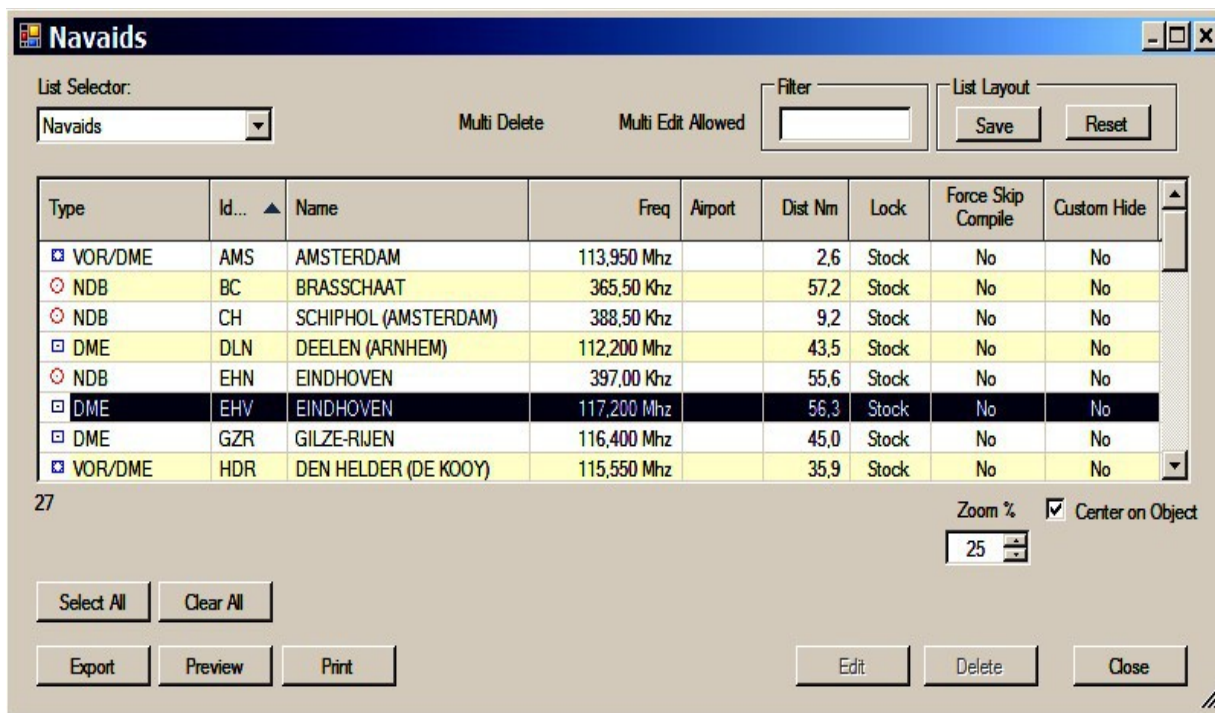


Figure 13-10: NavAids List

- Waypoints

The Waypoints List provides visibility to all the waypoints located within a radius of 60 nm of your airport.

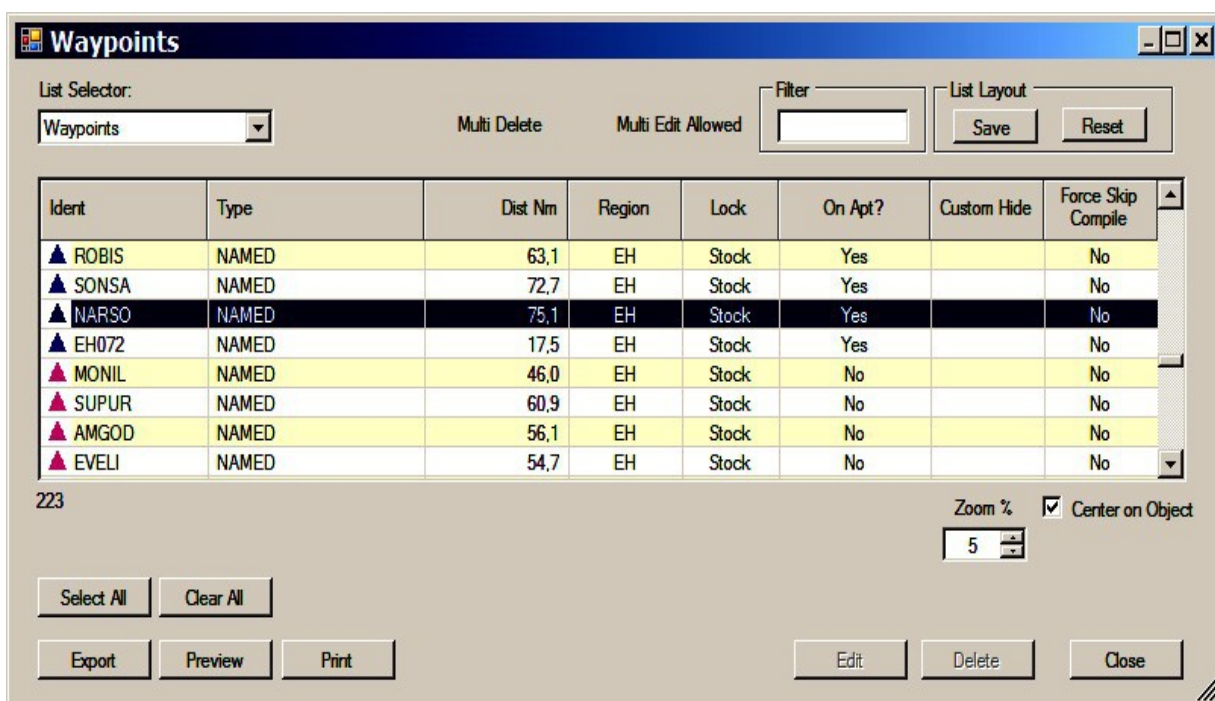


Figure 13-11: Waypoints List

The list provides information for each waypoint and indicates whether it is a terminal or route waypoint. You can only edit or delete terminal waypoints.

13.1.3 Approaches in ADE

You can choose from eleven types of terminal approaches in ADE. Using scoring logic, FS9/FSX prioritizes these eleven approaches in the following order:

1. **ILS** (instrument landing system)
2. **GPS** (global positioning system)
3. **RNAV** (area navigation)
4. **LOC** (localizer)
5. **LDA** (localizer directional aid)
6. **SDF** (simplified directional facility)
7. **LOC B/C** (Backcourse Localizer)
8. **VORDME** (VHF omni-directional range w/ distance measuring equipment)
9. **VOR** (same as above w/o the DME)
10. **NDBDME** (non-directional beacon w/ DME)
11. **NDB** (same as above w/o the DME)

Out of all the approaches, the ILS approach is the only non-weather related approach in FS. This means that ATC will always assign the ILS approach regardless of weather conditions at your airport or the presence of other approaches. When an ILS approach is not present at an airport and the weather is IMC (instrument meteorological conditions), ATC will assign the highest scoring approach.

These eleven terminal approaches consist of various elements including approach legs, transitions, transition legs, and missed approach legs. Each approach element has a set of properties that control how that element functions within the terminal approach.

To view these approach elements and properties, open an existing terminal approach by double-clicking on an approach from the Approaches List .

ADE's Approach Designer shows the selected terminal approach (main screen) along with approach elements and their properties (right two boxes).

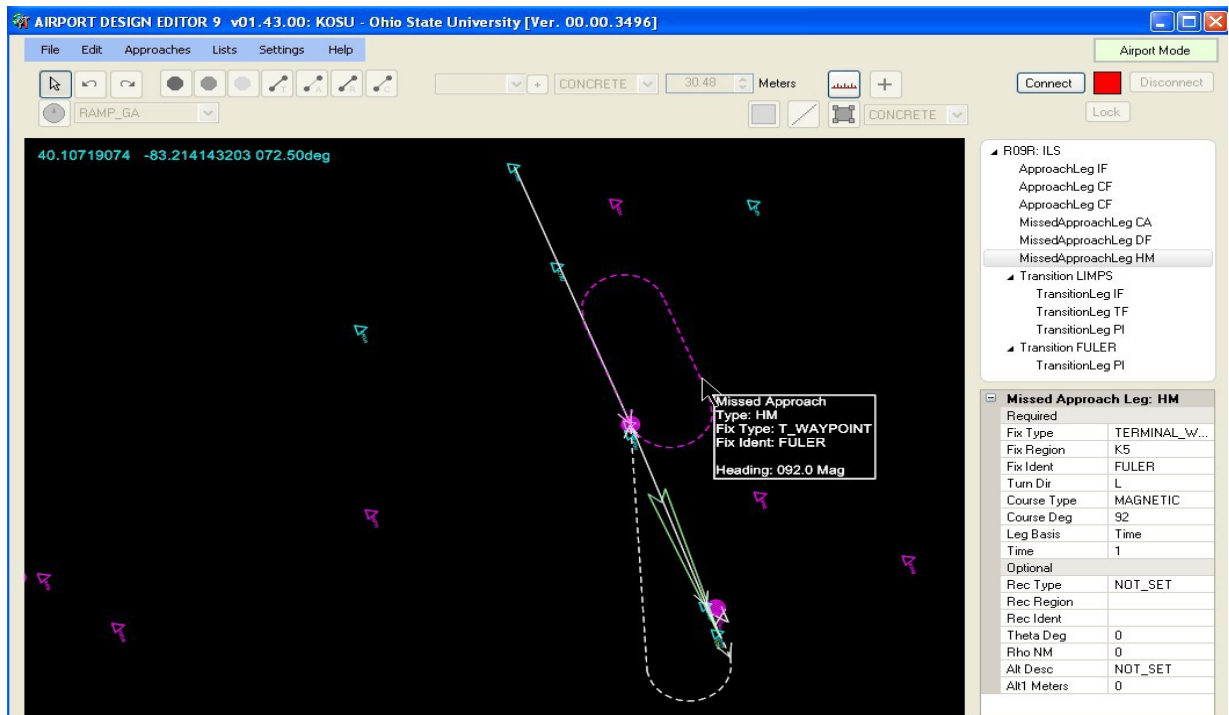


Figure 13-12: Runway 09R ILS Approach at KOSU

Notice how ADE draws the ILS approach similarly to how it appears in the FS9/FSX GPS unit. Many times you can spot problems with new or modified approaches based on how it is drawn.



Figure 13-13: 09 ILS Approach in GPS

To select an approach element, simply click on the element when you see its white Tool Tip appear. The element's color will change from white to magenta and ADE will display the element's properties in the property boxes to the right.

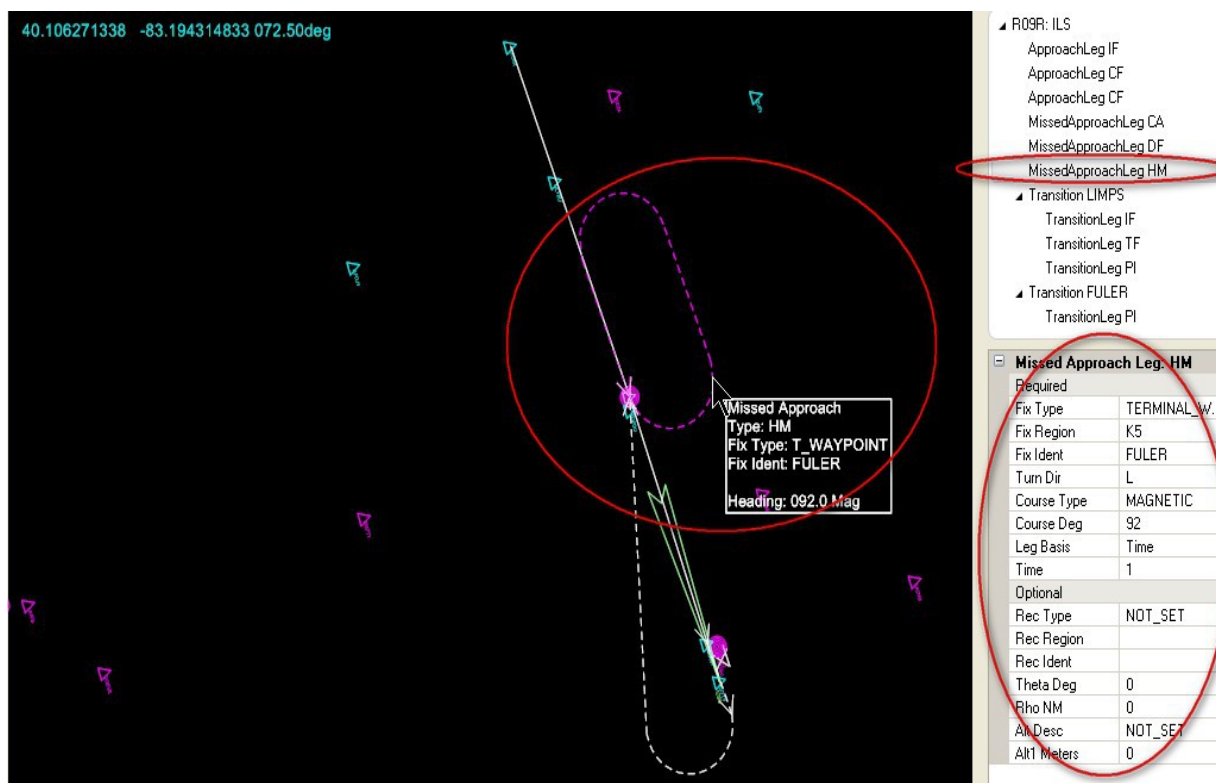


Figure 13-14: 09R ILS Missed Approach Properties

From here you can edit the approach element or any of its respective properties.

13.1.3.1 Approach Elements & Properties

Most terminal approaches have several approach legs, missed approaches, and transitions.

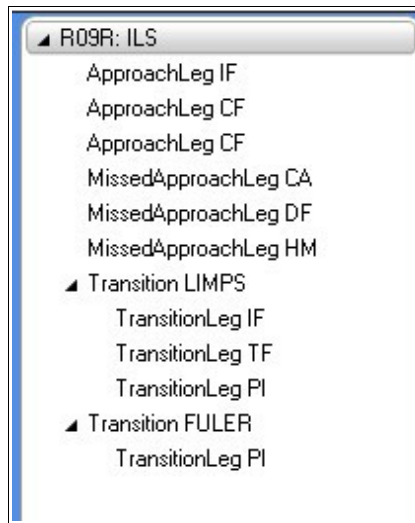


Figure 13-15: Elements of Terminal Approaches

In the case of the airport KOSU the 09R ILS-approach contains the following elements

- o One initial approach fix (IF)
- o Two approach legs (CF)
- o Three missed approach legs (CA, DF, HM)
- o Two transitions (LIMPS and FULER)

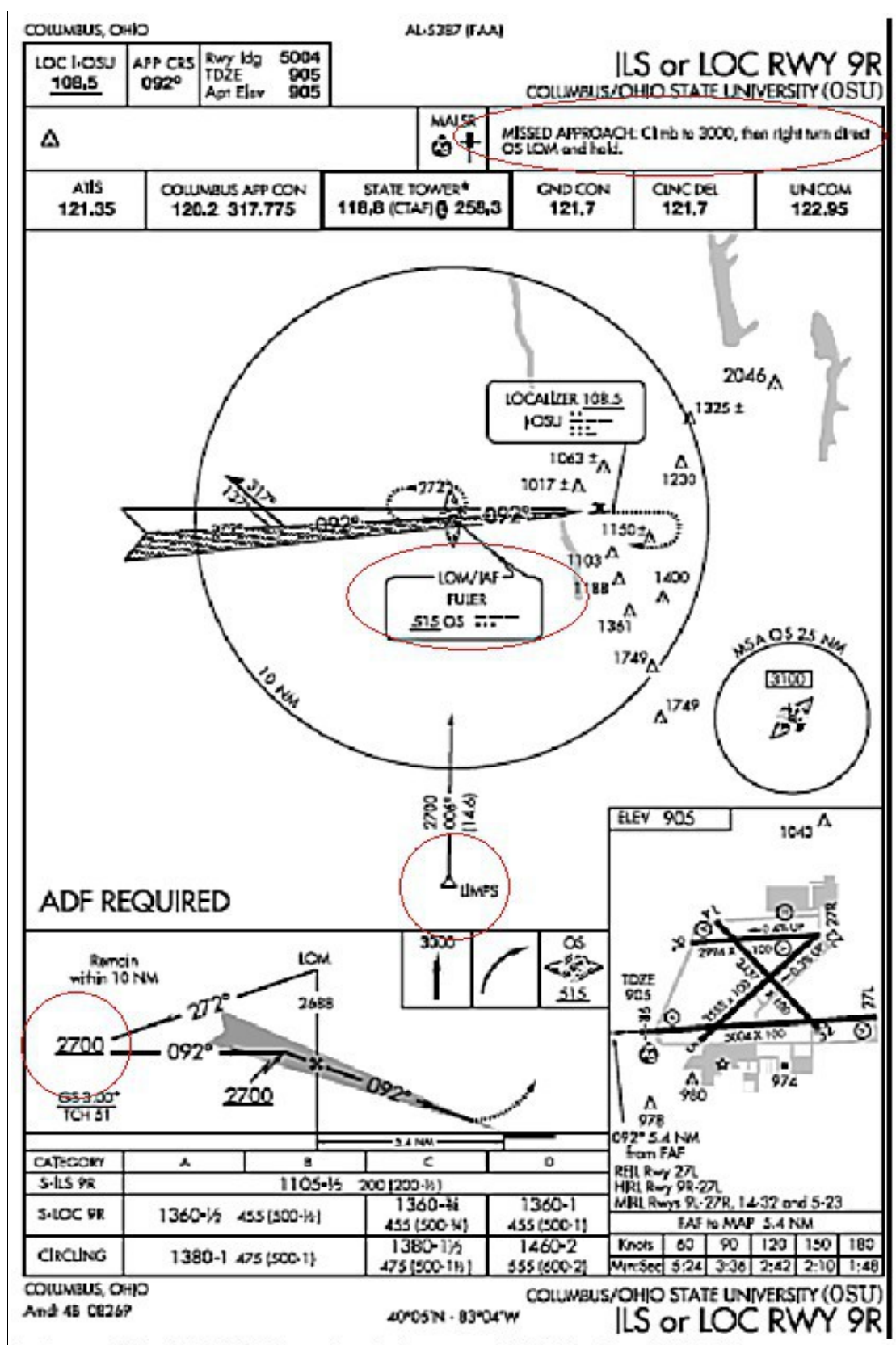
The main ILS properties box provides the following details:

Approach: R09R: ILS	
Type	ILS
Rwy #	R09
Rwy Des	RIGHT
Suffix	0
GPS Overlay	<input type="checkbox"/>
Fix Type	TERMINAL_W...
Fix Region	K5
Fix Ident	FULER
Appr Alt Meters	822,96
Missed Alt Met...	914,4
Heading & Default Turn	
Heading Deg	87,738411
Rwy Heading	87,07
Default Turn	LEFT

Figure 13-16: ILS Properties

- o The approach type is ILS
- o The approach is assigned to runway 09R
- o The FAF is the terminal waypoint FULER
- o The approach altitude is 2,700ft
- o The missed approach altitude 3.000ft
- o The approach magnetic heading is 87.738861 degrees

These properties should correspond to the terminal approach plate for runway 9R at KOSU:



Looking at the approach plate, you will notice that the approach altitude is 2,700ft. The LIMPS transition is evident as is the FULER waypoint. Also, notice that the missed approach instructions specify a climb to 3,000ft and a right turn back to FULER.

As you work through the properties of the other approach elements (approach legs, missed approach legs, and transitions) they should conform to the approach plate data as much as possible.

When working with the various leg types the following properties are usually required:

Approach Leg: CF	
Required	
Fix Type	RUNWAY
Fix Region	K5
Fix Ident	RW09R
Fly Over	<input type="checkbox"/>
Course Type	MAGNETIC
Course Deg	92
Distance NM	5.4

Figure 13-18: Leg Properties

- **Fix Type** – The final approach fix or FAF type. There are eight types from which to choose.
- **Fix Region** – The region of the world
- **Fix Ident** – The FAF ident or name
- **Fly Over** – Instructs the AI aircraft to over fly the FAF before executing the next leg of the approach
- **Course Type** – This will usually be based on the magnetic heading, but you can also use the true heading
- **Course Deg** – The approach leg heading
- **Distance NM** – Length of the approach leg from the previous waypoint or fix to the FAF

In addition to the required properties, most approach elements will have several optional properties:

Optional	
Turn Dir	NOT_SET
Rec Type	LOCALIZER
Rec Region	
Rec Ident	IOSU
Theta Deg	272.1
Rho NM	0.9
Alt Desc	A
Alt1 Meters	290.17
Alt2 Meters	0

Figure 13-19: Optional Properties

- **Turn Dir** – Determines the direction of an approach turn
- **Rec Type** – A “target” used to derive the reciprocal heading (Theta Deg) and distance (Rho NM)
- **Rec Region** – The region of the world
- **Rec Ident** – The target ident or name
- **Theta Deg** – The reciprocal heading from the Rec Ident
- **Rho NM** – The distance from the recommended target or Rec Type
- **Alt Desc** – Altitude instructions given by ATC
- **Alt1 / Alt 2 Feet** – Altitude minimums and maximums dependent on the Alt Desc setting

The required and optional properties vary by leg type. A detailed explanation surrounding required and optional properties is beyond the scope of this manual. However, you can find much of this information in the SDK documentation.

Please **NOTE** that if you fail to enter a required element property or use an invalid value, ADE will warn you by turning the approach element and its Tool Tip red.

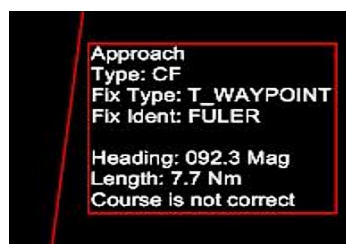


Figure 13-20: Warning Tooltip

13.1.3.2 Approach Rightclick Menu

When right-clicking one of the items in the right windows, the Rightclick Menu options change based on the approach element you are dealing with (color-marked).

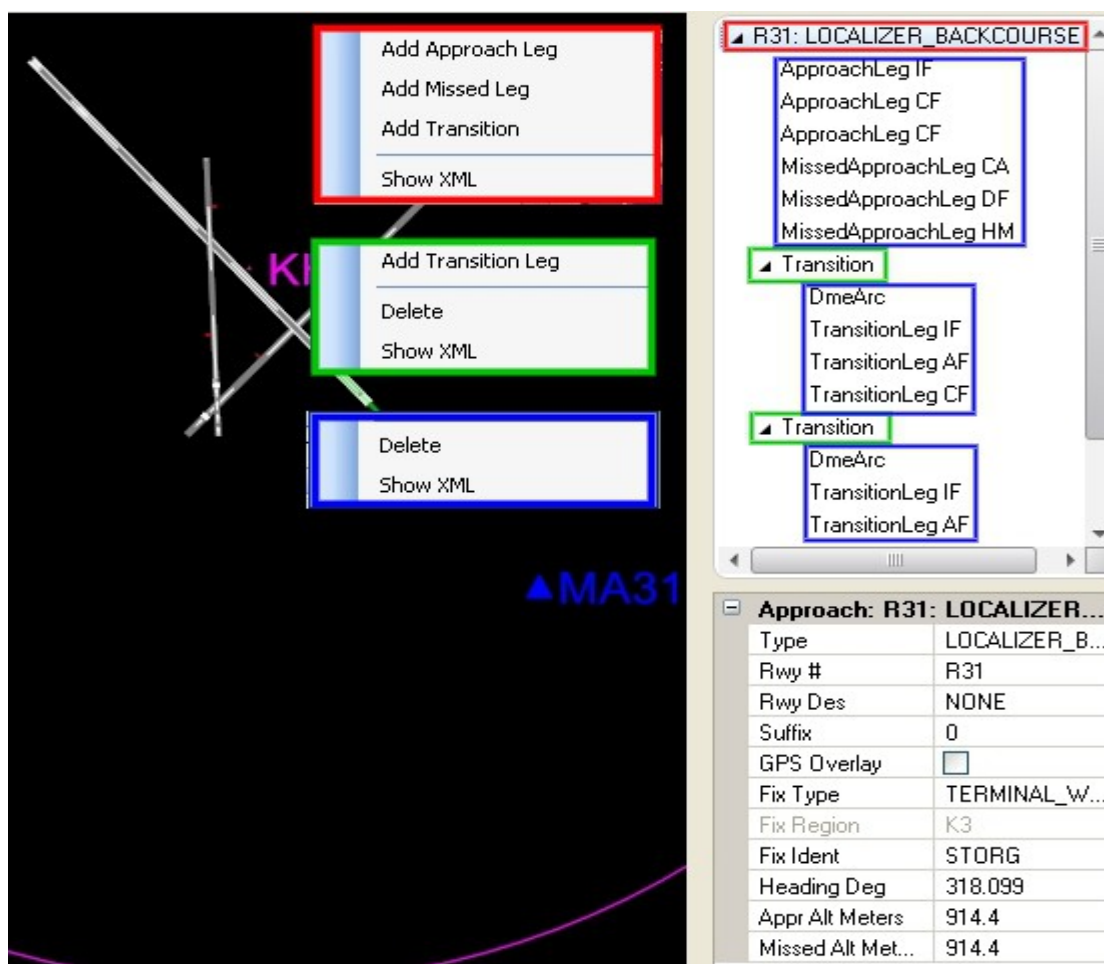


Figure 13-21: Rightclick Options

- When working with the **approach** itself, the Rightclick Menu will allow you to add an approach leg, missed leg, or transition. You can also view the XML for the entire approach.
- When working with a **transition**, the Rightclick Menu will allow you to add a transition leg or delete the entire transition. You can also view the XML for the transition.

- When working with **individual legs**, the Rightclick Menu will allow you to delete the leg. You can also view the XML for the leg.

- Adding Legs

When you choose to add an approach, missed, or transition leg from the Rightclick Menu, the New Leg dialog box will open.

The 'New Leg' dialog box is a standard Windows-style window with a blue title bar and a close button. It contains five dropdown menus: 'Leg Type' (set to 'AF'), 'Fix Type' (set to 'TERMINAL_WAYPOINT'), 'Fix Ident' (set to '20THR'), 'Rec Fix Type' (set to 'LOCALIZER'), and 'Rec Fix Ident' (set to 'IOSU'). At the bottom are 'Add' and 'Cancel' buttons.

Figure 13-22: New Approach Leg Dialog Box

From the dialog box, you can set the leg type, fix type, fix ident, rec fix type, and rec fix ident of the new leg. There are 22 leg types from which to choose, and most of them only require a fix type and ident.

- Changing Leg Order

You can change the order of existing approach, missed, or transition legs by selecting the leg and pressing the 'U' key to move the leg up or the 'D' key to move the leg down. However you can move a leg only within its group. For example you cannot move an approach leg down into the missed approach legs. Transition legs can be moved up and down inside the Transition they belong to.

- Adding Transitions

When you choose to add a transition to your approach, the following dialog box will open.


The 'New Transition' dialog box is a standard Windows-style window with a blue title bar and a close button. It contains four dropdown menus: 'Transition Type' (set to 'DME'), 'Fix Type' (set to 'TERMINAL_WAYPT'), 'Fix Ident' (set to '20THR'), and 'DME Ident' (set to 'APE'). At the bottom are 'Add' and 'Cancel' buttons.

Figure 13-23: New Transition Dialog Box

From the dialog box, you can choose the transition type, fix type, fix ident, and for new DME transitions, the DME ident.

13.1.3.3 Creating A New Approach

Although the purpose of the Approach Designer of ADE is generating approaches, it is not within the scope of this manual to demonstrate this process.

This will be covered by relevant tutorials, which will be published eventually.

In the meanwhile a tutorial-like discussion of this topic led by the approach expert Jim Vile can be found in the FSDeveloper Forum under

<http://www.fsdeveloper.com/forum/showthread.php?t=13751&page=2>

13.1.3.4 Automatic ILS Approach

As discussed in Section 12.3 ILS (Instrument Landing System), adding an ILS approach to your airport is a fairly straightforward procedure, especially if you want ADE to create the ILS approach for you.

To have ADE automatically create an ILS approach at your airport, select "Add" and then "ILS" from the Airport Design mode Rightclick Menu. This will bring up the New ILS dialog box.

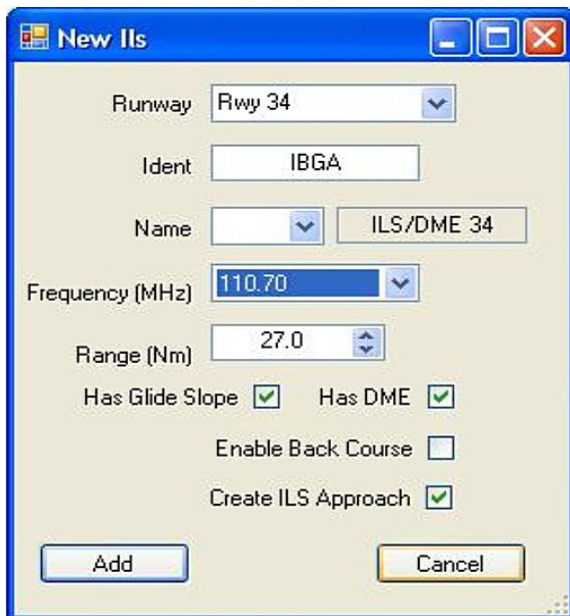


Figure 13-24: New ILS Dialog Box

Select the appropriate ILS properties for your airport. At a minimum, you should use the basic information provided on Jeppesen approach charts for the ident, frequency, glide slope, DME, and back course.

As an example, look at the Jeppesen approach chart for Palonegro, Columbia (SKBG) in Figure 13-25 below:

From the approach chart, we know that the ILS ident is IBGA, the ILS frequency is 110.7 MHz, and the ILS has a glide slope and DME. You should enter this basic information into the Add ILS property dialog box. To have ADE automatically create the ILS approach, click the "Create ILS Approach" box and press the "Add" button.

You will notice that ADE adds the ILS localizer beam, DME, and glide slope in the airport design mode. However, to see the actual approach that ADE created, you will need to use the Approach Designer in approach mode.

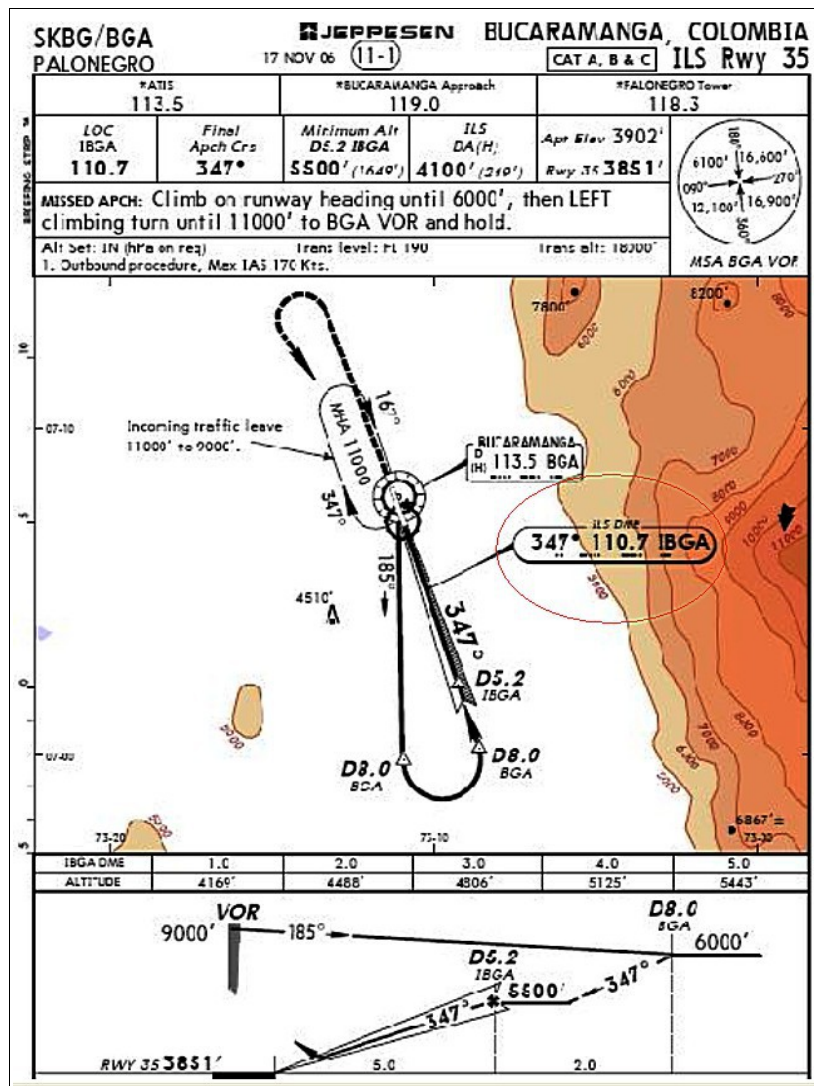


Figure 13-25: ILS Rwy 35 Approach Chart

Once in approach mode, select Approaches List from the List Menu and double click on the ILS approach.

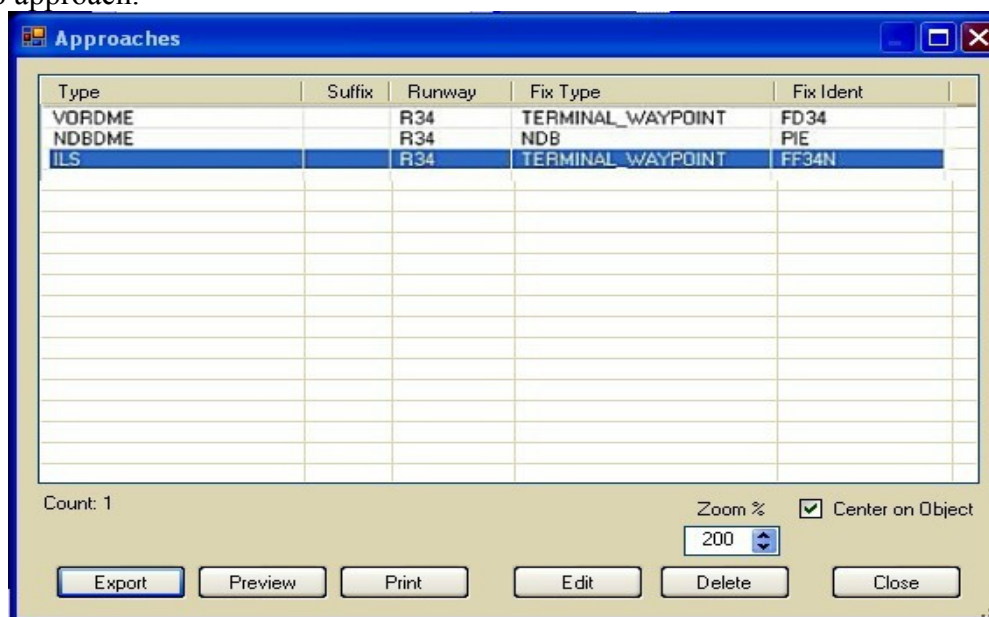


Figure 13-26: SKBG Approaches List

This brings up the automatic ILS approach that ADE created

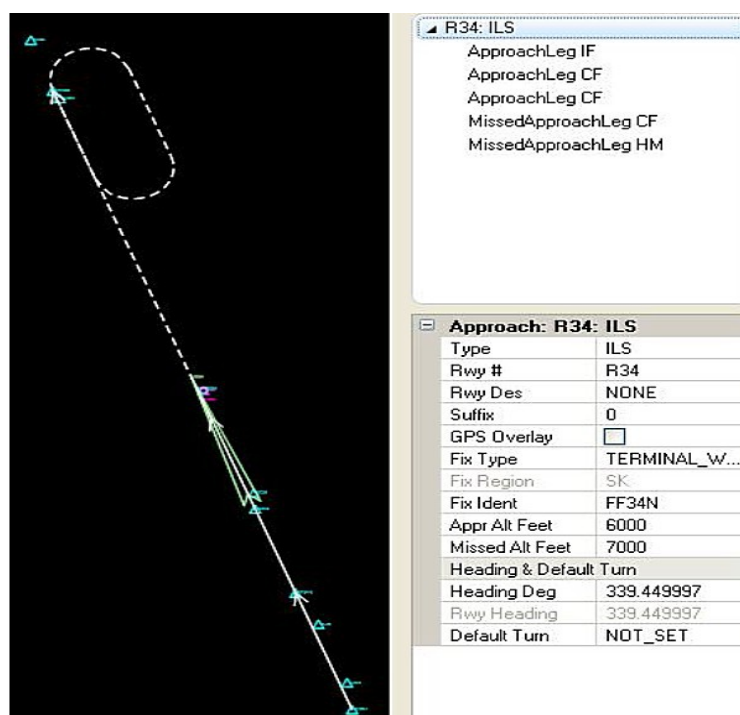


Figure 13-27: SKBG R34 ILS Approach

A quick glance will reveal that the automatic ILS approach contains two approach legs and two missed approach legs. However, the approach does not match the actual approach chart. Regardless, the automatic approach is a fully functional approach and will be honored by ATC and AI aircraft.

Also notice that ADE created three user defined waypoints as part of the automatic ILS approach: IF34N, FF34N, and HH34N

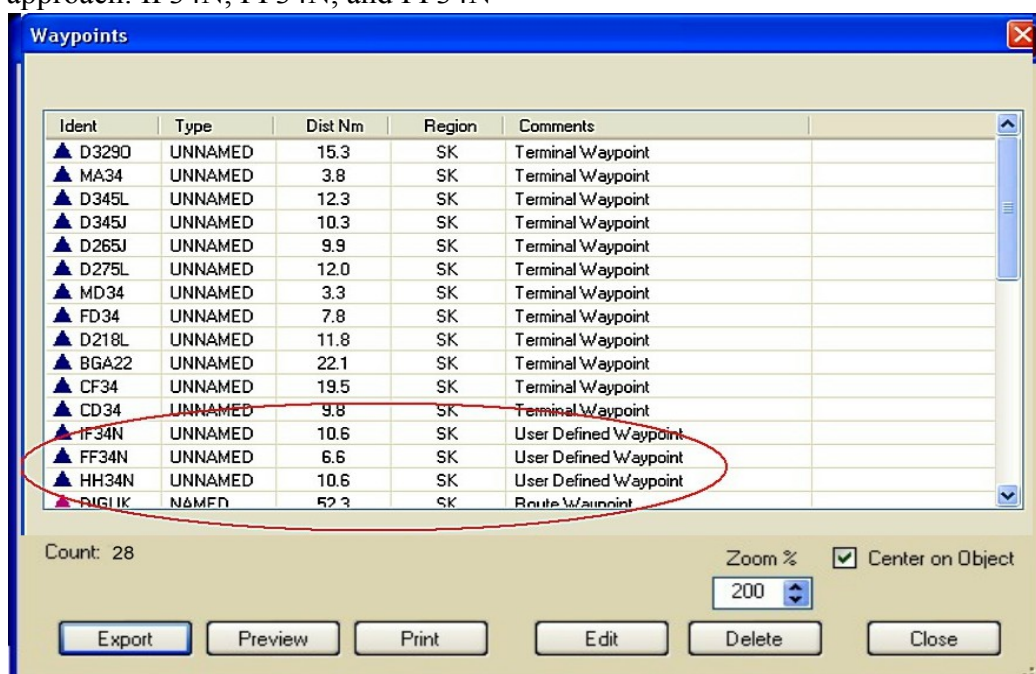


Figure 13-28: SKBG Waypoints List

Having ADE automatically create your ILS approach is quick and easy, albeit not entirely accurate. To create an ILS approach for SKBG that complies with the Jeppesen approach chart, you would need to use ADE's Approach Designer to build the approach one leg at a time

13.2 Fault Finder

This utility is one of the entries of the "Tools" menu. It is opened with a left-click.

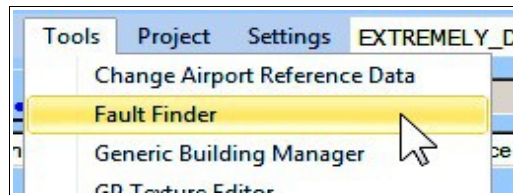


Figure 13-29: Fault Finder in Tools Menu

There are a number of common errors and faults that ADE will check for to help ensure that an airport works correctly. The Fault Finder gives access to these checks and in some cases can effect a repair. You can switch between the fault finder and ADE schematic display as you work through the list of faults.

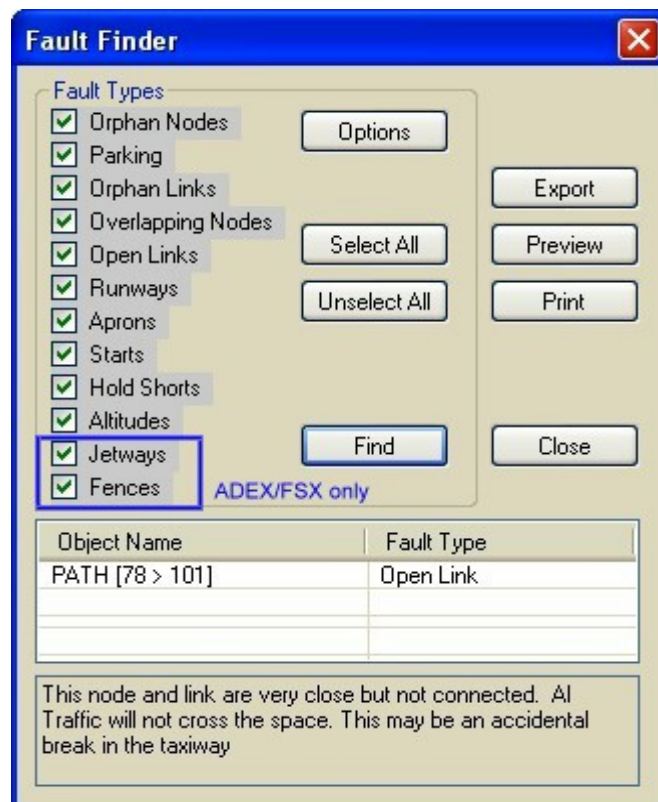


Figure 13-30: The Fault Finder Window

13.2.1 Fault Types

There are a number of potential fault types, and they are listed on the left side of the Fault Finder dialogue box. Each type has a check box, and you can select what fault types you want ADE to check. The Select All and Unselect All buttons to the right of the list allow you to choose to select all or none of the faults. Click Unselect All, and then select the particular fault you want to check. The fault types are described below:

- o **Orphan taxiway points** – These are taxiway taxiway points that are not associated with any paths.

ADE will save these to the .ad3-format file but will remove them when compiling.

You may want to delete these and this can be done from the fault finder (see below)

- o **Parking** – These are parking ramps or gates that have no parking link and no connection with the taxiway network. You may have created these to place static aircraft but generally these will create problems for AI traffic. Aircraft will never park here, and any aircraft spawned at the spot will be unable to move.
ADE will also raise a fault if you have in FS9 more than 254 parking spots at your airport that have airline codes assigned to them. This is a limit set by the compiler; however, you can have as many unassigned spots as you wish. ADE will also raise a fault (Unconnected Parking) if a parking spot is not connected to a Taxi, Apron, or Runway link.
- o **Orphan Links** – These are links that are not connected to the rest of the network. This may be quite correct if, for example, they are closed paths. On the other hand, it is easy to miss a connection and find a link isolated.
- o **Overlapping taxiway points** – It is quite easy to place taxiway points close together and sometimes even overlap them. Maybe you meant to join a link to an existing taxiway point but for some reason the link did not join properly, or maybe you placed two taxiway points by mistake.
- o **Open Links** – An open link is listed as a fault if a taxiway point is close to a link. If it is within five meters of a link then this may be a case where you planned to join the links together but something went wrong. Alternatively it is quite legitimate in some circumstances to put a small break in a taxiway. In that case there is not a problem.
- o **Runways** – This checks for duplicate runways in your airport project. Duplicate runways are defined as having the same runway number and designator.
- o **Aprons** – If one or more of an apron's edges cross each other then this will result in unpredictable behaviour in FS9/FSX including a CTD. This is also true of apron lights. The fault finder will identify both of these conditions. The fault finder will also raise a fault if there are more than 254 aprons at your airport. This is a limit set by the compiler. ADE provides an apron count on the ADE status bar as well and will not allow you to add more than this number of aprons.
- o **Starts** – All Runways that you want to use for take-offs must have a start located at the end. The Fault finder checks if there are any runway ends without a start and warns you. If you want to add one, you can do it from the fault finder window. In some cases, you could have two starts with the same runway number. This situation will cause the compiler to fail; therefore, ADE will look for these and give you the chance to change the runway number for one of the duplicates. You can also do this from the fault finder.
- o **Hold Shorts** – Hold Short taxiway points need to be closer than about 225ft from the runway they are intended to serve, or they will cause problems. Aircraft reaching them may never be given clearance by ATC to take off. ADE provides a visual cue (Select Hold Short taxiway point Limits from the View Menu) in the form of a red circle so you can see on the airport schematic whether a taxiway point may be too far away. The fault finder also makes the check and will list any that are outside the normal limits. Of course, you may have done this as part of your design. In that case, you can ignore this fault.
- o **Altitudes** – Airports in FS9/FSX are basically flat. This means that generally runways, starts, and other elements are placed at the same altitude as the airport itself. In fact, ADE will not allow you to change the altitudes of some elements and will set them at the airport altitude when you create them. Nevertheless, if you load an airport created in some other way, there could be these altitude problems.
The fault finder will therefore list any elements that are normally at airport altitude but

are not in this case. Since you cannot edit altitudes in the property dialogues, the Fault finder gives you a way to change the altitude of the element to the airport altitude.

- o **Jetways** – These are the animated jetways for **FSX**. If you place them too far from their parking spot or one is numbered incorrectly, (you should not be able to do this if you add jetways using ADE, by the way), a jetway may be seen trundling across the airport and even across runways to get to its assigned parking spot. ADE knows what the likely distances are for different types of gates and will warn you if a jetway appears to be too far away from its parking spot. In the real world you will only find a jetway at gate parking. However, ADE will allow you to add a jetway to any parking type. ADE will warn you though that the use of a jetway at certain parking types is not normal. **(in FSX only)**
- o **Fences** – ADE will display an error message if there are edges that cross each other in a single fence. Sometimes these can be difficult to see, but check corners and other turns to see if some extra vertex points are included that cause the overlap.

Remember that ADE will only search for those fault types that you select on the Fault Finder.

SAVE FAULT GROUP OPTIONS (Requires ProKey)

There is no specific action to be performed. Open the Fault Finder (Tools > Fault Finder). Use the Check boxes next to each fault group to select or deselect that group. Next time you open the Fault Finder it will remember the check box settings.

13.2.2 Fault Finder Options

In addition to the fault types, there are several options that you can set to control the behaviour of the fault finder. Click the Options button (red arrow in figure 13-31 below) to open the Setting dialogue:

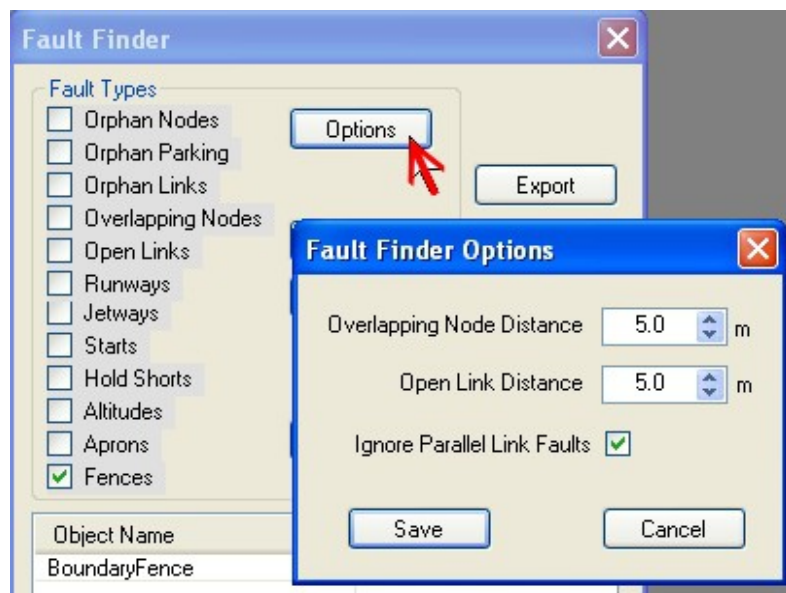


Figure 13-31: Fault Finder Options

- o **Overlapping taxiway point Distance** – This is the distance that the fault finder will use to determine if two taxiway points overlap. The overlap distance is one meter by default. Any links that are less than one meter apart will be reported as overlapping. You can set this distance anywhere between 0.1m and 5m. The farther the distance, the more faults ADE will report.

- o **Open Link Distance** – The fault finder looks for taxiway points that are close to links. If a taxiway point is close to, but not part of, a link then this would cause problems with AI traffic and vehicles if it should be in the link. By default the test distance is one meter, and it can be set between 0.1m and 5m. The farther the distance, the more open links will be reported – and more of them will not really be problems.
- o **Ignore Parallel Link Faults** – A number of designers will place links close together, perhaps running in opposite directions (referred to as “plumbing”). The fault finder could raise a lot of unnecessary fault reports in this case. If you tell ADE to ignore parallel link faults, ADE will ignore open link faults between parallel links.

13.2.3 Fault Finder Auto Repair

There are some fault types that the Fault Finder will offer to Repair. If you select a fault type that can be repaired from the fault finder then a Repair button will be visible.

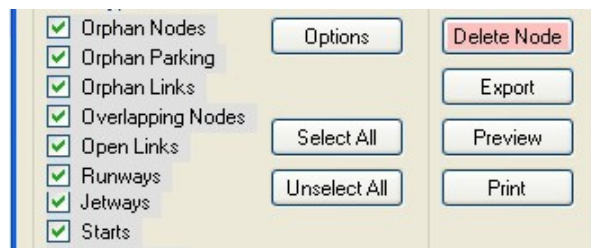


Figure 13-32: Repair Button (red)

Its function is shown in an example in Figure 13-33.

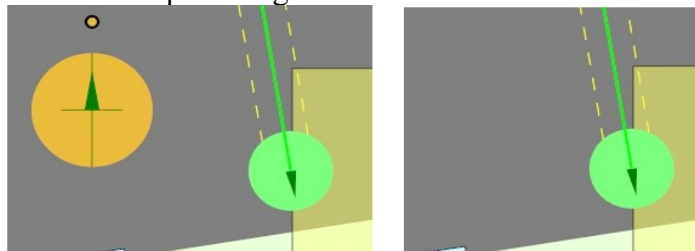


Figure 13-33: Orphan Parking Spot and Repair

You could delete it if you wished from the schematic or you can click the Delete Spot button. ADE will remove the associated fault from the list and delete the spot.

The spot is gone but it could be recovered, if you made a mistake, using the Undo function.

13.2.4 Real Time Issue Manager

The Issue Manager is intended to replace the current Fault Finder over time. At this time it only looks for faults, that will cause the Compile to fail.

It can be seen via a ‘button’ appearing left in the Status Bar of the ADE display.

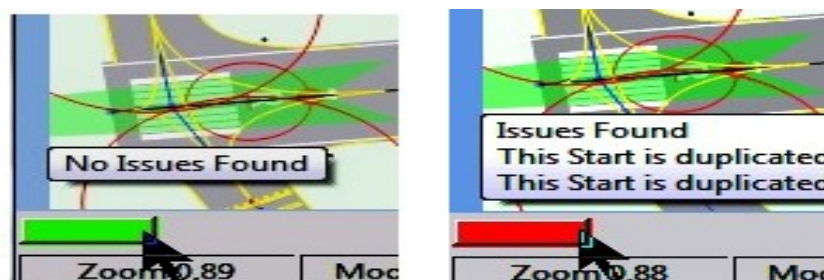


Figure 13-34: Red/Green Button of Issue Manager

If nothing is wrong, then this button is **green**.

When the cursor pointer is moved over the button, a tool tip will appear, stating the status (as seen in the picture)

The status button will show **red**, when fatal errors are detected.

Again the cursor pointer will open a tool tip, showing the fault issues found.

In the example here it is a duplicated start.

Clicking on the red button will open the Issue Manager:

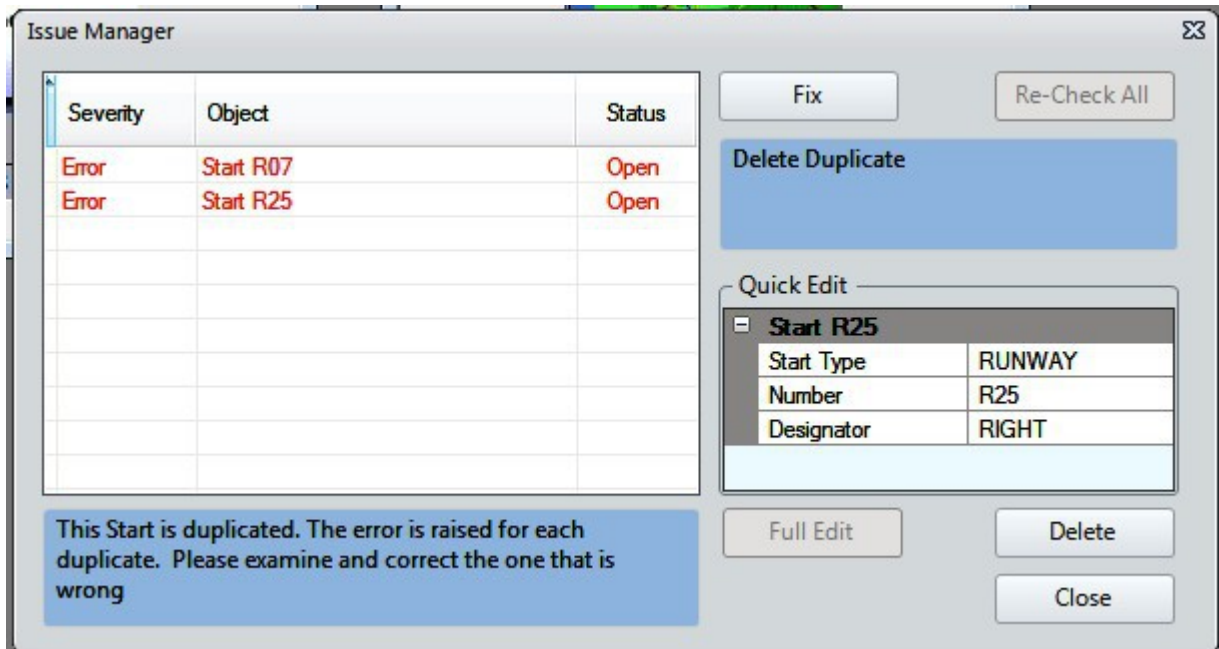


Figure 13-35: Issue Manager Window

You can fix and clear issues via this display (which will also support the On-Demand replacement for Fault Finder).

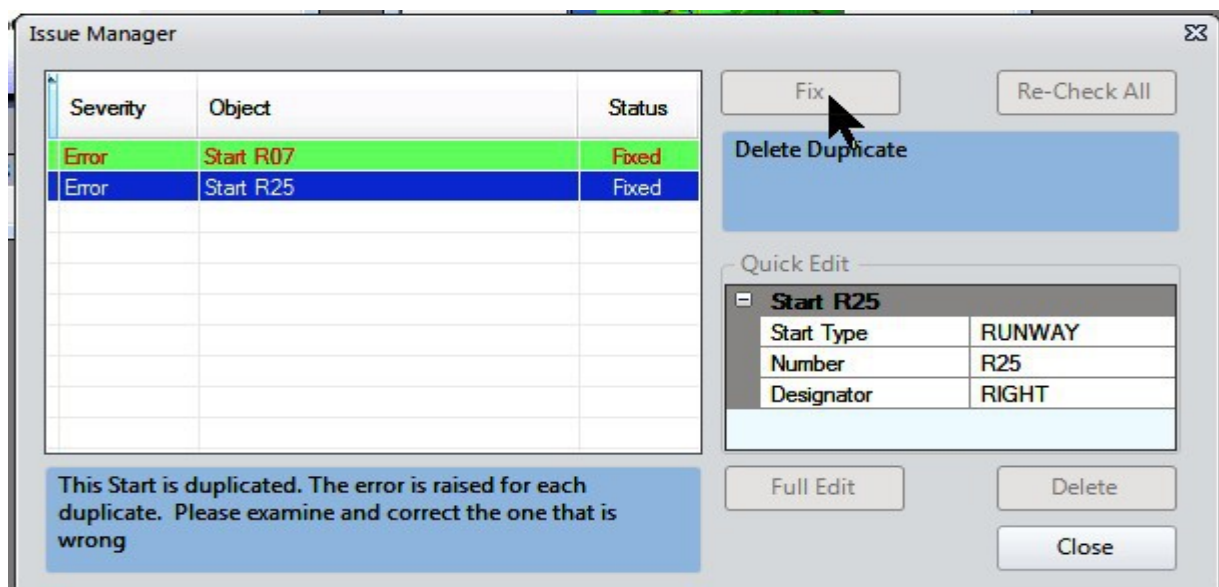


Figure 13-36: Issue is Cleared

NOTE that the issues listed could be slightly out of date. This is because analysis is always in progress. On a large airport each cycle could be several seconds, generally it is less than one.

Each time it is finished the results are handed over to the main program and analysis starts again.

When you click to see the issues you will get the last finished analysis. Opening the Issue Manager may stop the background analysis also to allow you to work on the current issue set.

This analysis is taking place on the project at all time and in all modes so if you are directly changing the properties and XML and make a mistake that will cause a compiler error the indicator will change as soon as the current analysis cycle finishes.

The issues will be listed.

In case of duplicates, both items are displayed. Many issues will have a default fix – in this case to remove the duplicate.

This is done by clicking the “Fix” - button

In many cases there will also be the option to carry out a manual delete to clear the fault. Faults that are cleared will show a changed display.

There are additional buttons:

- **Full Edit** will open the normal property dialogue giving you full access to edit the object. Usually Quick Edit will be sufficient to deal with the problem but sometimes the full editor is needed (taxi sign label errors are one example).



Figure 13-37: Additional Buttons

- **Delete** will delete the current object giving rise to the issue.
 - The **Re-Check All** button is not active in this version. Close the Issue Manager to carry on working.
- o **Issues** - These fall into several categories in descending order of severity:
- * Error This is an issue that will cause the MS BGL Compiler to fail. It must therefore be fixed before the project will compile;
 - * Warning Warnings will not stop the compile but are things which will probably stop the airport working. For example Hold Short taxiway points beyond a certain distance from a runway will stop AI traffic behaving properly;
 - * Advisory This is the category for those things that may cause problems but may also be by design. Overlapping taxiway point and unconnected taxiways are examples;
 - * Comment For anything else that may be worth report but is unlikely to have any effect on the airport and its operations.

The analysis covers over 60 issues ranging across these categories.

Remember that in the current version only Fatal Errors are monitored.

The following **Error Issues** are covered in the current analysis:

- o Invalid characters in names or Idents;
- o Names or Idents that exceed the maximum length allowed by the compiler;
- o Apron Count exceeding 254;
- o Duplicate NDBs, VORs, Way points, Runways and Starts;

- o Runway Type taxi links that are assigned to a non-existent runway;
- o Frequencies out of range for NavAids and Comms. Also the error that arises if a Com is given a frequency in the VOR range;
- o Comm frequency steps wrong. There are fixed steps for comm frequencies that must be honoured;
- o Taxi sign label errors;
- o FS9 Runway too narrow – needs to be at least 1m wide – in practice ADE will fix it to 1.1 meters to ensure no error;
- o Multiple Jetways assigned to one parking spot
- o Airline Codes Count. There is a limit (50) to the number of airline codes that can be assigned to a parking spot. Exceeding this will give a compiler error
- o Airline Codes exceeding four characters will cause a compile error
- o Missing or wrong version FSX compilers. You must have paths to BglComp and Shp2Vec correctly identified. Also you must not use the original BglComp because it generates errors. If any of these issues arise then you will be asked to fix them.
- o Invalid Exclusion Rectangles where the latitude minimum is not “less than the maximum” and/or the longitude minimum is “not less than the maximum”.

There will others so if you encounter a compiler error when the analysis shows no issues then we would like to hear about it and please send us the file so that we can investigate further.

13.3 ADE Environment Checker

In order to check, whether all requirements for a proper installation have been met and all setup steps were correct, ADE provides a very useful utility called “The Environment Checker”.

The Environment Checker is part of the Airport Design Editor package and can be found together with it's own handbook in the main ADE folder.

While it is starting the program will check the computer registry for several keys and files. Specifically this is:

- For the installation of Airport Design Editor
- For the installation of Microsoft Flight Simulator 9
- For the installation of Microsoft Flight Simulator X
- For the installation of the Microsoft Flight Simulator X SDK
- For the installation of Lockheed Martin Prepar3D V1
- For the installation of the Lockheed Martin Prepar3D V1 SDK
- For the installation of Lockheed Martin Prepar3D V2
- For the installation of the Lockheed Martin Prepar3D V2 SDK
- For the installation of the Flight Simulator SimConnect component
- For Peter Dowson’s FSUIPC (The official Peter Dowson Page)
- For various .NET and MSXML Installations
- For the regional settings of the Operating System
- For one specific error in the registry

NOTE - ADEC needs to run in administrative mode to recognize certain issues and to be able to fix them. It is by design that you see the User Account Control (UAC) warning when starting ADEC – please confirm this message, otherwise ADEC is not able to work properly.

If you have everything that is needed then the result should look like this:

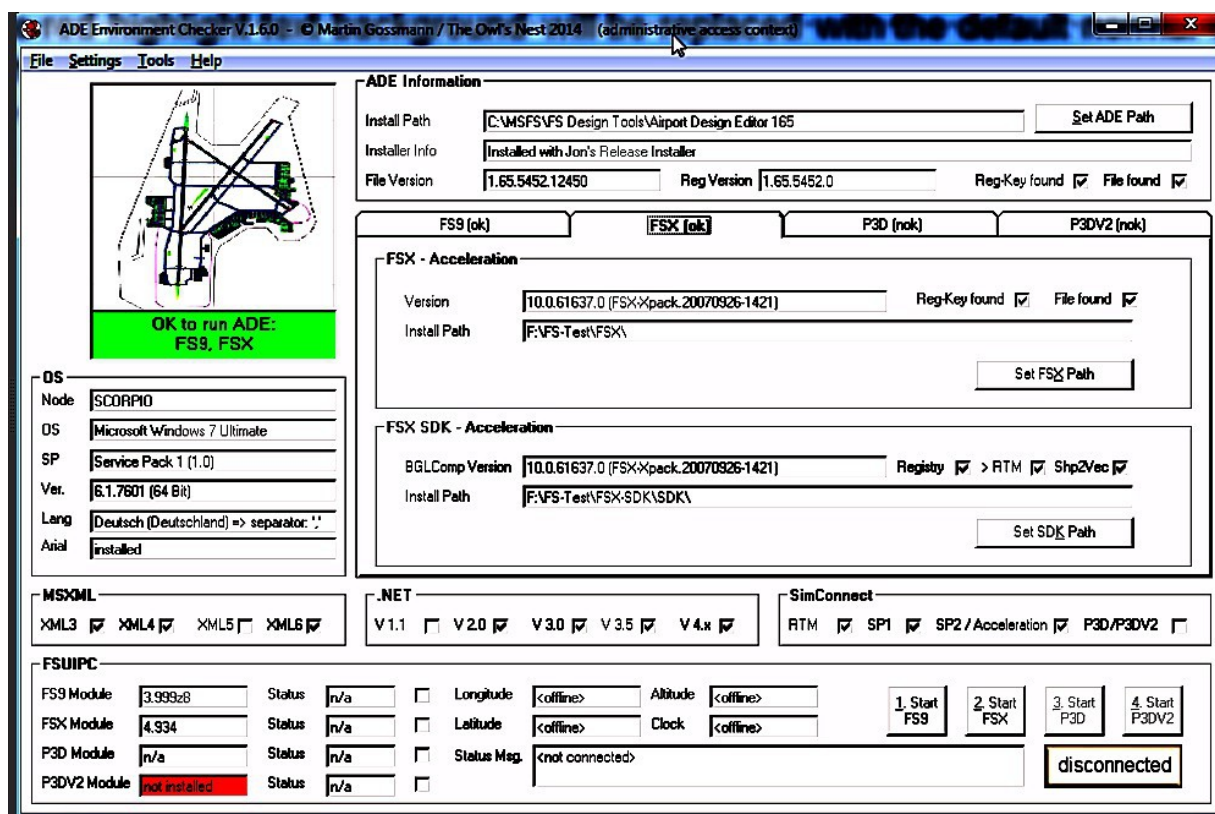


Figure 13-38: ADE Environment Checker

If you find that some requirements are missing, you will need to correct these before using Airport Design Editor.

NOTE that this does not guarantee that the program will run successfully on your computer. In some cases we have found failures due to interactions with other applications such as virus checkers and firewalls.

If you have an installation problem, please contact the ADE support team and include the load report from the Environment Checker.

Of course, you can use the Environment Checker any time, for example after an installation update, when you suspect, that something might be wrong with the set up of ADE.

"Environment Checker" comes with his own user manual.

Details of what the Environment Checker is checking and how this utility is used are covered there.

13.4 Library Object Manager (LOM)

The LOM is opened by clicking on the entry "Library Object Manager" in the "Tools" Menu on top of the ADE Main Display.

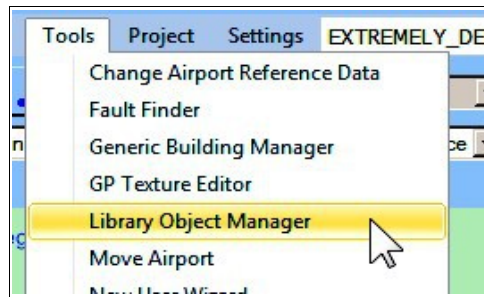


Figure 13-39: Open the LOM

The Library Object Manager in ADE provides full access to library objects and allows you to manage their information and edit their properties. This feature includes the ability to make user developed object libraries available in ADE.

NOTE Library Objects, their properties and their handling are covered in more details in **chapter 10.2 Library Objects**

The Library Object Manager (LOM) may take a few seconds to open while ADE loads the database, depending on the amount of library objects in the airport project.

The main screen is divided into four sections:

- "Selection" by Library and Category
- "List" of Objects Found
- "Object Data" library, GUID, Name, Category, Size, Facing
- "Thumbnails"

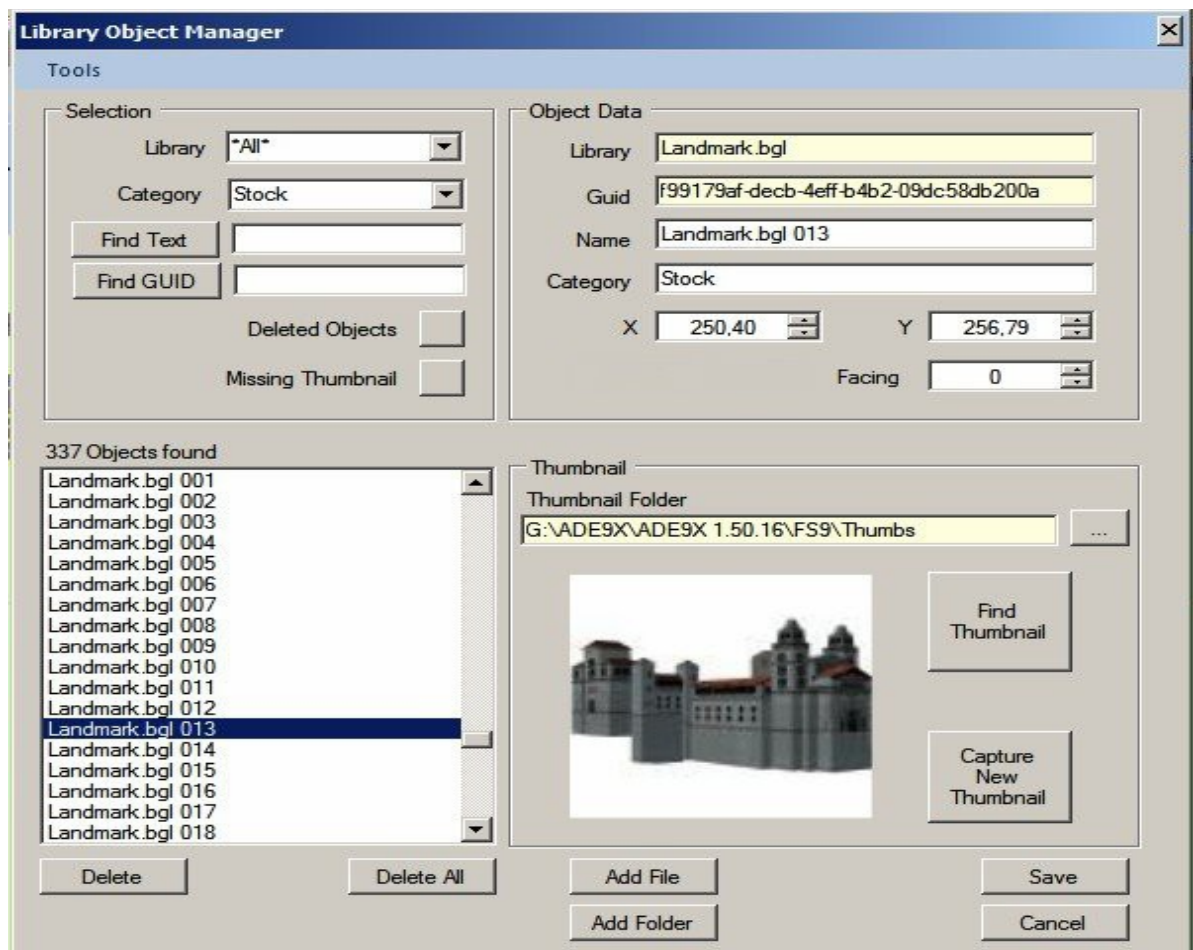


Figure 13-40 - Library Object Manager

13.4.1 Selection

- By selecting the options "**Library**" all object-BGL-files within this library are shown below in the "Objects Found" list.
- "**Category**" is another selection or filter, by which the objects are sorted. Alternatively you can search for "**text**" in object names or part or all of a **GUID**. Objects meeting the criteria will be displayed in the "Object Found" List.

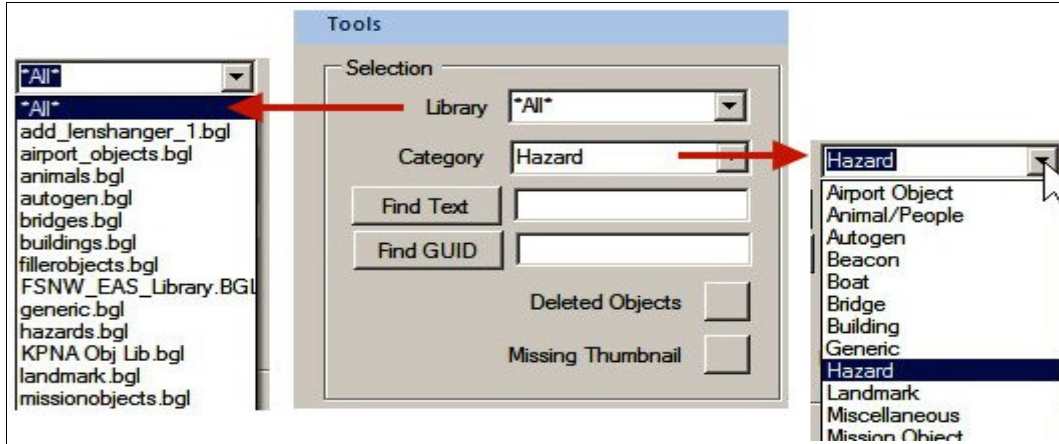


Figure 13-41: The "Selection" Filters

There are two more buttons in this section:

- **Deleted Objects** – filters the object list for any objects that the user set to delete.
LOM does not physically remove object marked for deletion until the Save button is used. It is therefore possible to use this button to find out what objects were deleted in the current session before committing to the final delete by using the Save button.
- **Missing Thumbnails** - filters the object list and shows all those objects that do not have a thumbnail, that is where instead of a thumbnail the "Not Available" picture is shown.

13.4.2 Objects Found

This section contains the list of currently filtered objects. Moving up and down the list changes the object data and Thumbnail.

13.4.3 Object Data

By selecting an object in the Object List, the following data of the object are shown in this section.

- **Library** and **GUID** are read-only.
- The **Name** is the description that appears for the object in ADE.
- The **Category** details the classification group of the object. This is a text field so spelling a category different ways will result in different categories. Please **NOTE** that the category list is not updated until you save and open the Library Object Manager again.

- **X, Y** - is the width and length of the object's bounding box. This is the rectangle displayed in ADE for the object. It is initially taken from the model itself. However these are not always accurate and you may wish to adjust these where the rectangle in ADE does not accurately represent the footprint in FSX. or FS9.
- **Facing** - is the object's orientation. Generally we would expect one side of an object to be the front. ADE assumes that the front of an object is the one facing the direction of the heading and puts a small black dot on that face of the rectangle; however, you do not always get what you expect. So if the object is not oriented as you expect you can change the Facing value 90deg at a time until the object is positioned correctly.

13.4.4 Thumbnail

Add or change a Thumbnail for the selected library object. By default ADE uses the Thumbs Folder inside the ADE application folder. You may already have a collection of images that you want to use or keep the images in a different folder. The only requirement is that the thumbnail name must contain the object GUID in FSX format and be a .jpg.

NOTE - When you change the thumbnail folder ADE clears the Thumbnail index. If it did not do this the thumbnails from your previous folder could still be displayed rather than thumbnails from the new folder.

If you have any existing image you want to use, select Find Thumbnail.

If you want to capture a new thumbnail, press the Capture New Thumbnail button. Refer to [chapter 14.17 Thumbnails and Screenshots](#) for more information about the Thumbnail Capture Tool.

In addition to these four sections the bottom part of the window offers buttons for the deletion and addition of Library Objects and their folders.

13.4.5 Deleting Library Objects from the Manager's Archive

- o **Delete => Save** -To delete an objects from the database first select the object and then click "Delete" followed by "Save". The LOM has to be started again and the object has disappeared.
- o **Delete All => Save** -The "Delete All" button allows to delete a whole library folder with its content. Open the library list under the group "Selection", select the library to be deleted and click "Delete All" followed by "Save". When the Manager is started again, the whole library is gone.

13.4.6 Adding Library Objects to the LOM's Archive

The user has the option to add a Library Object as a single file or as a folder and have LOM import any objects it finds. This is accessed either from the LOM's "Tools Menu" [(A) in Figure 13-41] or from the "Add" or "Add Folder" button [(B) in Figure 13-41].

In either case you will need to select the file or the folder to search:

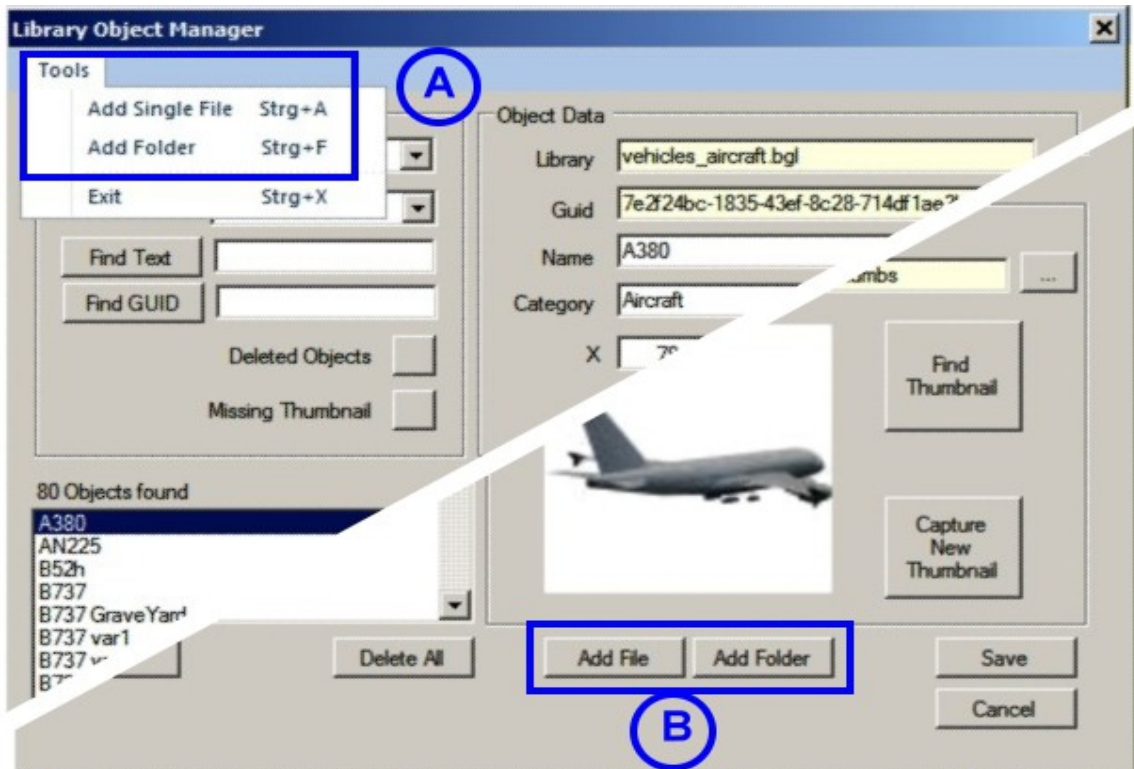


Figure 13-42: Adding a File

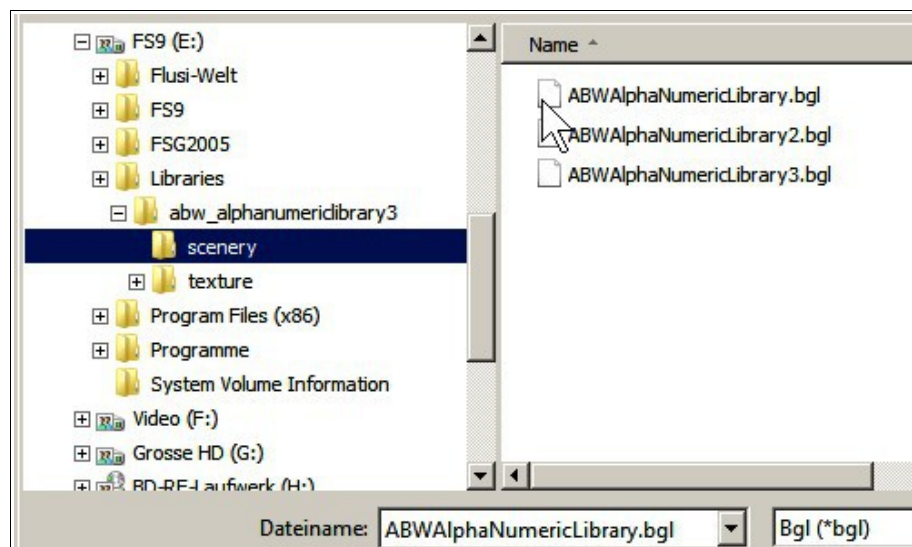


Figure 13-43: Browsing for the File

- When **adding a file** you simply select the proper BGL-file and click the "Open" button. The LOM will put all objects, which were found in the BGL-file, into the data base.

LOM presents a small message telling how many objects were found and how many of them are already in the data base. (Figure 12-44 left).

- When you **select a folder**, ADE will search all BGL files in this folder for objects. You will receive notification as each BGL is processed. This will vary depending on whether there are objects in the file and whether LOM already has them. The dialogue will tell you how many files you have processed and how many are left:

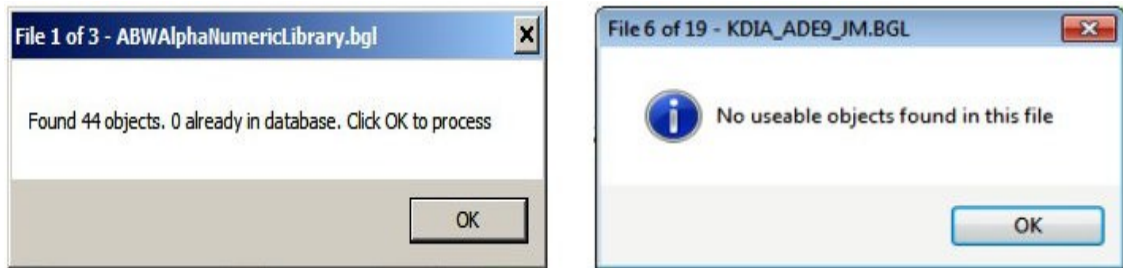


Figure 13-44: Messages

When the run is finished you will get a completion message.

Important:

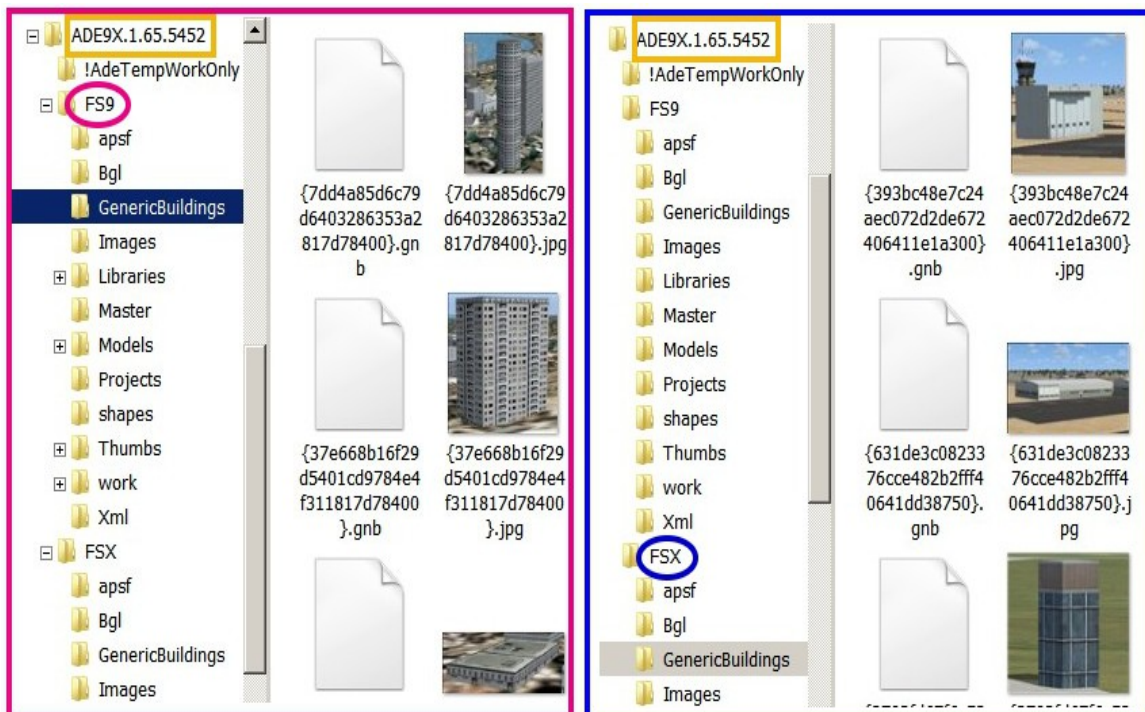
Be aware that LOM will search any BGL it finds. It will also extract any objects. It cannot differentiate between those that you can freely use and those that are part of an add-on package and the developer has not given permission for their re-use. You are entirely responsible for ensuring that you don't load copy write objects into LOM.

Finally remember to use the Save Button otherwise your new additions will not get remembered.

13.5 Generic Building Manager

This feature allows you to work with the generic buildings, which are stored in the database of ADE. This storage place is important, because its content determines, which Generic Buildings are available, when the user desires to add a building via the "Add"-function in the Rightclick Menu.

The folder in question is in the ADE main directory under "Generic Building", separately for FS9, FSX or P3D, as can be seen in Figure 13-45



FS9 Generic Buildings File

Figure 13-45

FSX Generic Buildings File

For each building there is a "bng"-file (data) and - where available - a "jpg"- file for the thumbnail.

These files are used by the Generic Building Manager.

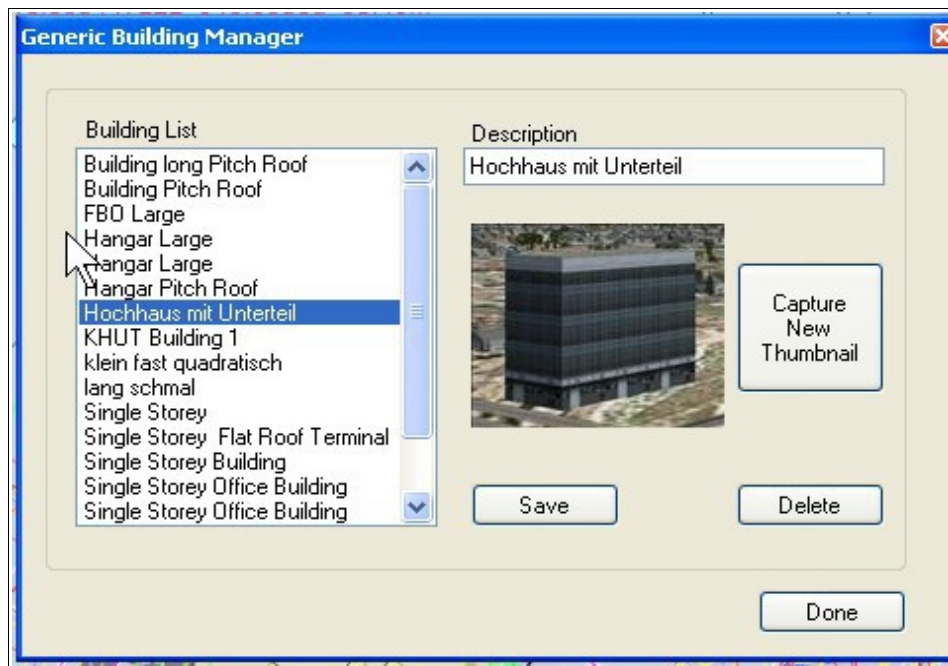


Figure 13-46: Generic Building Manager

- o **Building List** - contains all buildings, which are in the folder shown above in figure 13-45. While the folder display in figure 13-45 shows GUIDs, the building list in figure 13-46 shows the "Description" of the building descriptions. The thumbnail pictures are of course identical.
- o **Description** - Here the user can give a descriptive name to a Generic Building, which will be used also in the properties window, when adding and when saving a Generic Building
- o **Capture New Thumbnail** - is a method to import from other sources (i.e. the Flight Simulators) a picture of a Generic Building which will be used as thumbnail in all editing windows for Generic Buildings. The thumbnail Catching method is described in detail in [chapter 14.17 Thumbnails and Screenshots](#).
- o **Save** - after editing a Generic Building "save" will store it in the folder shown in Figure 13-45 above.
- o **Delete** - removes the selected building from all lists and files

To use the Generic Building Manager, select a building from the list. You can change the description or grab a new thumbnail. You must click Save to make the changes permanent. Use the Delete button to remove a building from the database, and ADE will confirm your decision before permanently deleting the building.

For more information about using Generic Buildings refer to [Chapter 10.1 Generic Buildings](#).

13.6 Custom Ground Polygon Editor

Custom Ground Polygons and Lines are part of ADE's Terrain Elements. Their use is described in [chapter 9.4 Custom Ground Polygons](#)

For their editing the "ADE-GP Editor" is available.

This utility is opened, when a ground polygon or ground line is created (see chapter 9.4.2)

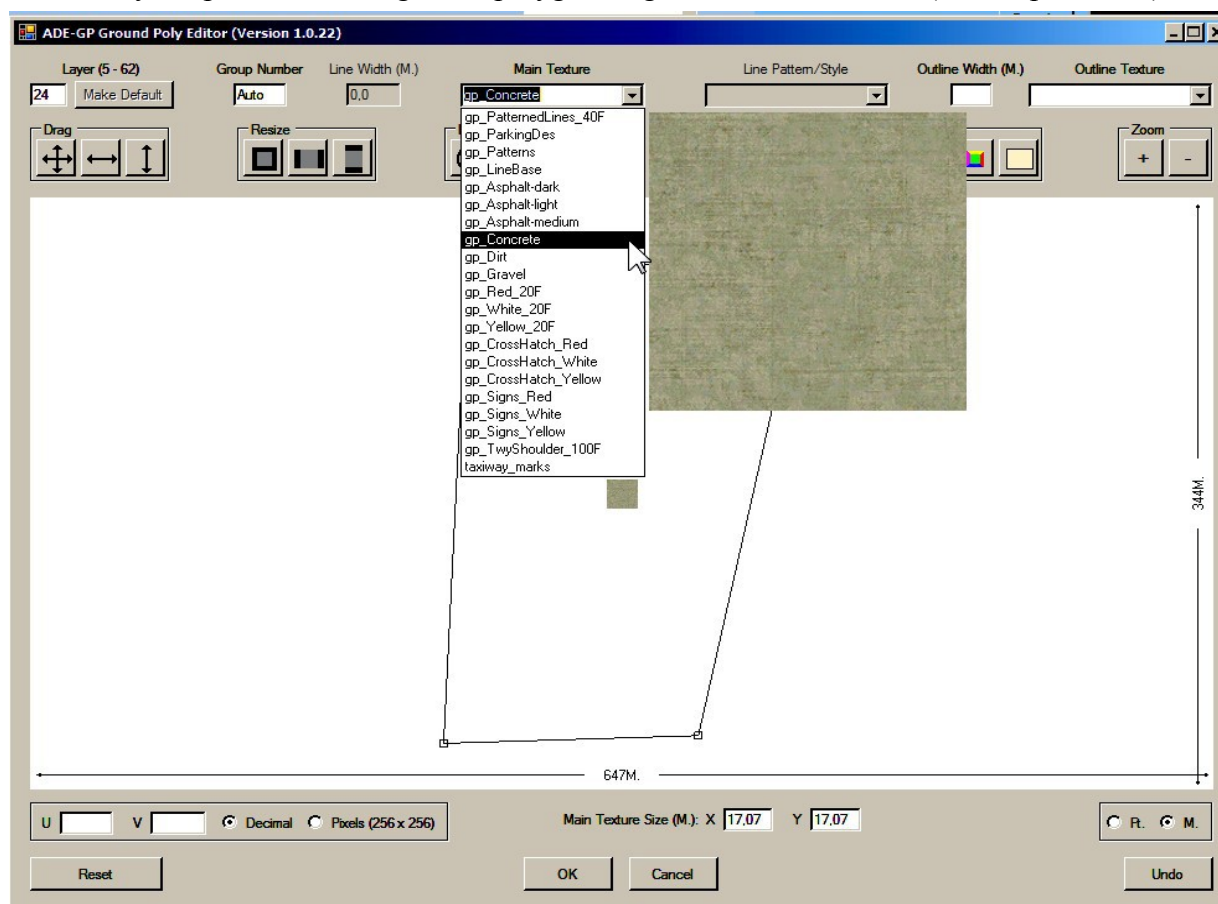


Figure 13-47: GP Editor

For the GP-Editor Utility there is a separate annual, which is a part of the ADE package. It can be found and downloaded as a PDF-file "ADE-GP-UserManual.pdf" in the folder "Manuals" in the main ADE directory.

13.7 ProKey

Introduction

ADE has several built-in features, which are useful for advanced users. They are not for free and are available only, if the user obtains and pays for a key called "ProKey", which unlocks those advanced features. ProKey is a small file that enables extra functionality in Airport Design Editor. In itself it does nothing except tell ADE to allow access to the extra functions.

ProKey is not free. You need to buy a license. On payment you receive a license key that will make ProKey permanently active on your computer. Be aware that the license is stored safely on your computer and may not be used on more than one computer at a time.

ProKey is released under the ScruffyDuck General Software Agreement. You should read this and not use the key unless you agree to the terms. Our terms allow you to install our software on two computers, but use it only on one at a time. You can therefore install the ProKey and license on a desktop and laptop for example but you may not use them, or allow them to be used simultaneously.

Be aware that functions for the ProKey will be updated and extended over time.

13.7.1 List of Currently Available ProKey Functions

- . Move airport
- . Rotate airport
- . Edit properties directly (allows editing of underlying XML)
- . Save fault finder options
- . Open last saved project when ADE starts
- . Hide selected airport objects
- . Restore Hidden Objects
- . Nudge objects accurately into position with arrow keys
- . Specify the number of vertices to be used when creating curved helper shapes
- . Skip the compile of specific objects
- . Conditional compile of different object groups
- . Extended default settings for taxi links
- . Ignore drawing layer constraints
- . Raw Data View
- . Copy/paste coordinates
- . Helper Shapes with handles

13.7.2 Download and Installation

- Open the web site <http://www.airportdesigneditor.co.uk> or www.scruffyduck.org.
- Select the “Airport Design Editor” Tab and then the “ProKey” page.
- Find the download link and save the file to a folder on your hard drive.
- Open the zip-file which contains several folders.
- Please read the read me for the latest information and
- Please open the manuals folder which contains the software license agreement and usage notes for the ProKey.
- Open the “Plugins”-folder and copy the the “ProKey.dll” file. You should not need the other file as it now ships with all current versions of ADE).
- Browse in your ADE installation for the folder “Plugins”, open it and paste the “ProKey.dll” into it.

This will install the Evaluation version of ProKey for 15 days.

The purchase and registering the full version, together with further details such as removing ProKey from your computer is contained in two related “Help-Documents” in

https://scruffyduck.screenstepslive.com/s/help_docs

13.8 New User Wizard

The New User Wizard appears, when you start ADE for a specific version for the very first time. This first use for a preliminary setting of ADE's configuration is described in chapter 2.5.1.

However the Wizard can be used also at a later date for completing or changing the settings. It is available as an entry in the "Tools"-Menu.

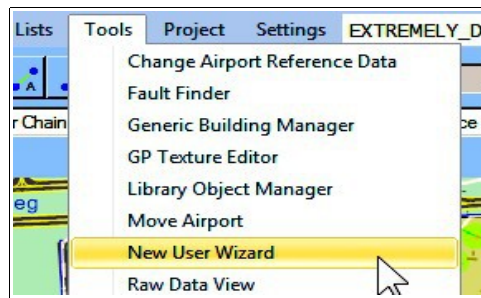


Figure 13 48: The New User Wizard in the Tools Menu

13.8.1 The Welcome Page



Figure 13-49: Welcome Screen

This screen reminds you that it is important to completely configure ADE. Move to the General Options Screen by clicking "**Next**". You can go back at any time and change or check settings by clicking "**Back**".

There is an additional very useful button "**Import Setting**"

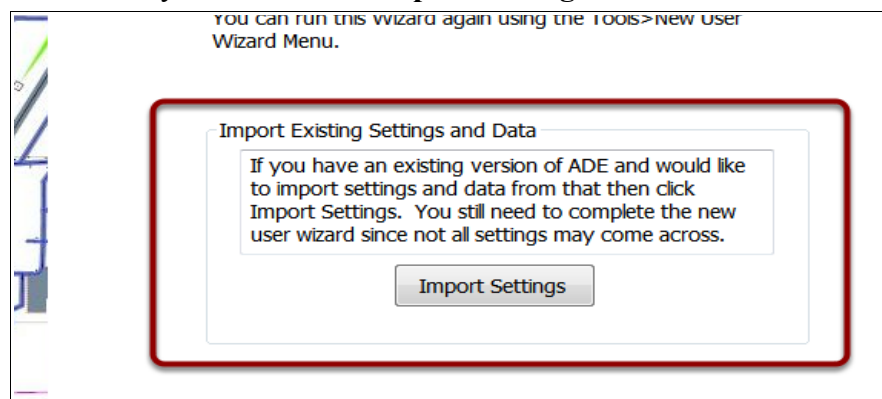


Figure 13-50: Import Existing Settings and Data

If you have an existing version of ADE then you can import the existing settings. You need to do this for each version of ADE that you set up.

NOTE If you do import the existing settings then you will still need to work through the New User Wizard. Please check that the entries make sense as you go through in case something is not imported or is not what you want.

Clicking the button "Import Settings" will open the following window:

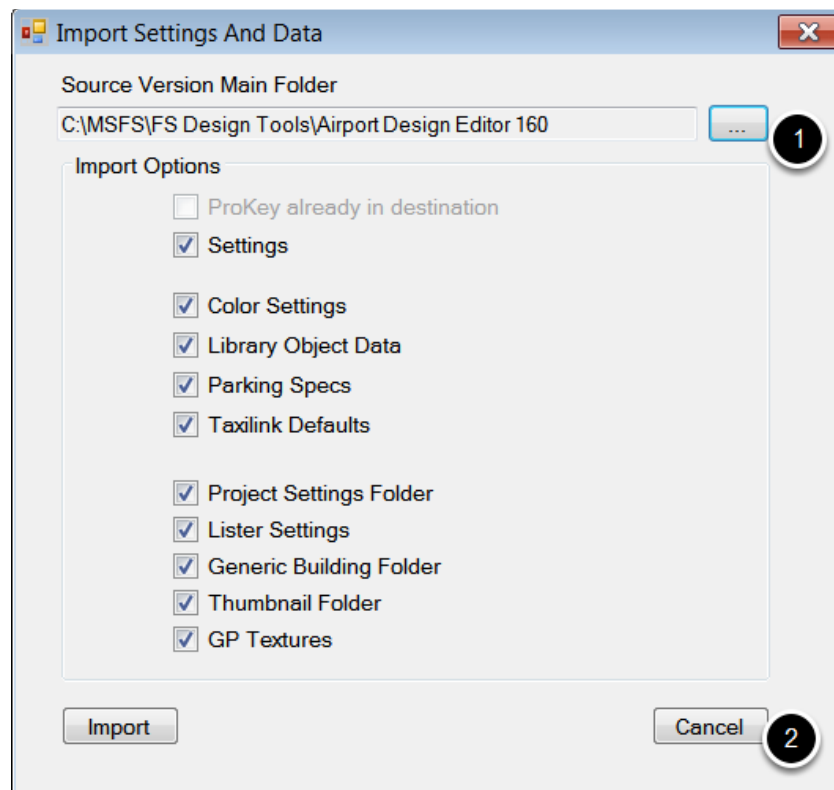


Figure 13-51: Import Settings and Data

When the dialog first opens the import options will be greyed out. The first thing you need to do is find the ADE installation that you want to copy the settings and data from

1. Click this small button and in the folder browse dialog navigate to the main folder of the ADE installation you want to copy from
2. You can click Cancel at any time if you change your mind about importing.

The folder you need is the main ADE folder. If the folder you select does not contain the main ADE program (Airport Design Editor.exe) then you will get this warning. The importer will not work until it has a valid ADE installation

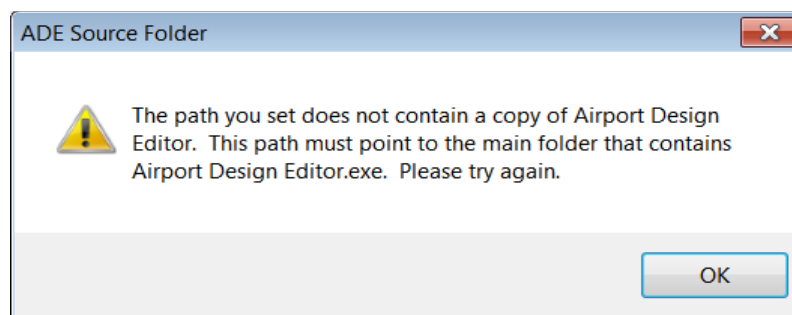


Figure 13-52: Warning - Wrong Folder

Once you have entered a valid path to an ADE installation the Import Options will become available. The state of these will depend on what ADE finds in the source installation. The data will automatically be taken from the matching version folder. So if you have opened the new ADE version for FSX then ADE will only import data from that version in the source version. You will need to repeat the import for each version that you use ADE with.

Some may be greyed out which means that for some reason it is not possible or required to import that information. The remainder will be enabled and have the checkbox checked. You can choose whether or not to import the information. If you don't want to import something then un-check it. You should generally not change the settings unless you are aware of the implications. In most cases you would want to import as much data as possible.

The following options are available:

- o **ProKey**

The ProKey is stored in the main installation and you will only import it once. The message above shows that the ProKey is already installed in the new version. This option will also be greyed out if there is no ProKey installed in the source installation. If it is available in the source version and not installed in the new version then this option will be enabled and checked

- o **Settings**

The settings file is the main file containing your settings and options. You should always import this unless you clearly have a reason not to; such as you want to reset all the settings in the new installation.

- o **Color Settings**

Color settings contain the colors used to display elements of the airport in ADE. They are stored in the entry "Colors" in the "Setting"-Menu ([chapter 12.8.2 Colors](#)) and can be edited there.

- o **Library Object Data**

This is the data about the library objects you have told ADE about. This is probably one of the data files that gets changed most as users add new libraries. You can also import the thumbnails that you have for these objects.

- o **Parking Specs**

This file contains the airline codes and color settings used with parking spots.

- o **Taxi Link Defaults**

Taxi link defaults were recently introduced. If the source version you are copying from does not contain this file then this option will be unavailable

- o **Project Settings-menu**

Project settings files contain settings information for each project and should be imported if they are available. Since these were introduced in ADE version 1.62 your source installation may not have them so this option will be unavailable. If it is available you should import this data if you plan to use the new version with existing projects.

- o **Lister Settings**

ADE allows you to create different layouts for each list type in the lister. This option allows you to import these settings into your new installation:

- . If the version you are importing from does not support lister settings then this box will be disabled
- . If the version does support these settings then you will see the box above
- . Lister settings apply to all Simulator versions in ADE so they only need importing once. If you do import again, or import a different version then this entry will be enabled without the checkbox. If you want to import them again just check the box

o Generic Buildings

ADE stores data about the generic buildings you save and use in a specific folder.

Importing will copy any generic buildings that are in the source folder and not in the new version folder.

o Thumbnails

Thumbnails are generally stored in a default folder in ADE. However there is the option to use a different folder and some users may have a single folder for thumbnails that they use for all ADE versions. There are three options here:

1. ADE needs to find the source version settings file to be able to find out where the thumbnails are. If it can't find the settings file then it will disable this option and you will not be able to import thumbnails. Generally the settings file will be there and if it is not it signifies some issues with the source installation
2. The source thumbnails are in the default folder. In this case you will see the option as displayed above and ADE will just import thumbnails from the source installation to the new one
3. If the source installation is using a specific folder for thumbnails you will see the following message:

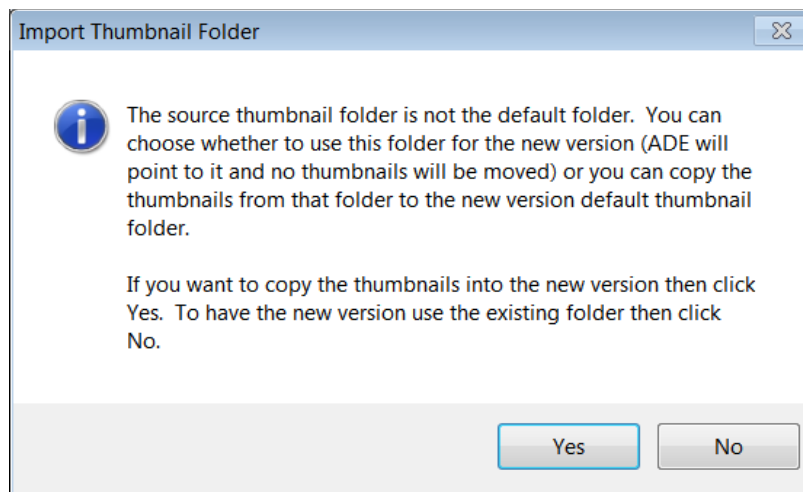


Figure 13-53: Import Thumbnail Folder

You have a choice. You can either:

- Copy the thumbnails from the specific folder into the default folder in your new installation or
- have your new installation point to the same folder used by the source installation. In this case no thumbnails are copied and both versions will use the same folder for thumbnails

If you are not sure what to do then use the copy option. While this is less efficient in terms of disk space it does mean that if you deleted the specific folder at any time you would not lose the thumbnails in the new version.

o GP Textures

Custom Ground Polys is a feature present from version 1.60. ADE will import your texture settings, definition files and textures from the source version to the new version

- If the source version does not support custom ground polys then this box will be greyed out
- If the source version does support them then you will see the box above

- Custom ground poly settings apply to all sim versions in ADE so they only need importing once. If you do import again, or import a different version then this entry will be enabled without the checkbox. If you want to import them again just check the box

When you are ready click the Import Button. It may take a short time depending on how much data is being moved but you will then see a confirmation message.

13.8.2 General Settings

New User Wizard

General Settings

- 1 ADE will use your initials as part of the file name when saving files so please enter them here:
- 2 Some messages are just displayed for a limited time. You can set the value in seconds here: seconds
- 3 ADE will automatically save you work on a regular basis. You can set the time between saves here: minutes
- 4 Parking and Apron (Path) taxiway links do not display surfaces but take the surface of the underlying Apron (if there is one). Due to a bug in FSX it is possible for these link types to show a surface. ADE can automatically handle the setting of surfaces for these types of taxiway. It is recommended that you leave this checked unless you want to handle all surfaces yourself. ☒

< Back Next > Cancel

Figure 13-54: General Settings

- (1) Enter your initials. These are used as part of the file naming system and also are included when you need to send us a log. You don't have to enter them but it is helpful if you do and also makes it easier to identify your files later
- (2) ADE shows some messages for a short period (such as saved a file or compiled an airport). You do not need to dismiss these yourself but you can decide how long you want them to display for here
- (3) Autosave is one way that ADE provides recovery for your work if ADE crashes. The autosave file will be created at regular intervals. You can see how often you want the autosave to be triggered here
- (4) This does not apply to FS9 but does apply to FSX and P3D. We advise leaving this checked since it saves having to worry about setting surfaces. Only un-check this if you are sure you want to handle all surfaces on aprons yourself.

13.8.3 Folders

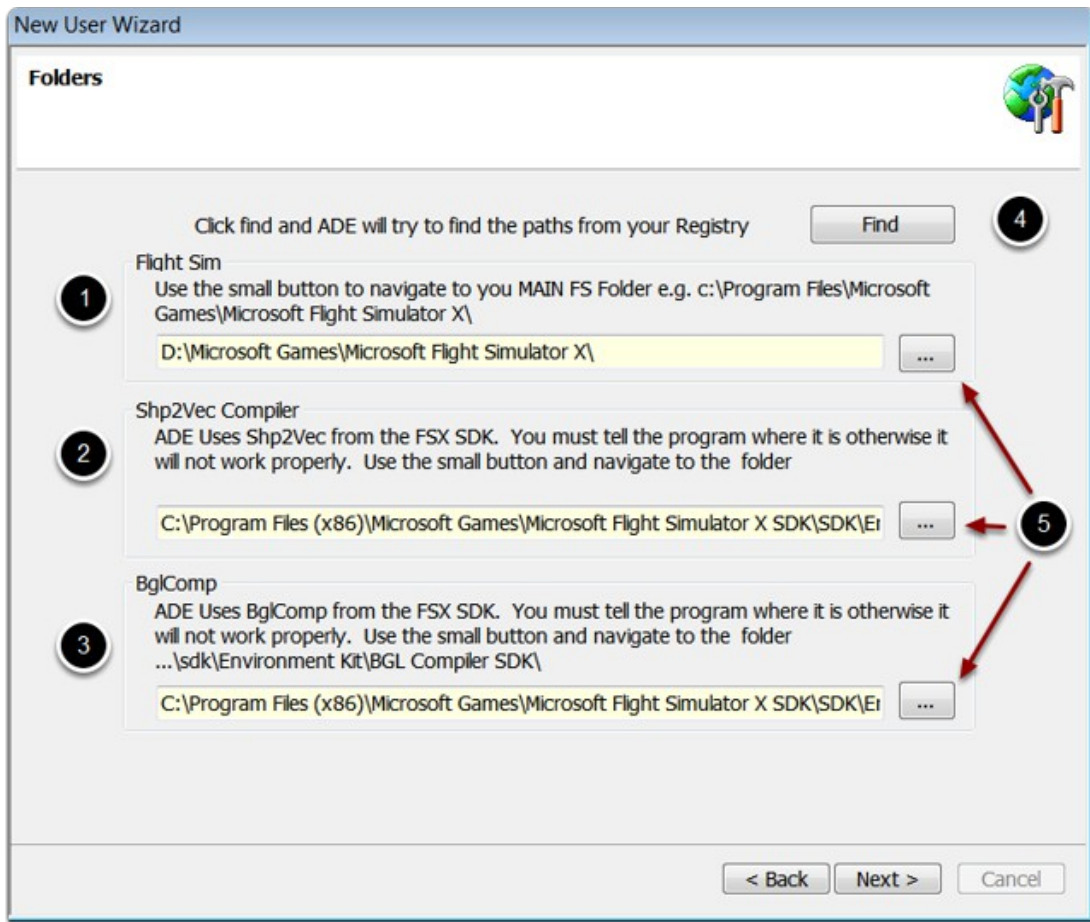


Figure 13-55: Setting the Sim- and Compiler-Paths

Settings folders correctly is probably **THE MOST IMPORTANT** thing you need to do.

Failure to set these will cause all sorts of problems and ADE will start to warn you if the paths to the simulator and compilers cannot be found. ADE will not work if these paths are not correctly set

1. This is the path to the flight simulator version that you are running ADE for
2. Shp2Vec is the compiler used for FSX and P3D to compile terrain. This box is not shown for FS9. ADE has limited terrain capabilities for FS9 and the compiler needed is shipped with ADE
3. BglComp is the compiler used for FSX and P3D to compile airport and scenery objects. This box is not shown for FS9. The BglComp for FS9 is shipped with ADE
4. To set the paths click the Find button. ADE will search through the registry and try to find the entries for the required paths. If it finds them then it will automatically enter the correct paths in the boxes.
5. If the text entered into one or more of these boxes by the Find button shows the path to ADE then something has gone wrong and a registry entry has not been found. The best solution in this case is to fix the registry issues. As an alternative you can click these small buttons to set the relevant paths yourself.

13.8.4 Units

New User Wizard

Units
These are setting for the units that ADE will work in.

Distances things like Navaid Ranges. You would normally use Nautical Miles for these 1

Dimensions are used for things like length, and width. Parking Radius units can be set separately below 2

Parking Radius is usually measured in Meters but you can change it to Feet if you wish 3

Altitude 4

ADE can handle coordinates in two formats. Decimal and Degrees, Decimal Minutes (DDM). 5

Decimal is 30.7654 or -123.7876. DDM is N30 35.888 or W123 17.6567

< Back Next > Cancel

Figure 13-56: Setting of Units

1. Distances: These are for long distances and it is recommended to leave this as Nautical Miles (NM)
2. Dimensions: Choose between feet or meters. Dimensions are used for shorter distances around the airport like runway length
3. Parking Radius: These are usually set to meters but you can use feet if you wish
4. Altitude: Set feet or meters
5. Coordinates: You can use either decimal or degrees and decimal minutes.

NOTE about coordinates. ADE stores all coordinates internally as decimal. It will display them as either decimal or degrees and decimal minutes based on your choice above. However when you are entering coordinates ADE will accept most recognized formats. It should warn you if you enter something it does not recognize. So generally you don't need to convert coordinates to decimal or degrees and decimal minutes before entering them.

13.8.5 Project Settings

The page covers some basic information about how you want ADE to work with your airport projects. If you are not sure what to do then you can leave these settings as provided by ADE and it will work fine.

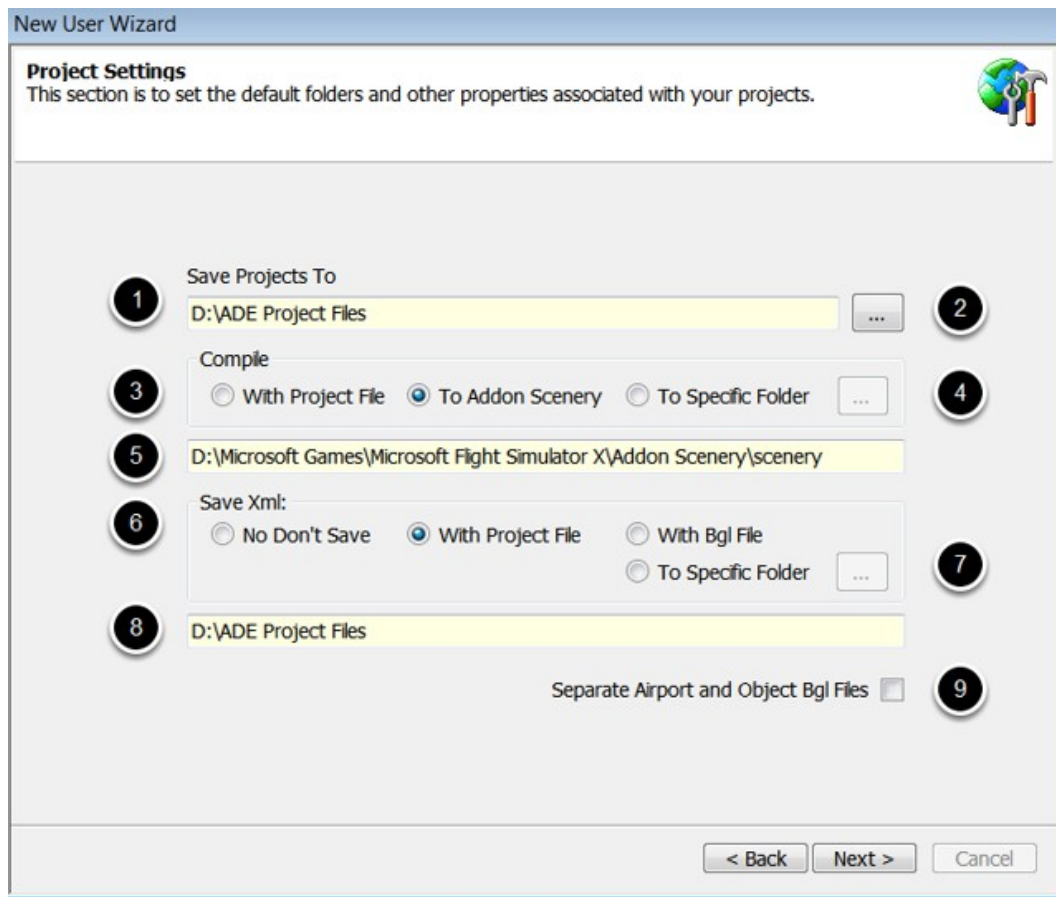


Figure 13-57: Settings of Project Paths

You can always change these at a later date either by running the new user wizard again or via the main options dialog. These settings apply to all projects that you create. However it is possible to set them differently for a specific project.

- (1) ADE saves your work in special project files. This section lets you set where you want to save them.
- (2) Click this button to set the folder
- (3) This area is used to set where the bgl file(s) that are created when you compile are saved. Note that if you choose an option other than Addon Scenery then you may need to copy your compiled bgl files into an active scenery folder in the sim.
 - . With the project file. This will save the compiled bgl files in the folder that you have assigned to save your project files
 - . To Addon Scenery. This is probably the simplest location to make sure that your airport changes and updates are recognized by the sim. If you are not sure what to choose then this is probably the best one
 - . To a specific folder. You tell ADE specifically where you want to save the compiled files
- (4) If you choose to save them to a specific folder then this button becomes active and you can use it to find the folder you want to save your bgl file to
- (5) This box shows the actual folder where your bgl files will be saved

(6) ADE creates XML source code that is used to compile your work. This area is used to tell ADE whether you would like to save this and if so where. It is not usually necessary to save the XML source unless you have problems with the compiler.

- . Don't save. Don't save the XML - unless you have problems with your compiling or you are asked for it then this is probably the best option
- . With the project file. Save the xml source in the same folder as the project file. This is quite a useful place to have it
- . With the bgl file. Save the XML source with the Bgl file. This puts the XML file in the same folder as the bgl file. If you are compiling to the sim then this may clutter up the sim folders with files that the sim will not understand
- . To a specific folder. Save your XML source to a specific folder. So all XML source will go into one folder and be kept together.

(7) if you choose to save the xml to a specific folder then this button becomes active and you can use it to find the folder you want to save the xml to.

(8) This box shows the actual folder where your xml source file will be saved

(9) This gives you the option to compile the airport and scenery together, Sometimes it is useful to be able to compile the airport and the scenery objects to different files. If you want to do this then check this box. Generally it is fine to leave it unchecked.

14.0 Additional Tools in ADE

Most of ADE's tools can be found in the Menus and on the toolbar. However some are not easily accessible and some need special explanations. They are covered in the subsequent sections.

14.1 Pointer Mode



Figure 14-1: Pointer Icon

The Pointer mode is the basic mode. You need to be in Pointer mode to select or drag objects. The Pointer Mode is selected by clicking on the first icon on the Toolbar. You can always see what mode you are in if you look at the status bar (at the bottom of the display). The second item from the left is the current mode.

14.2 Undo and Redo



Figure 14-2: Undo and Redo Icon

The Undo/Redo buttons on the Toolbar allow you to undo or redo your last actions. You can also use the Edit Menu or the key combinations "**Ctrl + Z**" and "**Ctrl + Y**" to undo or redo.

14.3 Selection of Objects

Selecting an airport element for editing can be done in two ways: single selection or group selection.

14.3.1 Single Selection

For single selection, you select the element by left clicking it when the tool tip is visible.

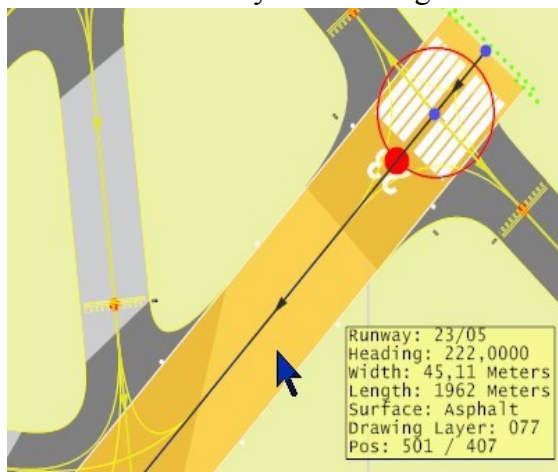


Figure 14-3: Selected Runway

By default, the selected element (in this case the runway) will turn orange and slightly transparent.

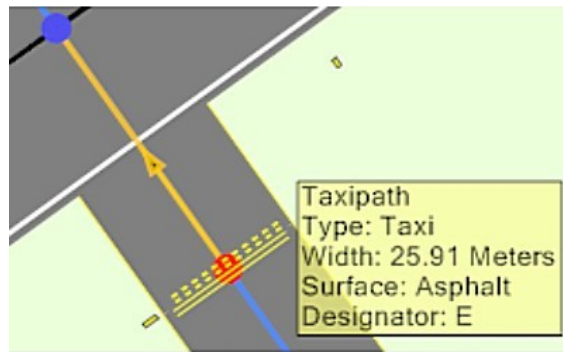


Figure 14-4: Selected Link

Note that to select a taxi link you need to be on the line and not on the surface. Remember, ADE will always select the object that is currently showing in the tool tip.

14.3.2 Multiple Selection by Clicking

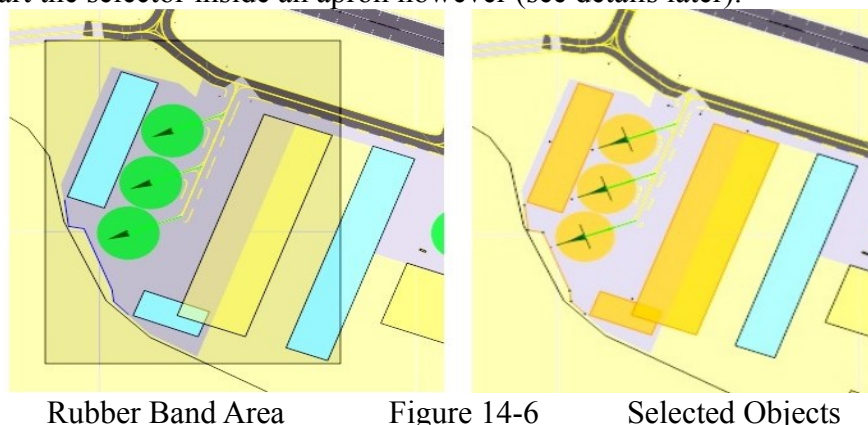
Click on the first element in the group, and while holding down the "**Shift**"-key, select other elements you want to include in the group. Once you select all the elements you want to change, keep the "**Shift**"-key pressed, now you can move or delete all selected elements.



Figure 14-5: Group of Parking Spots Selected

14.3.3 Multiple Selection by Rubber Band

To use the rubber band left click in an open area of the display – that is do not start by clicking on an object – hold down the "**R**"-key and move the cursor with the left key pressed down in such a way that the resulting rectangle encompasses the objects, which shall be selected. It is possible to start the selector inside an apron however (see details later).



Rubber Band Area

Figure 14-6

Selected Objects

When you release the mouse those objects inside the rectangle will be selected.

Note - that to select an object comprised of vertex points such as an apron or edge lights you need to include all the vertex inside the rectangle. Once selected you may move or delete the group.

Note - that in the current version ADE will not select objects that are locked or that are stock objects that cannot be moved.

14.3.4 Multiple Selection via Lists

Nearly all lists allow multi-selection, whenever the button "**Multi Edit Allowed**" is available. This button is marked with (5) in **Figure 12-27: The List Display** in chapter 12.5.1

14.4 Moving Objects

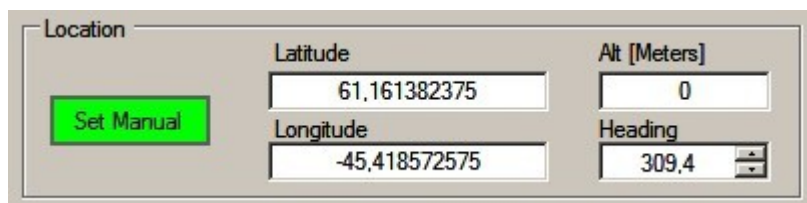
Any airport element (except those that are locked) can be moved. To move an airport element, there are several possibilities.

14.4.1 Manually Change Coordinates

First select the element, then double-click it. This opens the Property window of the object. In its lower section there is a block called "Location"

Toggle the left button to "Set Manual".

Now you can manually set the Latitude and Longitude to the desired value



The screenshot shows a 'Location' property window with a green 'Set Manual' button. To the right of the button are four input fields: 'Latitude' with the value '61,161382375', 'Longitude' with the value '-45,418572575', 'Alt [Meters]' with the value '0', and 'Heading' with the value '309.4' and a small up/down arrow icon.

Figure 14-7: Manual Input of Coordinates

14.4.2 Move By Dragging

- o **Move a Single Element** - First select the element, then double-click it. In the Property window toggle the left button to "Set by Drag". After clicking the "OK"-button you can drag the selected element with the mouse.



Figure 14-8: Selected taxiway point

Dragged taxiway point

- o **Move a Group of Elements** - After having selected several elements either by multiple selection or by rubberband selection (see [chapter 14.3.2 Multiple Selection by Clicking](#) and [chapter 14.3.3 Multiple Selection by Rubber Band](#)), you can move all selected elements as a block by holding down the "**Shift**"-key during dragging. **Note** that all elements must be toggled to "Set By Drag". **Note** also that dragging a large selection of objects is slow. It would almost certainly be very difficult to drag a whole airport. If you wish to move airports with control and precision then you may wish to consider the Move Airport function provided with ProKey.
- o **Accidental Drag Delay** - the incidence of an accidental drag when selecting an object can be reduced by choosing the number of pixels by which the selected object can be moved before the drag becomes effective. A value of zero avoids any delay. This option is enabled in the "Settings"-Menu under "Options" and the "General"-tab (see [figure 12-49: General Settings](#) in [chapter 12.8.1.1 General](#)).

14.4.3 Move to Aircraft

An alternate option for moving an object exists, when ADE and FS are connected. When an object is selected it can be moved to the position of the aircraft symbol by clicking the option "Move to Aircraft" in the Rightclick-menu.

14.4.4 Nudging (Requires ProKey)

This is a function that allows the positioning of airport and scenery elements using the "**Alt+Arrow**" Keys.

It is designed for small adjustments where dragging alone does not provide sufficient accuracy. Nudging can be applied to any single or group of objects. However be aware that locked objects will not be moved.

The "Nudging Distance" can be set at any value between 0.01m (4in) and 10m(33ft). The setting is only in meters.

The value may be changed up and down via the key combinations "Shift + N" and the "N"-key.. The current value is shown in the status bar:

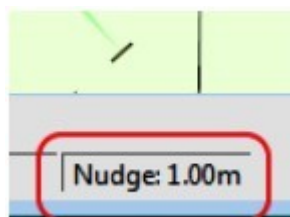


Figure 14-9: Nudge Setting

The nudging moves in relation to the ADE window. Thus the "**Up - arrow**" - key will always nudge up the window irrespective of whether the display is rotated or not.

Below in the first screenshot the display is not rotated and the up arrow will nudge the selected object in the direction shown by the arrow.

In the second screenshot the display is rotated by 60°. The direction of nudge remains the same as shown by the arrow.

It should therefore be possible to position any object or group of objects accurately no matter what their orientation.

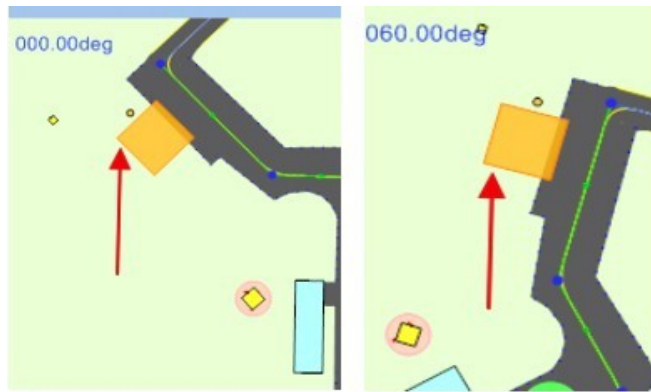


Figure 14-10: Direction of Nudging

Nudging can be undone. To avoid many undo steps the changes are accumulated while the "Alt" key is down. So five presses of the "Up arrow"-key with the "Alt"-key down will be treated as a single move and undo/redo will undo or redo the five moves as a single event.

14.5 Deleting Objects

To delete an airport element, select it with the mouse and press the "Del" key. You can also delete an element by selecting Delete Object from the Rightclick Menu.

If you delete something by accident, you can use the Undo button on the tool bar or press Ctrl+Z to undo it. Any object can be deleted except the Airport Reference Point and stock nav aids. You cannot delete an element group.

14.6 Object Properties

Figure 14-11: Properties Window of an Airport Element

Each object shown on the ADE display has its own set of properties. In some cases these are only for display, but in most cases you can change the details in the property dialog. ADE uses a common property dialog box that changes depending on the element selected.

To view an element's properties dialog box, either double click on the element, or select the element and choose "Edit Object" from the right-click Rightclick Menu.

There are three main sections on the properties dialog.

- * At the top is a small area that contains a check box indicating whether the element is locked.
- * The center section details the properties that are specific to the element being edited. For complex elements like the runway shown here, there may be multiple tabs to handle different information.
- * The bottom section contains "Common" properties. The parameters are the same in nearly all objects properties window.



Figure 14-12: Common Properties

- o **Flags** - an activated box switches off the indicated parameters
- o **Latitude/Longitude** - are the coordinates of the airport's location.
- o **Alt(itude)** - can be edited in a few cases only
- o **Heading** - direction in which the object is oriented
There are two options for changing the "Location" parameters:
 - "Set Manual" (button = green) permits direct entry of values by typing
 - "Set By Drag" (see Figure 14-11 above) all is greyed out. The location of the object can be changed only by "dragging" it in the main ADE display.
- o **Comments** - any comment about the object is possible. It will be displayed in the ADE window, but it is not part of the airport data.
- o **Force Skip Compile** - when the box is activated, the object will not be compiled (see [chapter 12.1.14.5 Skip Compile](#) for more details)

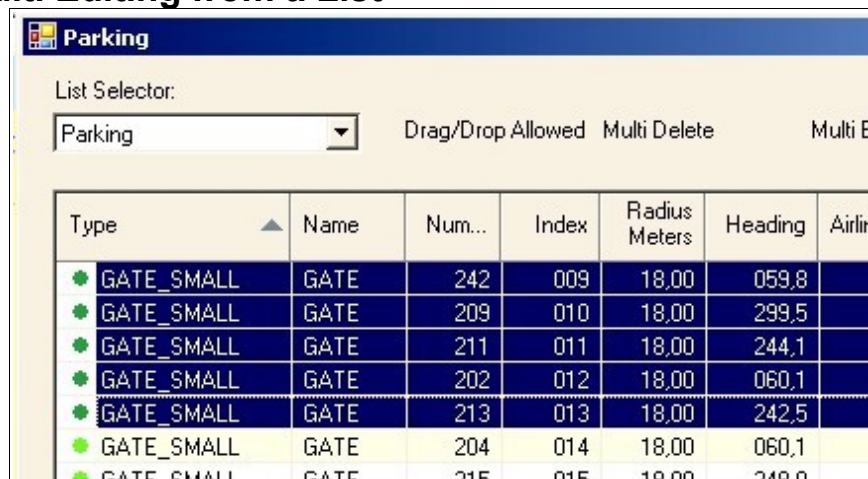
If the airport element can have a heading, you will see the heading box and be able to modify it. In most cases you cannot change an element's altitude. This is because the FS expects elements to be at the same altitude as the ARP. If altitude has no meaning for the element (e.g. taxiway points), you will not see this box at all.

In most cases, ADE will not allow or accept values for properties that would cause either the compiler to fail or FS9/FSX to crash.

14.7 Group Editing

Editing multiple objects is possible by selecting any group of objects of the same or different types and then edit the properties that they have in common. If all the objects belong to the same group then you can edit most properties. If they are all different then only one or two can be edited. For some object types such as runways, comms or taxi designators it does not make much sense to edit all the properties in a group so these will be limited in any case.

14.7.1 Multi Editing from a List



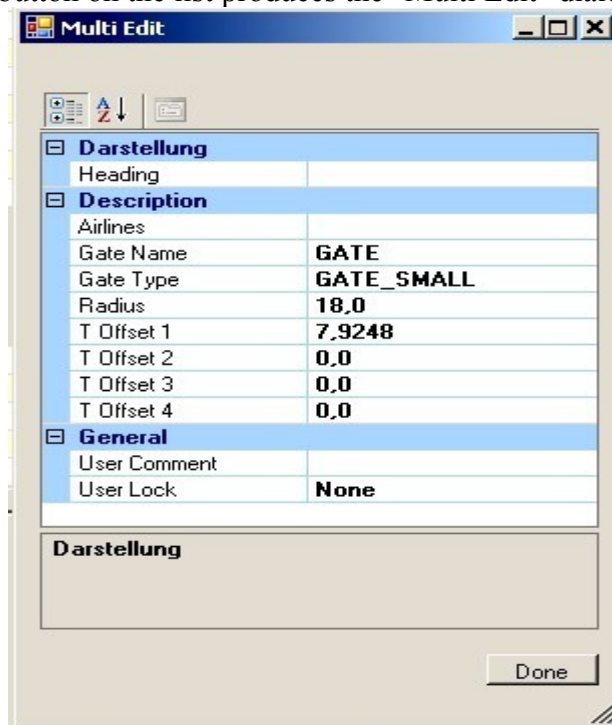
The screenshot shows a window titled "Parking". At the top, there is a "List Selector:" dropdown menu set to "Parking". To its right are three checkboxes: "Drag/Drop Allowed", "Multi Delete", and "Multi E". Below this is a table with the following columns: Type, Name, Num..., Index, Radius Meters, Heading, and Airlin. The table contains six rows of data, all of which are highlighted in blue, indicating they are selected. The data is as follows:

Type	Name	Num...	Index	Radius Meters	Heading	Airlin
GATE_SMALL	GATE	242	009	18,00	059,8	
GATE_SMALL	GATE	209	010	18,00	299,5	
GATE_SMALL	GATE	211	011	18,00	244,1	
GATE_SMALL	GATE	202	012	18,00	060,1	
GATE_SMALL	GATE	213	013	18,00	242,5	
GATE_SMALL	GATE	204	014	18,00	060,1	
GATE_SMALL	GATE	215	015	18,00	249,0	

Figure 14-13: Selecting a Group of Objects for Multi-Editing

In the "Parking"-list (List-menu) five very similar Parking Spots were selected having things in common, for instance the type, the name and radius.

Clicking on the "Edit" button on the list produces the "Multi Edit" dialog window



The screenshot shows a "Multi Edit" dialog window. It has a title bar with standard window controls. Below the title bar is a toolbar with icons for undo, redo, and a list. The main area is divided into three sections: "Darstellung", "Description", and "General".

- Darstellung**: Contains a "Heading" field.
- Description**: Contains fields for "Airlines", "Gate Name" (value: GATE), "Gate Type" (value: GATE_SMALL), "Radius" (value: 18,0), "T Offset 1" (value: 7,9248), "T Offset 2" (value: 0,0), "T Offset 3" (value: 0,0), and "T Offset 4" (value: 0,0).
- General**: Contains fields for "User Comment" and "User Lock" (value: None).

At the bottom of the dialog is a "Done" button.

Figure 14-14: Multi Edit Parameters

All the common properties are shown in this window.

Where the value is empty it generally means that the value is not the same for all objects

Change the values as you wish and when you are finished click "Done" The changes will be effected in all elements..

14.7.2 Multi Editing from the Main Display

In this case some parking spots and some generic buildings were selected in the ADE window by Leftclick and pressed "Shift"-Key

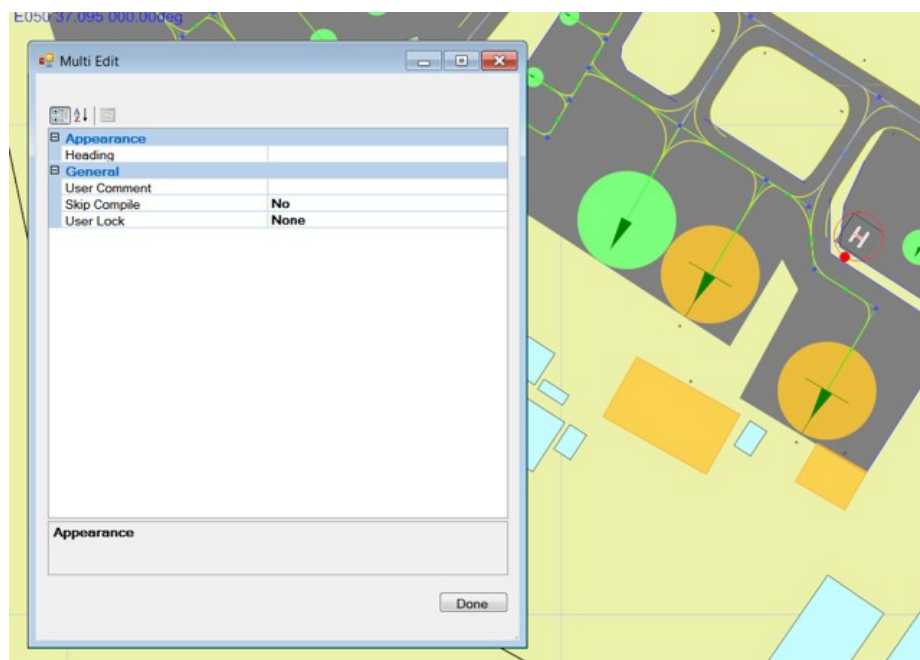


Figure 14-15: Multi-editing in Main Display

The properties available to edit are now much reduced. However we could set the heading for all objects to be the same or change the lock status or whether the objects are compiled or not (SkipCompile) Note that access to SkipCompile is a ProKey function.

14.8 Lock/Unlock Objects

All objects in the ADE display have a Lock Status. Some types of object can be edited by the user and others are not editable. Stock elements can be edited, but not deleted.

The user can lock airport elements to keep them from being moved or deleted, either intentionally or accidentally

Locking can be done with single objects or whole groups of objects.

14.8.1 Lock/Unlock Single Objects

To lock individual elements, select "Lock Object" from the Rightclick Menu. You can also lock an object by checking the checkbox "User Locked" in the property dialog window (see figure 14-16).

As a consequence the properties window of the locked object cannot be opened any more, neither by double click nor by "Edit"-command.

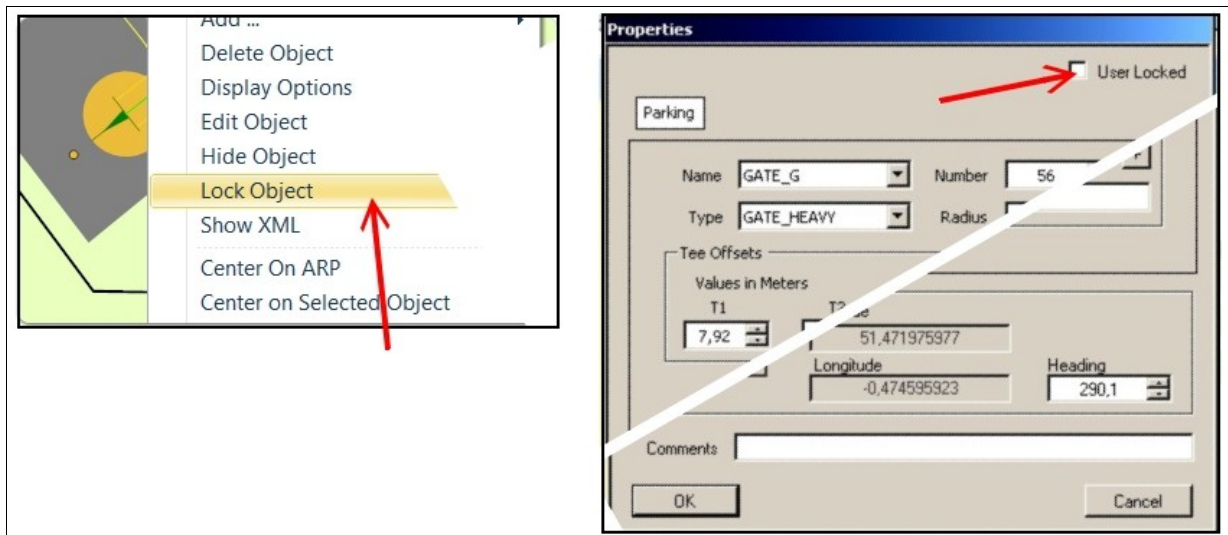


Figure 14-16: Locking Single Object

Locking will change the object's tool tip color to indicate a user lock is active, the color of the locked object when being selected will be red and the "Lock Object" option will have a check mark.

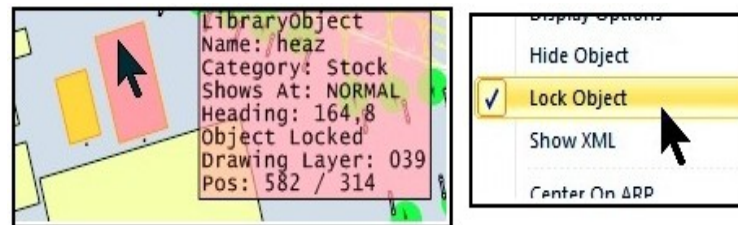


Figure 14-17: Tooltip of Locked Object

The Lock-status is also displayed in the List Menu. This can be used to find locked objects among the listed elements

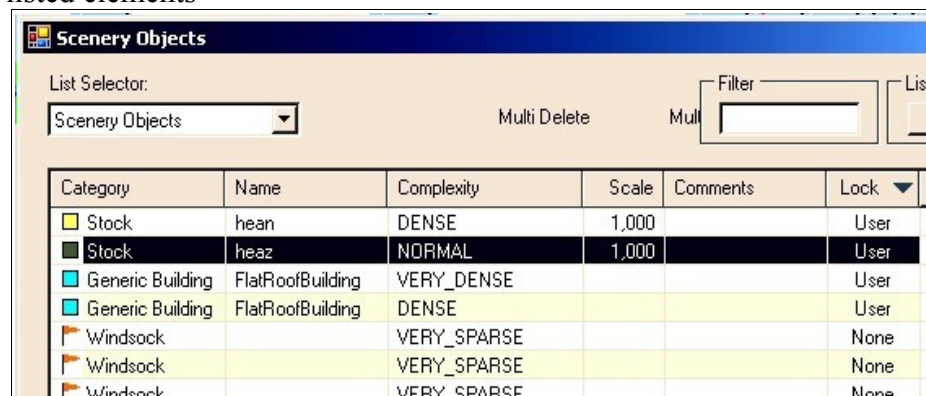


Figure 14-18: Locked Objects in List

Unlocking is only possible by un-checking the "Lock Object" - option in the Rightclick menu

14.8.2 Lock/Unlock Groups of Objects

ADE permits to lock or unlock a whole group of objects. This is possible only for Aprons, Background Images, Runways, Taxiways and Terrain Polygons.

This functions are provided in the **"Lock"**- and **"Unlock"**-Menus.

Unlocking can be done for the whole group in the Un-Lock menu or individually as described above single objects.

14.8.3 Editing Locked Objects

Locking principally prevents the moving and editing of objects.

However for cases, where the user wants to prevent moving/dragging but needs to open the properties window for editing or displaying properties.

This option is offered in the "Settings"-Menu. On the "General" Tab is a checkbox called "Locking Disables Editing".

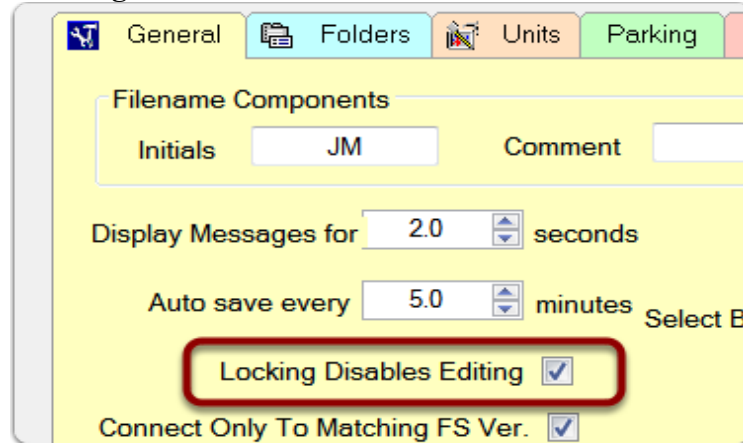


Figure 14-19: Editing Locked Objects

If this is checked then you will not be able to edit locked objects. This applies to all locked objects. It does not allow editing on an object by object basis. If it is unchecked all locked objects can be edited.

14.9 Guidelines and Position Markers

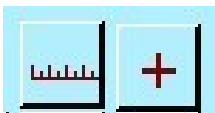


Figure 14-20: Toolbar Icon for Guides and Markers

14.9.1 Guidelines

Guidelines are ruler lines that can be drawn anywhere on the ADE airport schematic. This can be useful, for example, when trying to place several objects in a straight line. Guidelines are proper ADE objects and as such can be added, deleted, moved, rotated and edited. Undo/Redo works with them as well. Guidelines are kept in the .ad4-file and will be saved between sessions; however, they are not compiled into the .BGL file.



Figure 14-21: Tooltip of Guideline

The tool tip for a guideline will tell you the length and heading of the line. The base end (where the guideline reference point or origin is located) has a simple cross line while the far end or terminal point has an arrow. Heading is from the origin. A selected guide will have a rotate handle, and you can rotate the terminal point around the origin

14.9.1.1 Creating Guidelines

A guideline can connect markers that have already been drawn or you can run a guideline between any two points and markers will be created at those points if they don't already exist. A guideline will snap to an existing marker if you start or end the line close to a marker.

Select the Guideline Tool from the ADE Toolbar. The mouse pointer will change to the guideline drawing symbol (a red cross).

Put the cross on the location where you want to start the line, press the mouse button, and leave it down while you drag the line out to where you want it to end, and then release the mouse button.

As you drag the guideline, you will be able to see its current length, true heading, and magnetic heading at top left of the display.

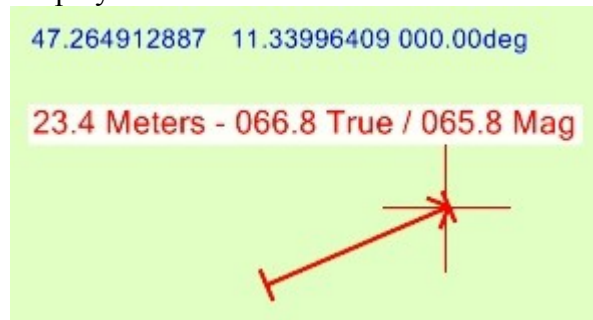


Figure 14-22: Dimensions of a Guideline

On completion, a guideline object will appear on the airport schematic.

The default guideline color is red but you can change the color by either double clicking on the guideline or selecting Edit Object from the Rightclick Menu which will open the Properties window of the guideline.

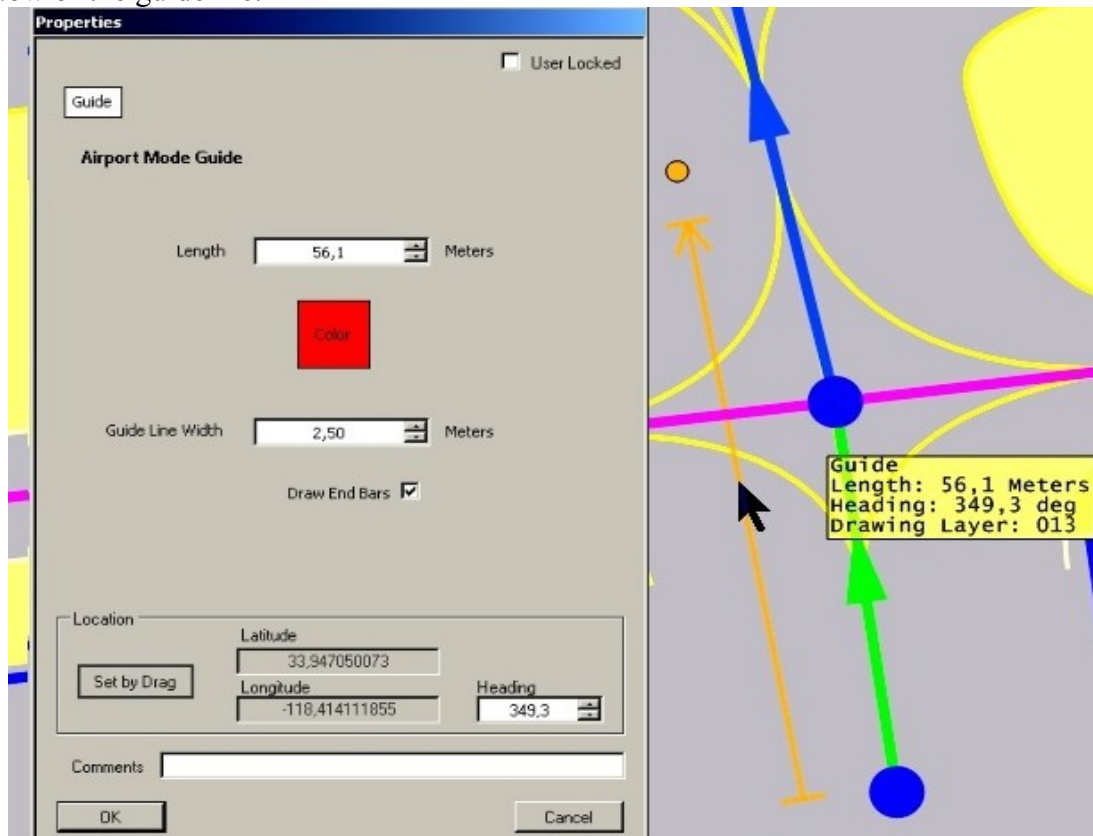


Figure 14-23: Guideline Property Dialog Box

To change the guide color, click the Color button. You can also adjust the length and the width of the guideline. You can decide whether the guide line should be drawn with an end bar or not. Any comments added to the guideline properties will appear in the tool tip.

14.9.1.2 Moving Guidelines

Like most objects, you can move a guideline by 'grabbing' it with the mouse and dragging it. You must be in Pointer mode to do this – select the Pointer from the Toolbar. They can also be rotated using the rotate handle.

14.9.1.3 Deleting Guidelines

You can delete a guideline by selecting it and pressing the "Del" key or selecting Delete Object from the Rightclick Menu. You can Hide or Show guidelines from the View Menu.

14.9.2 Position Markers

These are just simple marks that you can place anywhere on the airport. You can use position markers to mark a location for information, etc. If you add a comment in the property dialog for a position marker, this will be displayed in the tool tip and help you remember what the marker represents.

To create a position marker, just click the position marker button next to the guideline button. While it is active, left click where you want the marker placed.

You can move and delete position markers in the same way as guidelines. Like guidelines, ADE keeps position markers in the .ad4-file and saves your markers between sessions.

14.10 Helper Shapes

Helper shapes are geometric shapes (e.g. circle, ellipse, rectangle, square, triangle, polygon and arc) in ADE that help designers place and design airport elements, namely aprons, taxiways, ground polygons and ground lines. This is described in the related chapters of the elements. These helper shapes are regular objects in ADE and are saved in the project file. When used, they are drawn on the top of everything and can be re-sized, rotated, and moved. Helper shapes are also hollow so you can select what is under them.

To create a helper shape, select "Add Helper Shape" from the Rightclick Menu, and the helper shape dialog box will open.

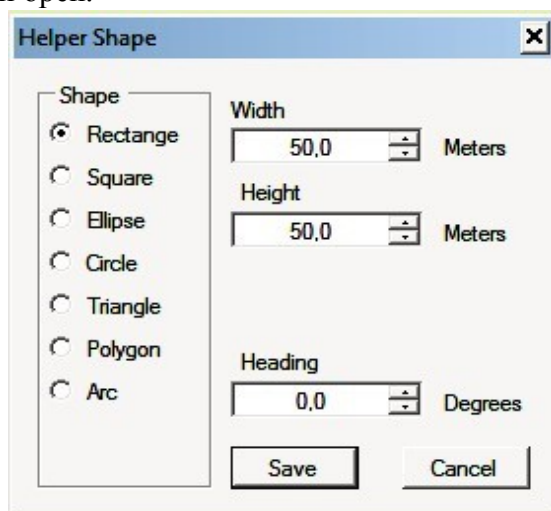


Figure 14-24: Helper Shape Creator

Select the shape you want and give them the required size by entering width and height.

- **Circles** are constrained Ellipses.
- **Squares** are constrained Rectangles.
- **Triangles** are based on a Rectangle where the base is the bottom of the rectangle and the point is in the center of the top of the rectangle.
- **Polygons** are based on a circle and can have between three and 32 sides. Thus it is possible to create an isosceles triangle or square using a polygon.
Polygons are constrained so they will resize equally in both dimensions (as per a circle).
- **Arcs** are defined by Diameter and Degrees of Arc and are restrained as a circle.

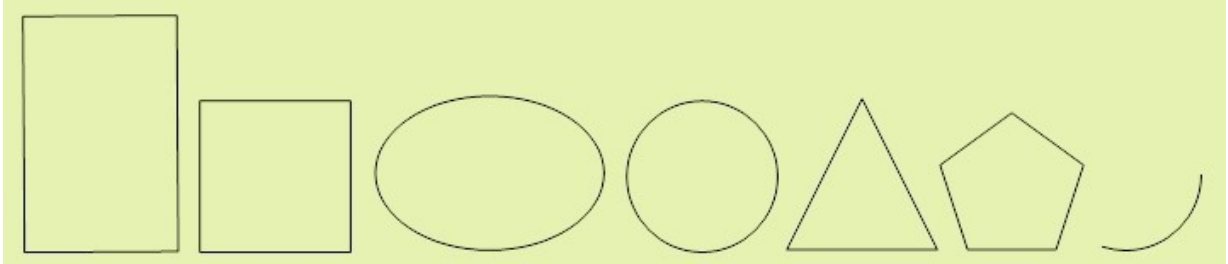


Figure 14-25: Helper Shapes

The dimension setting options will change depending on the shape type selected. With the Helper Shape selected, you can perform the following actions:

- **Increase width:** Ctrl + Right Arrow. For constrained shapes this changes both dimensions
- **Increase height:** Ctrl + Up Arrow. For constrained shapes this changes both dimensions
- **Decrease width:** Ctrl + Left Arrow. For constrained shapes this changes both dimensions
- **Decrease height:** Ctrl + Down Arrow. For constrained shapes this changes both dimensions
- **Move right:** Alt + Right Arrow.
- **Move left:** Alt + Left Arrow
- **Move up:** Alt + Left Arrow
- **Move down:** Alt + Left Arrow
- **Rotate:** Alt + Mouse Wheel or Ctrl + Alt + Mouse Wheel or select it and drag the handle
- **Make bigger:** Ctrl + Numeric Pad Plus
- **Make Smaller:** Ctrl + Numeric Pad Minus
- **Change Arc Diameter:** Shift + Alt + Mouse Wheel

There is an option in the Edit Menu to "**Delete All Helpers**". This will remove any helper shapes from the project.

Helper shapes can now be re-sized via handles (requires ProKey).

There is no need to enter manually the required dimensions. Simply select a helper shape and it will show the following design:

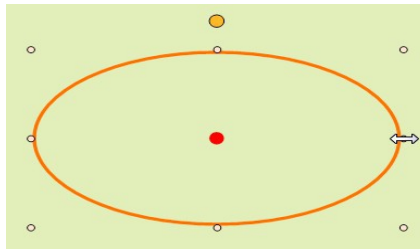


Figure 14-26: Ellipse with Handles

Squares, Circles, Polygons and Arcs do not have corner handles and dragging a side handle results in the shape re-sizing while retaining its aspect ratio.

Once you have created a helper shape, you can use it to design related forms of Aprons, Ground Polygons and Ground Lines via the right-click Rightclick menu

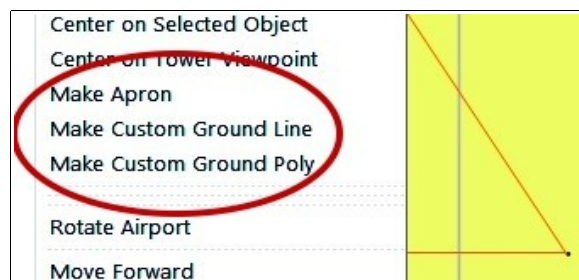


Figure 14-27: Helper Shape Options in Rightclick Menu

For all 3 objects above the same method is valid:

- * put the cursor on the location, where you want to place the object and right-click.
- * select “Add Helper Shape” from the rightclick Menu
- * select and configure the helper shape
- * right-click the helper shape and select “Make.....” in the rightclick menu

At first the new object, having the same dimensions as the helper shape, is not visible except by it's texture.

You can drag the helper shape away to repeat the process or you can delete it.

Helper Shapes are explained in detail in [chapter 14.10 Helper Shapes](#) and in the corresponding object chapters.

14.11 Bookmarks

A bookmark can be set anywhere on the ADE-display, shown as a small crimson circle. It is best visible with a zoom of 2.00.

- o **The B key** - sets the bookmark at the mouse position.
- o **Shift-B** - centers the display on the bookmark
- o **Ctrl-B** - removes the bookmark

Included with the bookmark is a distance and bearing display as shown below. The status bar shows in the right corner the mouse position distance (in m or feet depending on the User Dimension Unit setting) and heading of the mouse position from the bookmark.

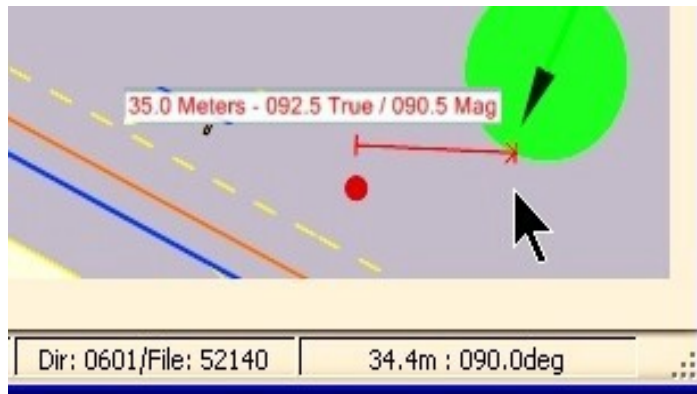


Figure 14-28: Bookmark with Dimensions

For comparison in this figure a guideline is inserted with app. the same length and bearing. No bookmark is possible until you load an airport. When you have an airport with a bookmark and load a new airport the existing bookmark is cancelled. Note that you can have only one bookmark, it is independent of position markers and is not persisted between ADE sessions.

14.12 Exclusion Rectangles

Exclusions allow you to hide or mask certain airport objects and scenery in your airport project. There are two general exclusions used in airport design: object exclusions and terrain exclusions.

- o **Terrain exclusions** tell FSX not to display certain types such as roads, bridges, land class, and hydro polygons. Terrain exclusions are created by using Terrain Polygons (see [Section 9.2 Terrain Polygons](#) for more information). **(for ADEX/FSX only)**
- o **Object exclusions** tell FS9 or FSX/P3D not to display certain elements in your airport project. They are often used to remove stock buildings or other objects when redesigning the airport. Object exclusions are created by using Exclusion Rectangles

Although Airport Design Editor allows you to create your own exclusions, in most cases you should not need to do so. This is because ADE automatically generates the exclusions necessary to hide all the stock elements at an airport. Consequently, when you compile an airport project in ADE, FS9 and FSX will display whatever is in ADE rather than what is at the stock airport.

This works well when you begin your ADE airport project from a stock airport, but problems can occur when you use a third party .BGL or .XML file as the origin of your project. In this case, the stock information will not be available, and ADE will not create the exclusions needed.

The best method of proceeding is to load the stock data of the airport by selecting Load Stock Data from the Tools Menu (see chapter [12.6.9 Load Stock Data](#)).

Sometimes you may see double buildings or taxi signs or find that moving a building or sign leaves the original visible in FS. While it is possible that ADE has missed some elements, particularly if you have loaded someone else's .BGL file or a .BGL file created by another utility, this is unlikely. You can use the FS9/FSX Airport Scanner Tool to confirm whether multiple .BGL files are present. This tool is available in the ADE forum at fsdeveloper.com. Please **NOTE** that scenery exclusions do not remove autogen objects.

NOTE that overlapping exclusion rectangles are a no-no. The results are entirely unpredictable. They can cancel each other out, they can interact in such a way that what gets excluded is different than either of the individual exclusions.

14.12.1 Creating an Exclusion Rectangle



Figure 14-29: Exclusion Rectangle Icon in Toolbar

To add an exclusion rectangle, click the exclusion rectangle icon from the main Toolbar. The cursor will change to a small cross. At the same time ADE will re-orientate the airport schematic to North if you have it rotated. Position the cursor at the top left corner of the exclusion area. Hold down the left mouse button and drag out the rectangle going to the bottom right.

The exclusion rectangle should look similar to the one below:

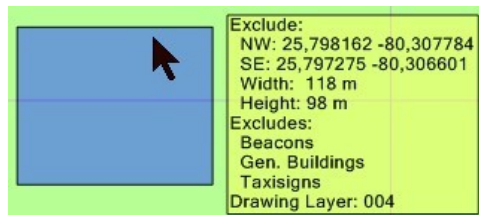


Figure 14-30: Exclusion Rectangle

Notice that the Tool Tip shows the exclusion options selected.

Please **NOTE** that exclusion rectangles are always oriented to the north. Objects are excluded when their “reference point” (i.e. the center of the object rectangle displayed in ADE) is within the exclusion rectangle. You should size your rectangle or use multiple exclusions as necessary to exclude only the objects desired.

When you are done dimensioning the rectangle release the left mouse button, and the property dialog will open.

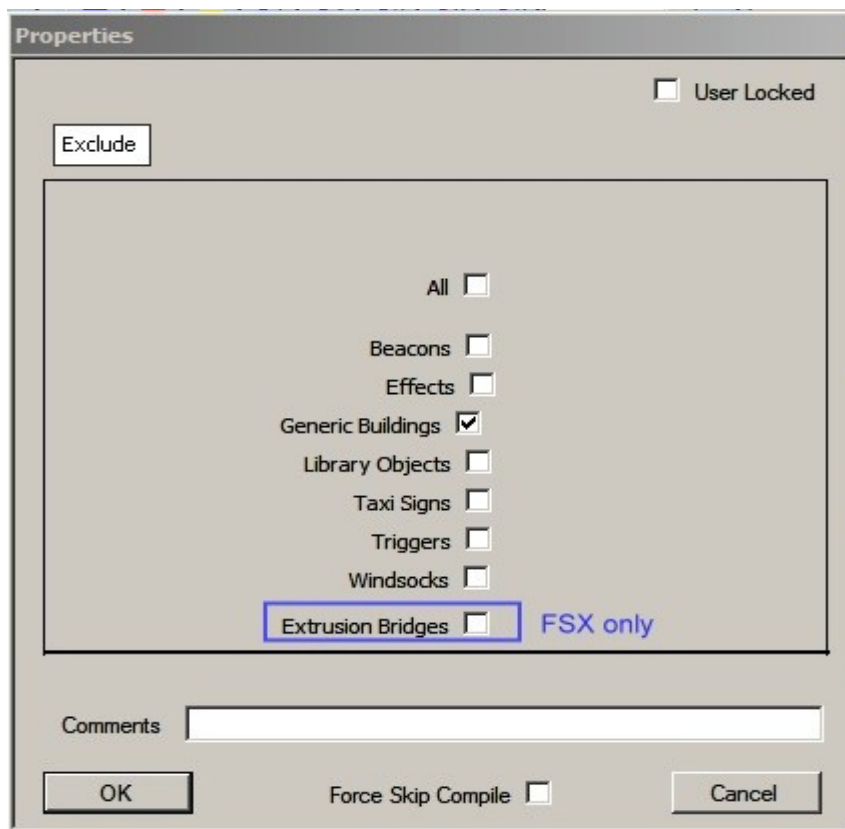


Figure 14-31: Exclusion Rectangle Properties Dialog Box

ADE defaults to the "**Exclude All**" option. Un-check this to select the individual element types you want to exclude.

Please **NOTE** that an All exclude will remove jetways as well as other scenery objects.

To complete your selection, click the **OK** button.

If you click **Cancel** then the exclusion rectangle will not be added. You can also use the Undo / Redo commands with exclusion rectangles.

14.12.2 Editing an Exclusion Rectangle

To edit an existing exclusion rectangle, select the rectangle and either double click, press Enter, or select Edit Object from the Right Click Menu. Make your changes in the Property Dialog and click OK to save and Cancel to discard. These changes can also be undone if needed.

14.12.3 Moving and Resizing Exclusion Rectangles

To move an exclusion rectangle, select the rectangle and drag it to the new location. If you move it by mistake, you can Undo the move.

To resize an exclusion rectangle, select the rectangle, which will show little circles on the edges. Move the pointer over one of them and drag the line to re-size. Resizing an Exclusion Rectangle cannot be undone.

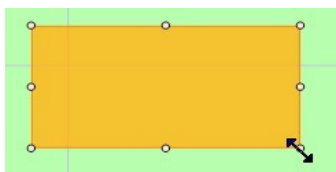


Figure 14-32: Resizing

14.12.4 Deleting an Exclusion Rectangle

Rectangles can be easily deleted by selecting it and either pressing the "**Del**" key or selecting Delete Object from the Rightclick Menu.

14.12.5 Viewing Exclusion Rectangles

To view all user exclusions in your airport project, select Exclusions from the View Menu. Exclusions automatically created by ADE for stock objects are not visible, regardless of view setting.

To see an entire list of user-created exclusions, select Exclusions from the List Menu. Again, ADE will only list exclusion rectangles you created.

14.13 ADE Connected with FlightSimulator

14.13.1 Link Program

Many developers find it helpful to develop or modify their ADE airport projects using the Flight Simulator alongside ADE. **FS9 uses FSUIPC3** and **FSX/P3D use FSUIPC4** to link with FS9 and FSX. ADE will work if it cannot find FSUIPC, but you will not be able to connect to the FS without it (see **chapter 2.1.2 FSUIPC**).

14.13.2 Connecting to FS9/FSX/P3D

ADE allows to make a direct connection between ADE and FS9 or FSX:
The connection can be accomplished either manually or automatically.
The mode depends on the setting of the checkbox "Autoconnect".



Figure 14-33: Manual Connection Mode



Figure 14-34: Automatic Connection Mode

If "Autoconnect" is checked then ADE will automatically connect to a running copy of FS. If it is not checked then ADE will be in manual connection mode and you will need to connect and disconnect yourself.

- The connection buttons change depending on whether you are in automatic or manual connection mode.
- The connection indicator is green if ADE is connected to FS and red if not
- Locking ADE to the sim means that the user aircraft is displayed at the center of the ADE display at all times and the display will move around it. If not locked then the display remain stationery and the user aircraft symbol will move about it
- If you have your Sim running and ADE is not connecting then there may be a problem with the connection. Click the Test button to try a manual connect

Note

For a connection to be successful it is required, that in ADE an airport is opened, be it one from stock or a new or existing project. The manner how this connection will be done, is controlled by an option in the "Settings"-menu (Settings => Options => General => Connect Only To Matching FS Version) - see [chapter 12.8.1.1 General](#).

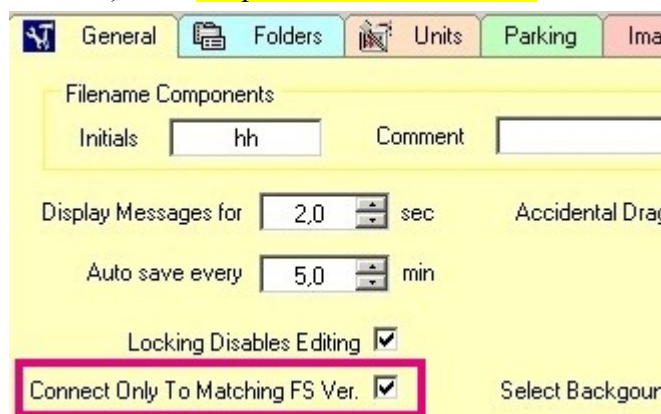


Figure 14-35: Connection Requirement

When the checkbox is ticked ADE checks whether the correct version of FS is running. ADEX will connect only to FSX and ADE9 to FS9.

When the box is not checked, ADE will connect to whatever version of FS is running so ADEX could connect to FS9 and ADE9 to FSX.

For the average user this might not be a great idea since the layout of airports may be different between the versions. For example being connected to FS9 while creating an airport for FSX could result in things being misplaced.

On the other hand if the user is developing a common airport for each version then being able to connect to either might be a good idea.

- To connect to FS9/FSX, start the simulator and select an airport in Free Flight with which you want to work. After FS9/FSX loads the airport, ADE can easily move the aircraft in FS9/FSX to the location you specify in the ADE display. It is usually easiest to work in top down mode in FS9/FSX so the view matches the ADE schematic view.
- Next, enable Slew Mode in FS9/FSX ("Y" Button). Some developers also choose to reduce the simulation rate so that they can have more precise control over the user aircraft movements.
- Once you activate slew mode in FS9/FSX, you will need to initiate the connection between ADE and FS9/FSX. Switch screens to ADE and to connect ADE to FS9/FSX, click the Connect button.
The connection indicator should turn green and the Disconnect and Lock buttons should become active.
- If this does not happen check that FS9/FSX is actually running and that you are located at the right airport.

Once connected, you will see an aircraft symbol on the ADE display at the same location of your user aircraft in FS9/FSX. The aircraft symbol is drawn using a crosshair circle and it will allow you to place airport elements accurately.

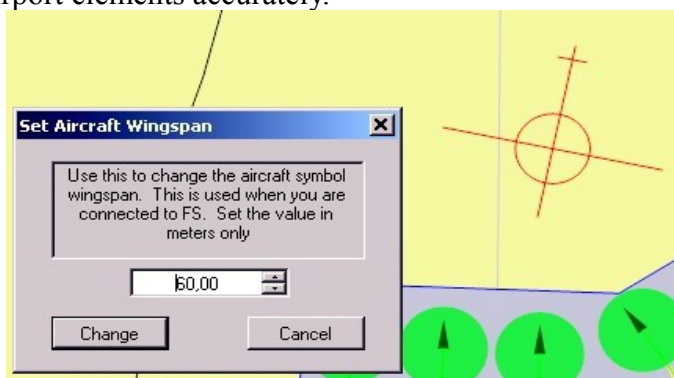


Figure 14-36: Aircraft Crosshair Symbol

The menu-point "Settings" contains an option "Set Aircraft Wingspan". This permits you to choose the size of the symbol. The ring corresponds to the chosen wingspan value.

Now you can slew around FS9/FSX and use the location of the user aircraft to place objects and elements in your ADE airport project.

If you cannot see the aircraft symbol, first position your cursor where you would like to see the aircraft. Next, right click and select Move Aircraft Here.

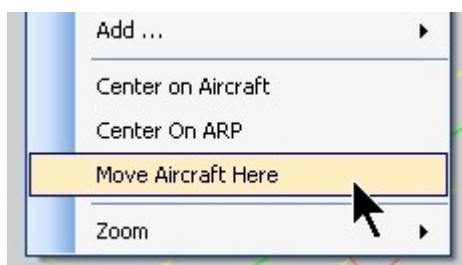


Figure 14-37: from Rightclick Menu

After a moment you should see the aircraft symbol move on the display. At the same time, ADE will move your aircraft in FS9/FSX to correspond to the same location.

Another helpful feature of ADE is, that in the upper left corner of the ADE main window a second line of red numbers is shown.

These are Long./Lat. of the aircraft, aircraft heading (deg), airport altitude and the distance, how far away the aircraft (symbol) is from the airport reference point (ARP) (blue arrow and blue guide line). The unit shown depends on the User Settings in "Settings => Options => Units => Distance"

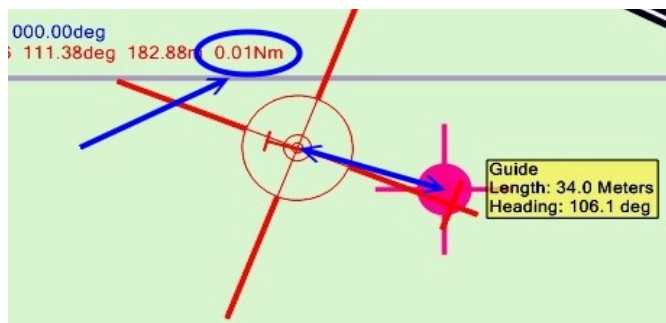


Figure 14-38: Position of Aircraft

14.13.3 Compiling and Installing an ADE Airport

- o **Compiling** - To compile an open Airport project, select either “**Compile Airport**” from the File Menu or “**Compile**” from the Menu Bar

From the ensuing window choose the “scenery”-subfolder, where the compiled BGL-file(s) should be stored. The default folder is in the Flight Simulator “FS(9 or X) => Addon Scenery => scenery”.

But you can choose any other location on your computer, as long as it is a “scenery”-subfolder.

For further details see [chapter 12.1.14 Compile Airport](#).

- o **Installing an ADE Airport** - The final step is to install the compiled .BGL file(s) to FS9/FSX. This done by adding the “scenery”-subfolder, where the compiled airport-(BGL-) file was stored, in the Scenery Library of the Flight Simulator.

- (1) start the Flight Simulator or – if it is already running – close the flight.
- (2) in the ensuing Settings-window click “Settings => Scenery Library”

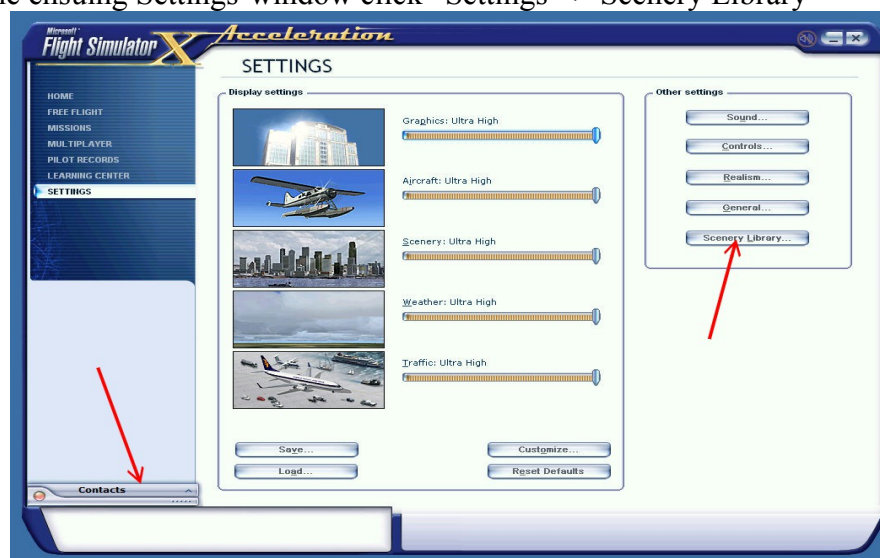


Figure 14-39: FSX Settings

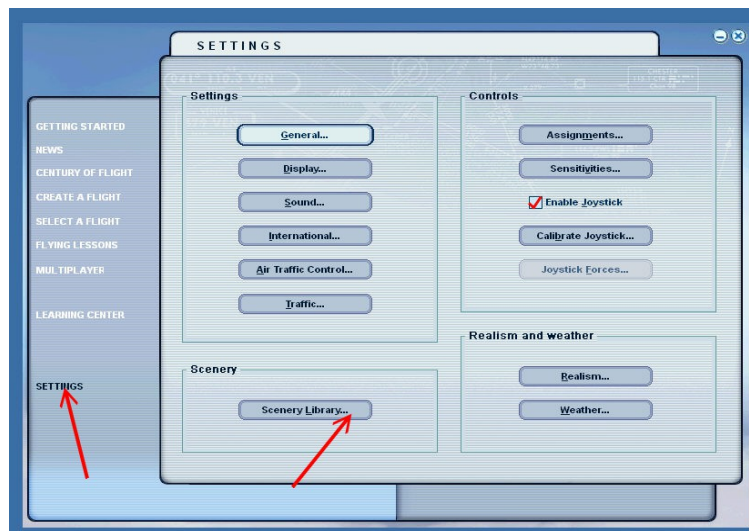


Figure 14-40: FS9 Settings

- (3) In the window “Settings – Scenery Library” click the button “Add Area”

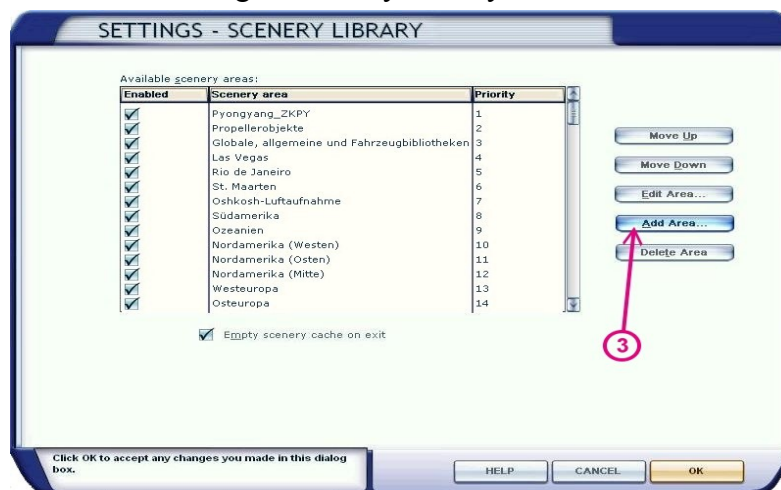


Figure 14-41: Add Area to Scenery Library

- (4) In the ensuing window “Select Scenery Directory” you browse to the directory, where the airport BGL-file was stored by the compilation process.

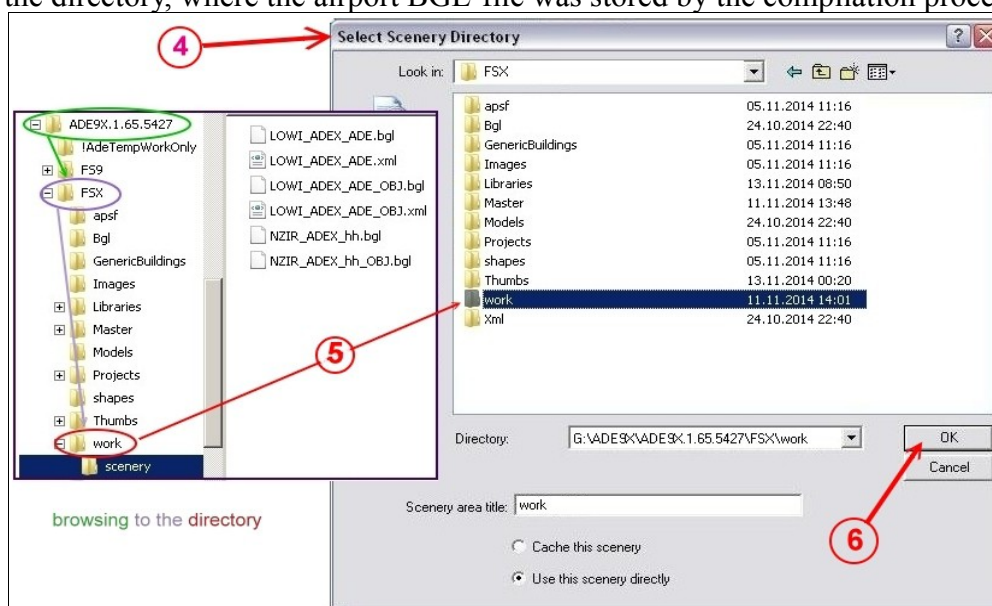


Figure 14-42: Selection of Scenery Directory

- (5) The directory (not the subfolder “scenery”) must be selected
- (6) Click on “OK” shows the subfolder “scenery”

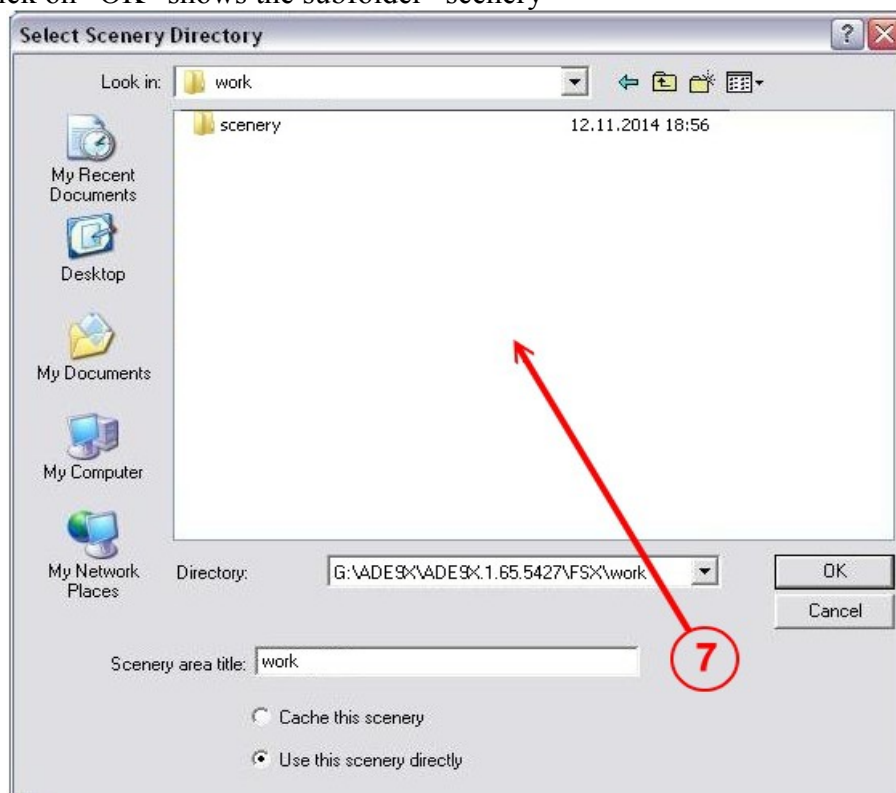


Figure 14-43:

- (7) A click on the empty space of the window will transfer the directory with the airport BGL-files to the “Scenery Library” of the Flight Simulator.

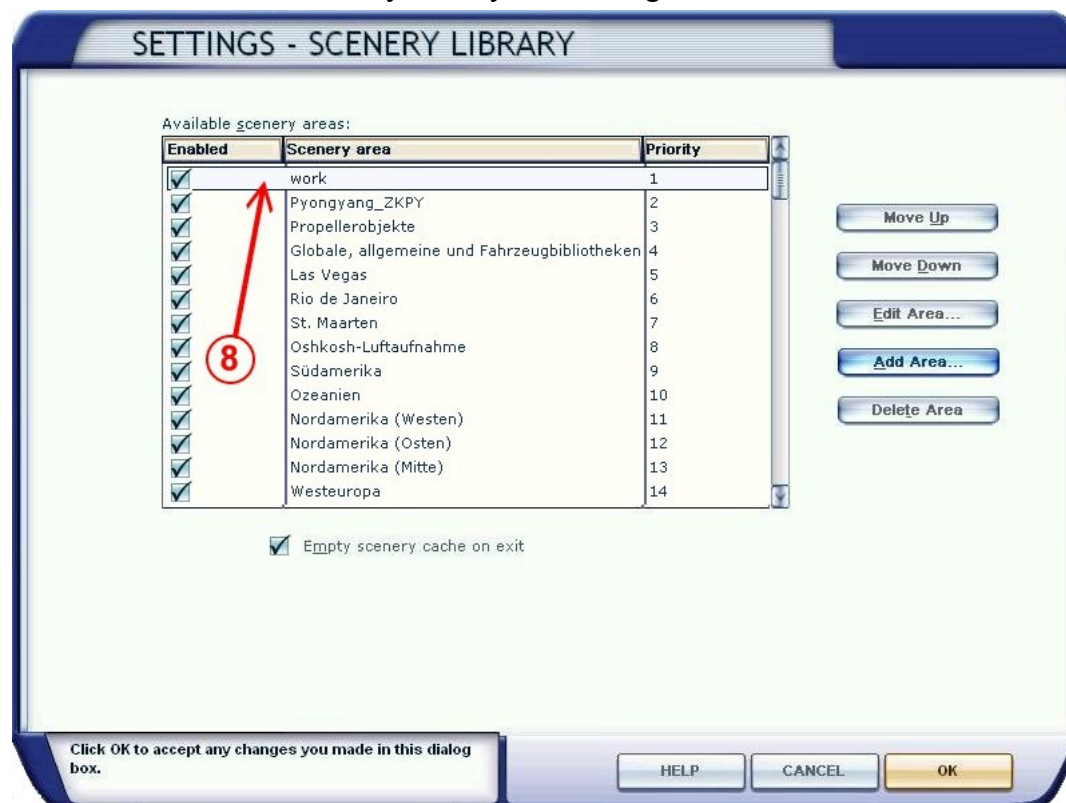


Figure 14-44:

- (8) This directory should be placed on one of the top positions in order to be selected by the Flight Simulator overlaying the stock airport file.

Note:

While compiling and installing a .BGL airport file, you will not be able to update a .BGL file that the FS is currently using. ADE will make a check before attempting to create the .BGL file. If it finds that the FS is using the file, it will warn you and abort the compile. If this happens, close the FS, wait a few moments to allow all the program components to unload, and then try again.

14.13.4 Moving Between ADE and FS9/FSX

You can start either program first. If you have more than one monitor then you can put FS9/FSX on one monitor and ADE on the other. It is recommended that you put FS9/FSX in windowed mode when working with ADE. If you don't have enough monitor space to have both the FS9/FSX and ADE windows open side-by-side you can have both windows maximized and press the Alt + Tab keys to flip back and forth between them.

14.13.5 Eliminating Pauses

By default, the FS will go into pause mode whenever you leave the FS window. It can be a nuisance un-pausing that window all the time, but this can be prevented by changing a FS setting. On the FS Settings / General window, un-check the setting "Pause on task switch."

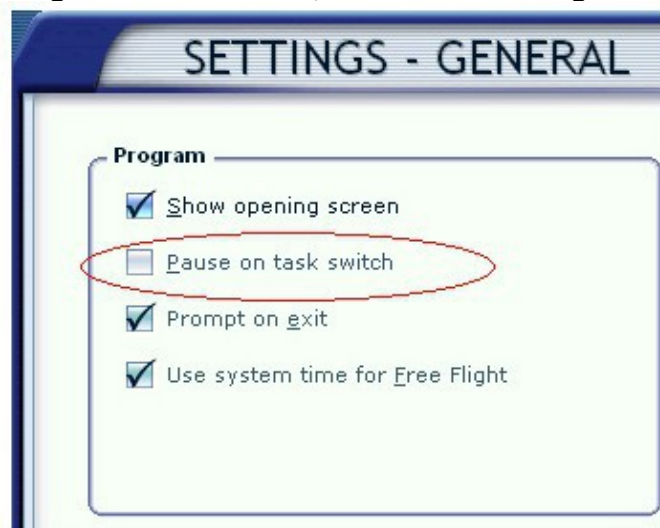


Figure 14-45: Eliminating Pauses in FS

14.13.6 Disconnecting from FS9/FSX

To disconnect ADE from FS9/FSX, simply click the Disconnect button, shown in Figures 14-33 and 14-34. You should not close the Flight Simulators before disconnecting.

14.14 Drawing Layers

The creation of this chapter was made possible by Jim Vile's (jvile) extensive research and tests into the undocumented domains of Microsoft and by the corresponding ADE-programming of Jon Masterson (scruffyduck).

Treating this complex situation thoroughly goes beyond the scope of this Manual. A future full-length tutorial should fill this gap. What is presented here are the basic ground rules how to use ADE for achieving realistic airport sceneries.

14.14.1 Background

The term "Drawing Layer" or "Layering" is used in both ADE and Flight Simulators, but they have very little in common.

- o In the **Flight Simulators** drawing layers are used to ensure that the display of the flight scenery is as realistic as possible.
The layers are controlled by a strict hierarchy based on object properties i.e. dimensions and surface textures. This hierarchy cannot be altered.
- o In **ADE** drawing layers are used to facilitate the designing of complex airport layouts. The layers are based on a priority system, which allocates ranking numbers to all airport elements. This system is, within certain limits, quite flexible but has no influence on the Flight Simulators.
However ADE mimics as far as possible the display rules of the Flight Simulators.

14.14.2. Drawing Layers in FS9/FSX/P3D

Visibility of airport elements follows a simple overlaying hierarchy:

- #1 3D buildings and structures.....large conceal small
- #2 Custom Ground Polys and Lines....high layer number conceal low layer number
- #3 Runwayssurface ranking
- #4 Helipads
- #5 Aprons and Taxiways..... surface ranking
- #6 Terrain Vectors
- #7 Terrain Polygons

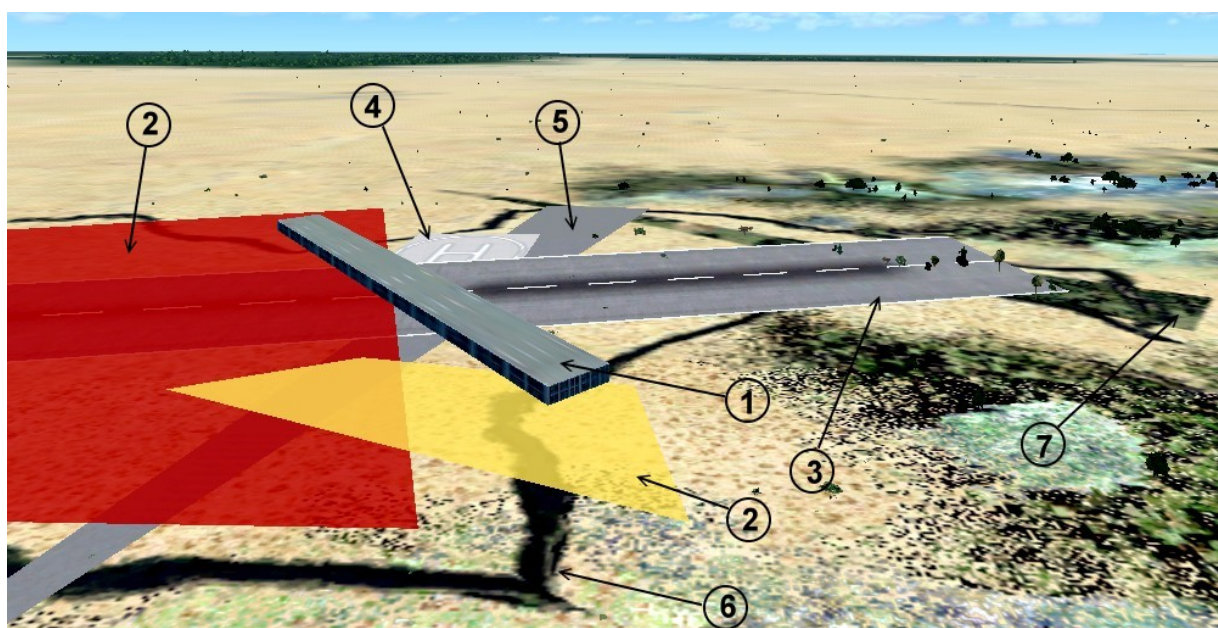


Figure 14-46: Layer Ranking in FS9/FSX

14.4.2.1 3D Objects

With buildings, structures, aircraft, vehicles and similar 3D-elements the overlaying rule in the Flight Simulators is simple:

large (or high) cover small (or low)

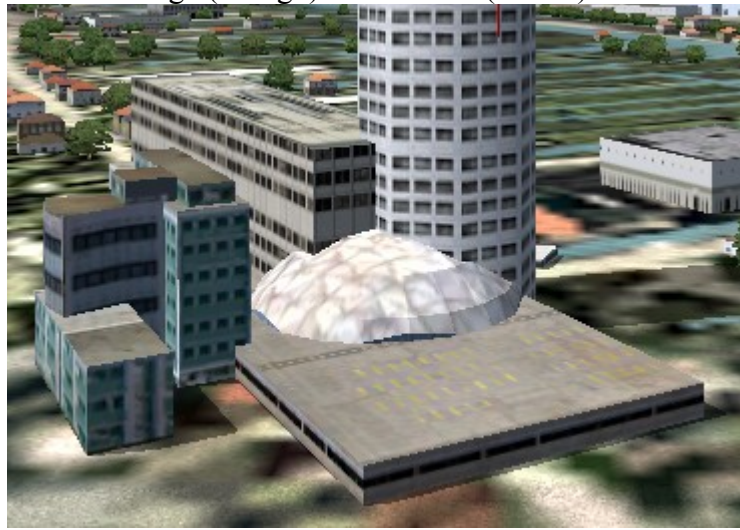


Figure 14-47: Layering of Objects in FS

14.4.2.2 Custom Ground Polys and Lines

These 2D-elements have layer numbers, which can be allocated by the "ADE-Ground Poly Editor" in the range between 5 and 62.



Figure 14-48: Layers in GP-Editor

Higher numbers conceal lower numbers in the Flight Simulators.



Figure 14-49: Custom Ground Polys and Lines with Layer Numbers

14.4.2.3 Runways, Aprons and Taxiways

In FS9 and FSX a ranking system for layering is used, which is based on the texture of the surfaces. The ranking is slightly different in FS9 and FSX and also for Runways and Aprons/Taxiways. But the rule is: runways cover aprons and taxiways. The details are listed in the following table:

Rank	FS9		FSX	
	Runways	Aprons, Taxiways	Runways	Aprons, Taxiways
1	Concrete	Tarmac	Unknown (uses Concrete texture)	Tarmac
2	Asphalt	Shale (2)	Concrete	Shale, Oil-Treated (identical texture)
3	Tarmac	Sand	Cement (uses Concrete texture)	Sand
4	Macadam	Planks	Asphalt	Planks
5	Brick	Macadam	Tarmac	Macadam
6	Bituminous	Brick	Macadam	Brick
7	Planks	Bituminous	Brick	Bituminous
8	Oil treated	Steel Mat	Bituminous	Steel Mat
9	Steel Mats	Oil Treated (2)	Planks	Gravel
10	Grass, Clay (identical texture)	Gravel	Oil Treated	Coral
11	Sand	Coral	Steel Mats	Dirt
12	Shale	Dirt	Grass, Clay (identical texture)	Snow, Ice (identical texture)
13	Gravel	Snow, Ice (identical texture)	Sand	Asphalt
14	Dirt (uses Grass/Clay text)	Clay (3)	Shale	Water
15	Coral	Asphalt	Gravel	Grass, Clay (identical texture)
16	Snow, Ice (identical texture)	Water	Dirt	Concrete, Cement, Unknown (identical texture)
17	Water (invisible)	Grass (3)	Coral	-
18	Unknown (1)	Concrete, Cement, Unknown (identical texture)	Snow, Ice (identical texture)	-
19	-	-	Water (invisible)	-

Figure 14-50: Ranking Table for FS9 and FSX

These rankings are frozen in FS9 and FSX and cannot be changed

Table Notes: for FS9 only

- (1) "Unknown" is an invisible land texture
- (2) "Shale" and "Oil Treated" have the identical textures
- (3) "Grass" and "Clay" have identical textures.
If "Clay" is used as Grass-texture it will overlay "Asphalt".
"Grass" however overlays only "Concrete/Cement/Unknown".

14.4.2.4 Terrain-Polygons and -Lines (for FSX only)

FSX offers over 250 Terrain-Polygons and -Lines (vectors).

Of these, 123 Land-polygons, 12 Water-polygons and 112 Lines (vectors) are available in ADE, together with Exclusion polygons for all of them, in groups or for each individual element.

They are all together listed in **chapter 9.0 Terrain Elements**.

The layering principle of these elements is neither documented by Microsoft, nor is it investigated by any FltSim enthusiasts.

It is recommended that the user does his own experimenting. For this it is important to check constantly the result of terrain element placements by compiling and running the airport in FSX

14.14.3 Drawing Layers in ADE

The problem in ADE with overlaying airport elements obscuring each other is mainly a problem of impeding designing and editing.

An example shall demonstrate this problem.

In Figure 14-51 a fictive complex airport in the Flight Simulator is shown:



Figure 14-51: Complex Airport in FS9/FSX

The corresponding ADE-display looks like this.



Figure 14-52 The Complex Airport in ADE Display

In figure 14-52 one can see, that 4 objects are placed on top of each other.

In order to reach an element for editing it must be selectable. When it is covered by another element, this is not possible.

In order to manage the concealing effect, ADE has introduced a ranking system. This system allocates ranking numbers for all airport elements, which are supported by ADE.

- Some elements have a **unique layer number** which cannot be altered.
- Several elements have **identical layer numbers**. ADE displays them on top of each other in the sequence of adding or editing. The last one sits on top, the first one below all others.
- The other elements have a **default layer number and a range**, inside of which they can be altered.

o Elements with Unique Layer Numbers

Element	Nr	Element	Nr	Element	Nr	Element	Nr
Vertex	2	Rway "Bituminous"	81	Rway "Ice"	91	Apron "Gravel"	110
Comment	3	Rway "Planks"	82	Rway "Water "	92	Apron "Coral"	111
TaxiPoint	4	Rway "Oil Treated"	83			Apron "Dirt"	112
Taxipath	5	Rway "Steel Mats"	84	Apron "Tarmac"	101	Apron "Ice"	113
		Rway "Gras"	85	Apron "Shale"	102	Apron "Snow"	114
Rway "Unknown"	74	Rway "Clay"	85	Apron "Oil Treat."	103	Apron "Asphalt"	115
Rway "Concrete"	75	Rway "Sand"	86	Apron "Sand"	104	Apron "Water"	116
Rway "Cement"	76	Rway "Shale"	87	Apron "Planks"	105	Apron "Clay"	117
Rway "Asphalt"	77	Rway "Gravel"	88	Apron "Macadam"	106	Apron "Grass"	118
Rway "Tarmac"	78	Rway "Dirt"	89	Apron "Brick"	107	Apron "Unknown"	119
Rway "Macadam"	79	Rway "Coral"	90	Apron "Bituminous"	108	Apron "Cement"	120
Rway "Brick"	80	Rway "Snow"	91	Apron "Steel Mats"	109	Apron "Concrete"	121

Figure 14-53 Airport Elements with Unique Layer Numbers

o Elements with Layer Number Ranges

The following table contains the default value and the editing limits of ADE layer numbers. They can be changed by the user within the indicated individual ranges.

Element	Def	Limit	Element	Def	Limit	Element	Def	Limit	Element	Def	Limit
Excl.Rectangle	4	4-69	Airport	39	4-69	ILS	39	4-69	Tower Object	39	4-69
Airport Lights	5	4-69	Beacon	39	4-69	Jetway	39	4-69	VOR	39	4-69
Bookmark	13	4-69	DME	39	4-69	LibraryObject	39	4-69	Waypoint	39	4-69
Guideline	13	4-69	EdgeLights	39	4-69	Marker	39	4-69	Windsock	39	4-69
Position Marker	13	4-69	Effect	39	4-69	NDB	39	4-69	Shape Vector	39	4-69
Helper Shape	17	4-69	Fence	39	4-69	SceneryObject	39	4-69	ShapePoly	39	135-143
Def = Default Limit = Editing Limits			GenericBuildg	39	4-69	Start	39	4-69	Fuel Trigger	60	4-69
			Glide Slope	39	4-69	Taxisign	39	4-69	Parking	65	4-69
			Helipad	39	4-69	Tower	39	4-69	Image	145	3-148

Figure 14-54: Default Rank Numbers and Editing Limits (yellow = identical defaults)

Note: "Shape Poly" and "Shape Vector" are the layer names for Terrain-Polygons/-Vectors. The layering of Ground-Polys and -Lines is controlled by the GP-Editor (not ADE)

o Ignoring the Limits of the Layer Numbers (requires ProKey)

The limits for the layer numbers, shown in table above, can be - not ignored totally but at least expanded to the build-in limits. They are from 1 to 150.

This function can be set in the "Settings"-menu under "Options => General => Checkbox "Ignore Layer Constraints".(see [figure 12-49: General Settings](#) in [chapter 12.8.1.1 General](#)).

14.14.4 Editing of Layers in ADE

The sole purpose of changing layer numbers of airport elements is to ease the task of editing airport objects in the display of ADE.

In the following example the displays of FS9 and ADE of a complex airport in Figure 14-52 is used to demonstrate the application of layer numbers for creation an editing a complex airport. Figure 14-55 below is the same scenery, but just rotated by 160° counter clock wise.

The high tower building is a Generic Building (drawn in light blue). In ADE it is barely visible, because it is "buried" four levels beneath other scenery objects.

Thus it is not accessible for editing

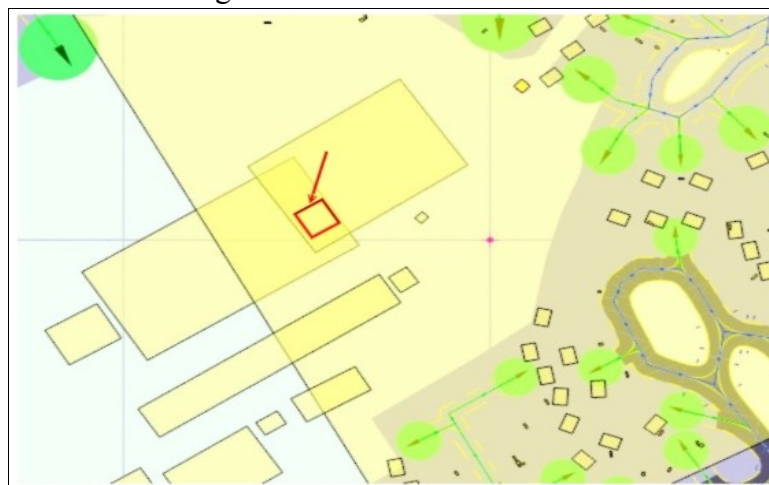


Figure 14-55: Generic Building obscured by 3 layers

The tooltips, which appear as soon as the cursor-pointer touches them, contain among other information also the ADE layer number.

In the composite picture of Figure 14-56 the tooltips are shown of all involved scenery objects

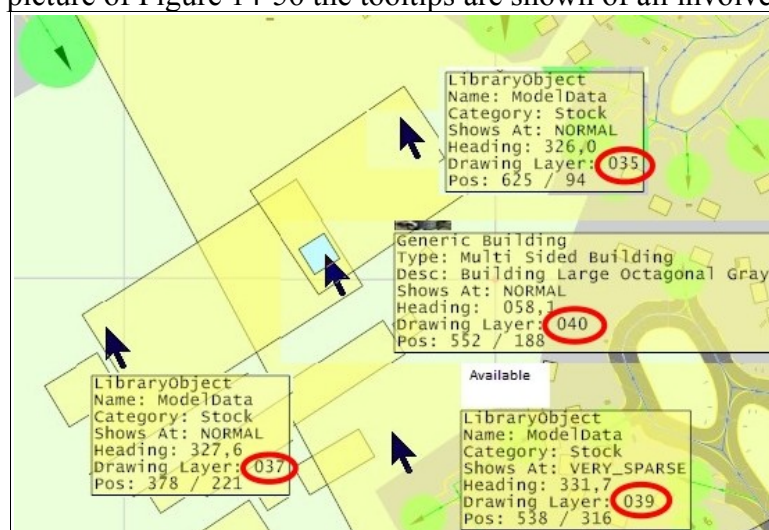


Figure 14-56 Drawing Layer Numbers in Tooltips

The object in question has number 40, the others have 35, 37 and 39.

There are four methods in ADE to gain access to obscured airport elements.

- o **Move Objects** - one can move the malefactors out of the way. Just select the uppermost one and drag it with the left mouse-key to a convenient place. Repeat this process until the desired element is in the open.
But this approach has it's drawback, since it destroys useful geometric references.
- o **Hide Selected Objects (requires ProKey)** - one can hide the concealing element by selecting it and press the "F8" key or with the "Hide Object" function, which is one of the options in the Right-Click menu.
- o **Hide a Group of Elements** - by deactivating the relevant check.box in the "View"-menu
- o **Changing the Layer Numbers** - is done by selecting an accessible object and using the "Move Forward/Back" and "Move To Front/To Back" commands in the Rightclick menu.

The commands and their keyboard shortcuts are:

- Move Forward ----- Ctrl + Home.....moves layer one level higher
- Move Back ----- Ctrl + End.....moves layer one level lower
- Move to Front ----- Alt + Home.....moves to the top level
- Move to Back ----- Alt + End.....moves layer to the bottom level

Note: There is no need after editing to change the layer numbers back to their original values.

Changing layer numbers of elements in the ADE Display do not have any effect on the display in the Flight Simulators.

However if you want to bring the layer numbers back to their original values, there is a simple method for that.

o **Resetting Layer Numbers to Default**

All changeable layer numbers can be reset to default via the "Right-Click"-option "Reset Drawing Layers Default" (see **chapter 12.11.30 Reset Default Drawing Layers**). The reset can be done either individually for selected objects, or totally for all objects of the project, when no specific element is selected.

14.15 Background Images

Background images allow you to remodel stock airports or create new airports based on the latest satellite imagery, Jeppesen Airport Charts, or even FS9/FSX screenshots. Currently, ADE uses the following image formats: .jpg, .gif, .bmp, .png, or .wmf, and allows you to use any number of background images to aid in airport development.

14.15.1 Adding Background Images

To use background images, select "Add" and then "Image" from the Rightclick Menu.

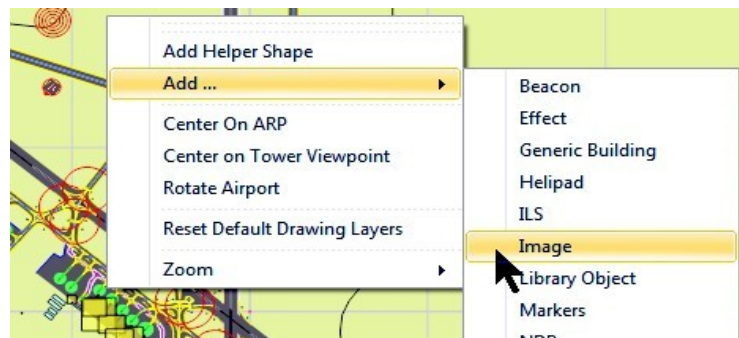


Figure 14-57: Add Image

This will bring up the New Background Image Dialog Box (see below). In the File Name field, click the button '...' to the right and select the path of the image you want to use.

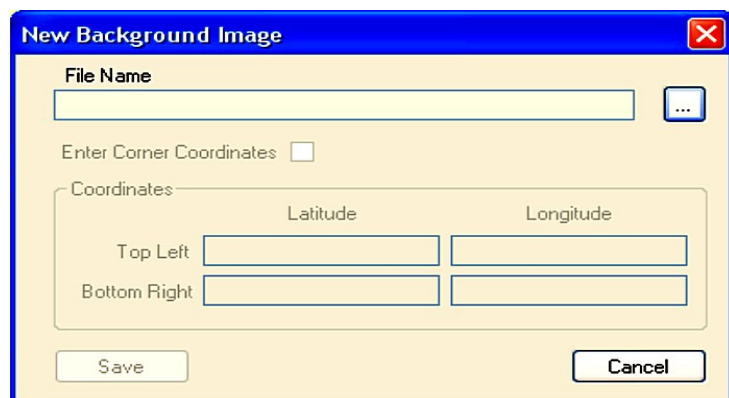


Figure 14-58: New Background Image Dialog Box

Please **NOTE** that ADE does not store the image in the .ad4 file but only a reference to where it is located. Therefore you should be careful not to move images in the file structure once they have been associated with an airport design project.

The suggested place is the folder "Images" in the ADE => FSX- and FS)-folders

For best results, background images should be less than 100k in size. Larger background images will severely impact ADE performance and could result in out-of-memory errors. File size is especially critical if you decide to use multiple background images with your airport project.

14.15.2 Using Corner Coordinates

If you are using corner coordinates, check the Enter Corner Coordinates box and proceed to enter the Top Left and Bottom Right Latitudes and Longitudes. A corner or border coordinate is the location of the top left (Northwest) and bottom right (Southeast) points of the image you want to use.

These coordinates allow you to precisely place and align the image in ADE based on either Decimal (e.g. 23.4567, -125.789) or Degrees Decimal Minutes (e.g. N23 28.556, W125 47.223). Certain programs and mapping services provide this information when using them to export images.

14.15.3 Selecting the Image

Selection of an image is done by either left-clicking on the surface of the image, or by touching the edge of the image and left-clicking.

The choice between the two methods is done in the “Settings”-menu under the option “General” by clicking/unclicking “**Select Background Image by Edge**”(see [chapter 12.8.1.1 General](#)).

Next you click on the image. You can tell the image is selected because ADE will display a red ‘X’ across the image.

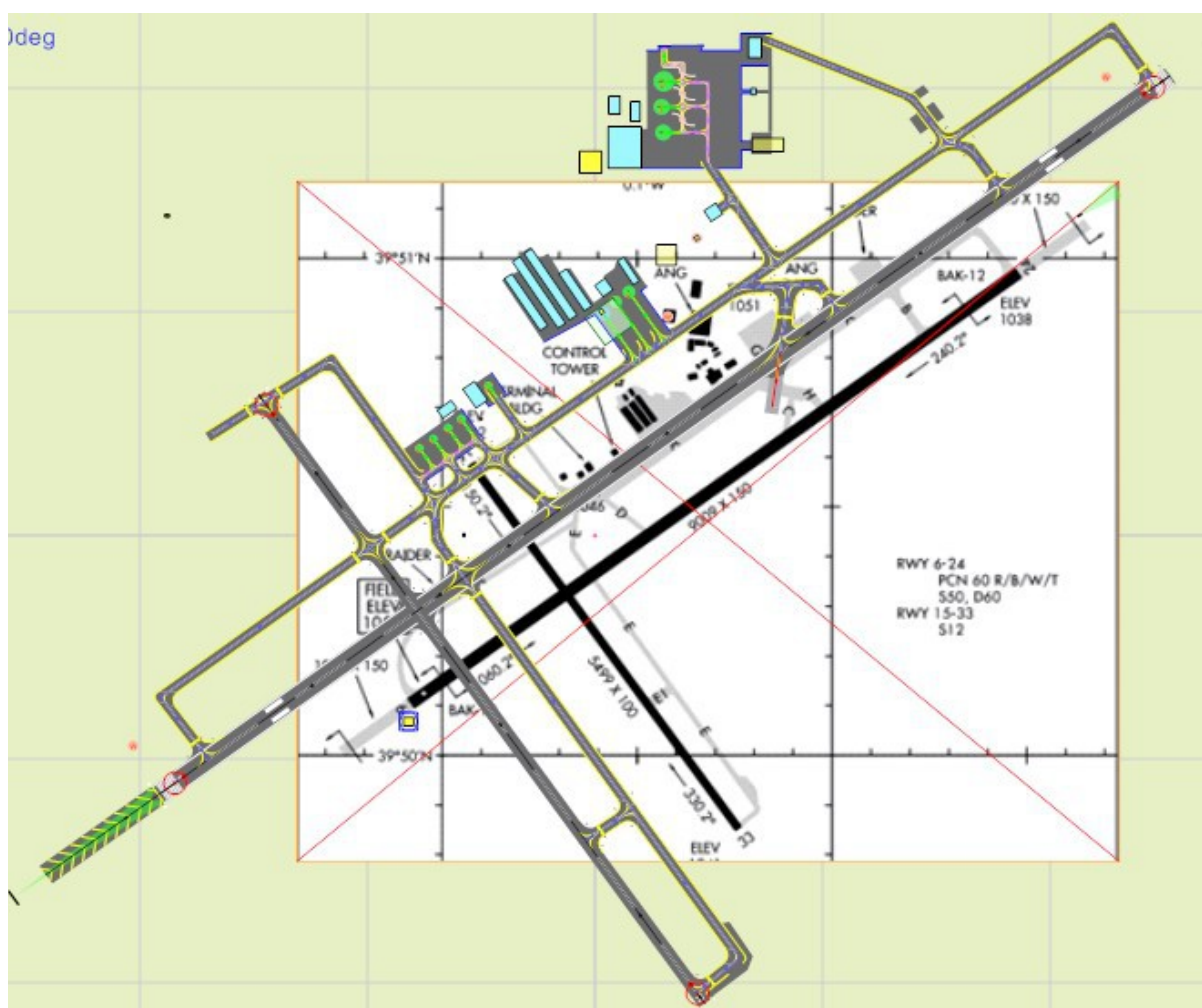


Figure 14-59: Image Added and Selected

With the image selected, you can either drag it around by holding down your left mouse button and moving it, or you can adjust the image dimensions by selecting the entry “Position Image” using the Rightclick Menu, or the image properties by selecting the option “Edit Object”, also in the Rightclick Menu.

14.15.4 Image Properties

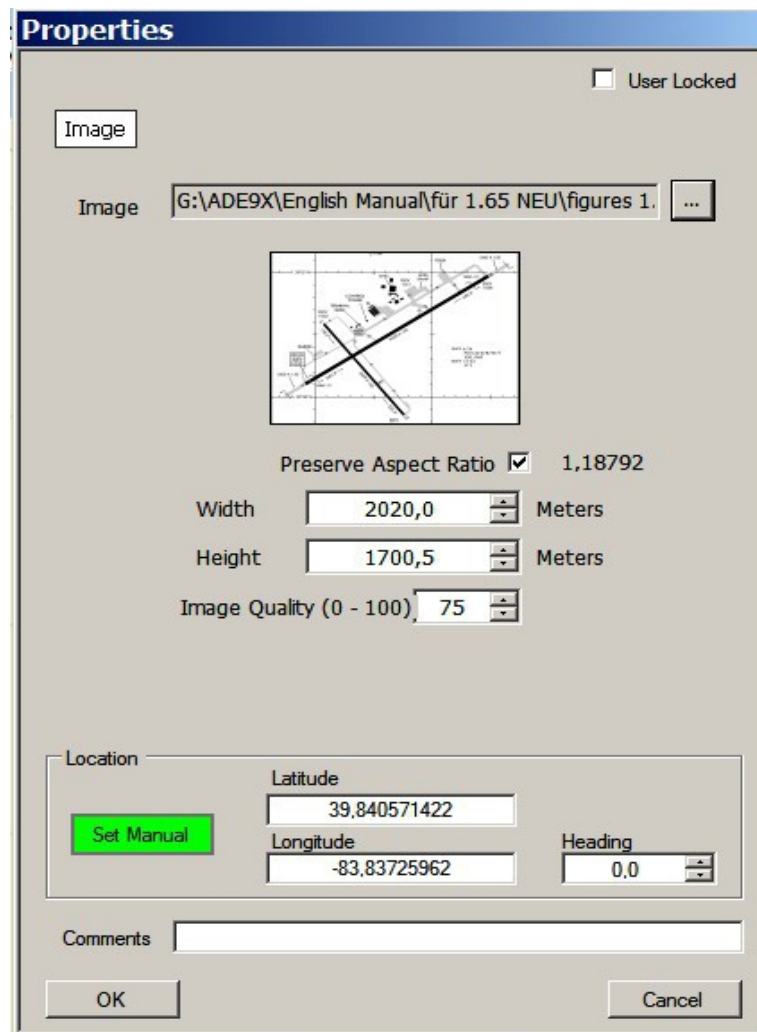


Figure 14-60: Image Properties Window

The Image Properties Window presents the following parameters for editing:

- o **Image** - the background image in question is displayed in the small window. In the line above the image can be changed by inserting a path to another candidate.
- o **Preserve Aspect Ratio** - by clicking or unclicking this box one has control over the aspect ratio.. **Note**, that this function is only valid for this image whose properties are edited here.
- o **Width & Height** - can be edited here
- o **Image Quality** - Background Images, in particular those with GoogleMap type landscape can be quite voluminous, reducing ADE's reaction times considerably. This can be relieved by reducing the image quality.

All other parameters are so called common parameters, which belong to other objects as well.

They are treated in **chapter 14.6 Object Properties**

For images there is an other properties window available. This a bit unfortunate double title has historic reasons. The smaller properties window in figure 14-61 was for many versions the only means to edit images.

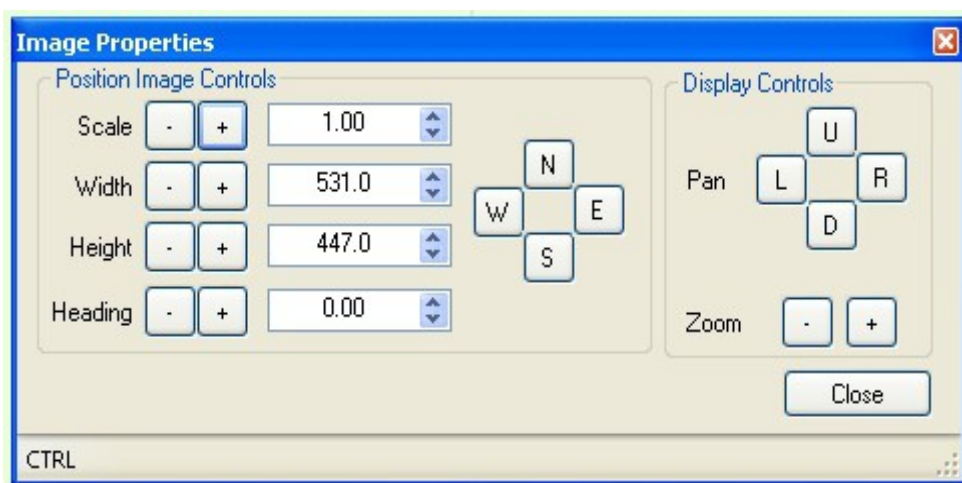


Figure 14-61: "Small" Properties Window for newly added Images

The Image Properties Box has two main sections: "Position Image Controls" and "Display Controls".

As the name implies, Position Image Controls allow you to manipulate the background image by adjusting the scale, width, height, heading, or location of the image in relation to the ADE workspace. On the other hand, Display Controls allow you to change the display properties of the entire ADE workspace by moving the workspace up, down, left, or right and by zooming in/out the workspace. If the "**Shift**" key is held down then changes made to either the image or display controls are increased in small steps ; with the "**Ctrl**" key held down changes made are in large steps.

14.15.5 Working with Multiple Background Images

There are a variety of ways to use and work with background images to modify your airport project. You can manage all your images by using the images list under the List Menu.

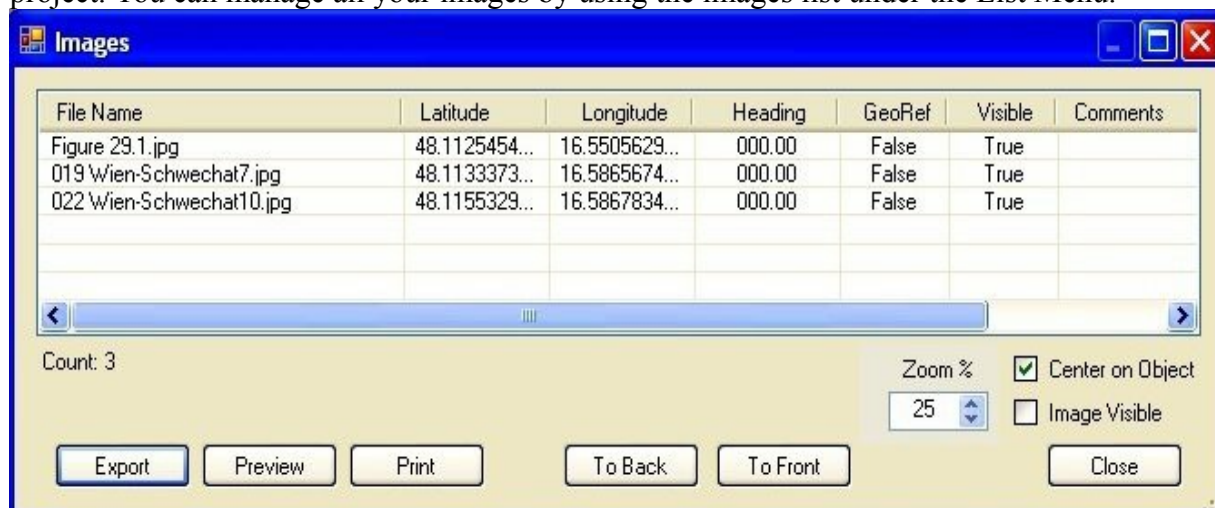


Figure 14-62: Images List from the List Menu

The images list allows you to hide/show each background image using the Image Visible check-box, to prioritize them using the To Back and To Front buttons, and to export the image list using the Export button.

Please **NOTE** that ADE does not currently remember image order between sessions.

14.16 Airport Image

ADE provides the ability to save an image of the airport display. Select "Save Image" from the File Menu, and ADE will save the image based on your currently defined image settings. See [chapter 12.8.1.5 Images](#) in the "Settings" menu for more information.

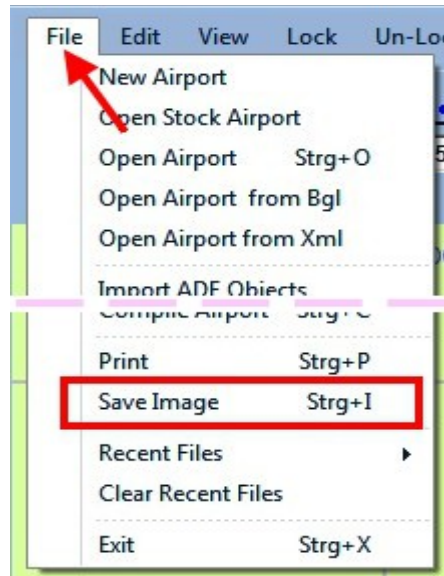


Figure 14-63: "Save Image" in File Menu

14.17 Thumbnails and Screenshots

ADE has a simple built in screen capture tool. This can be used to capture and save thumbnail images of library objects and generic buildings directly from the flight simulator. The screen capture tool is available via the "Capture New Thumbnail" button in both the Generic Building Manager and the Library Object Manager under the Tools Menu.

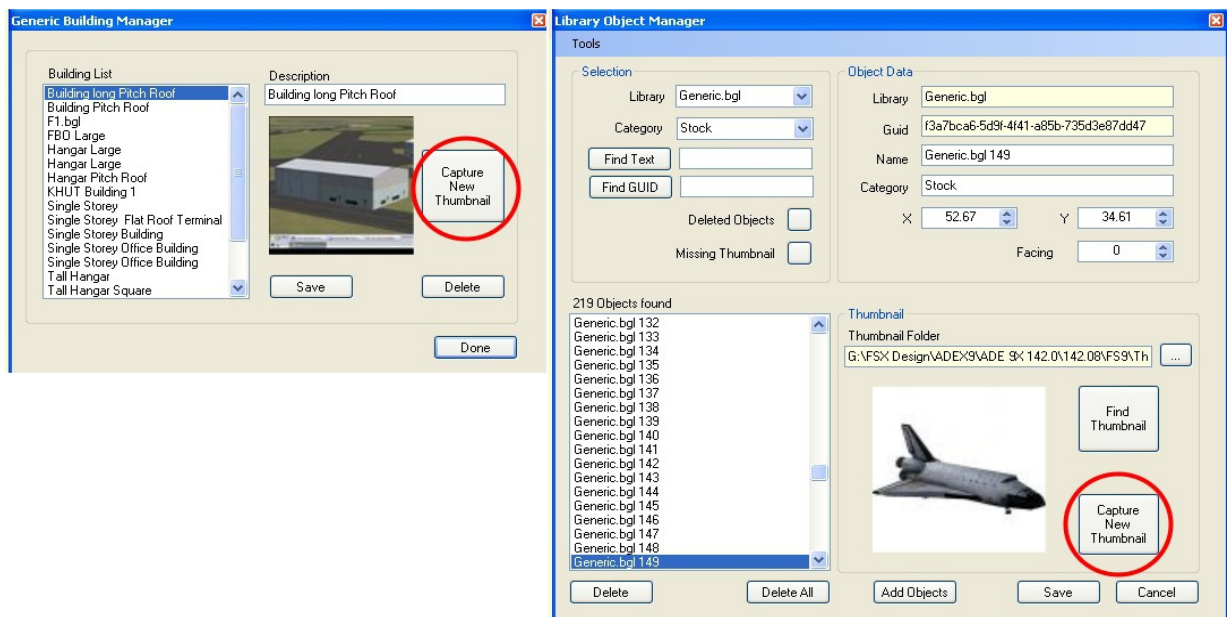


Figure 14-64: Screen Capture for Creating Thumbnails

Thumbnails are small pictures, which are stored together with the object data and which are very useful when selecting a suitable object.

- Make sure that the FS is running, that it is connected with ADE and that it is visible, either on the half screen or on a second monitor.
- Locate and identify the object of which you want to create a thumbnail
- Click the button "Capture New Thumbnail", and ADE will hide itself, and the main screen will change slightly to a "hazy" presentation.

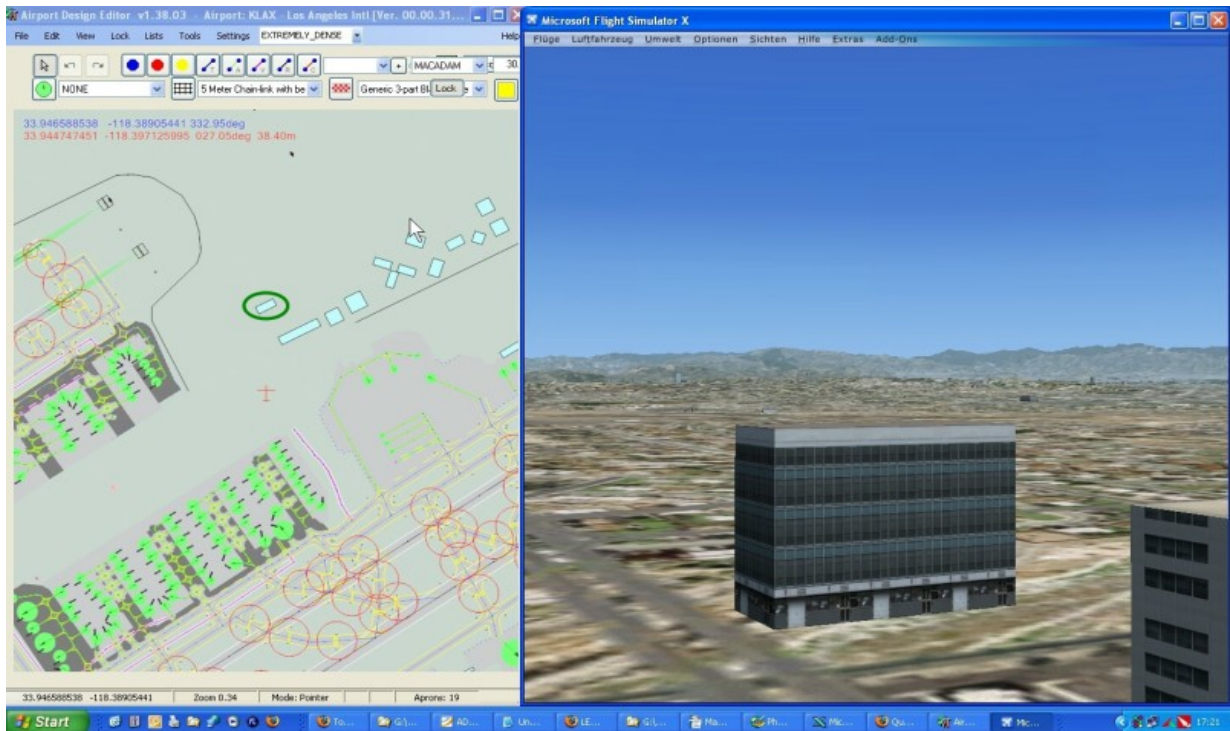


Figure 14-65: Object in ADE (green ellipse) and in FS

- Position the mouse at top left of the area to capture, left click, hold down and drag out a rectangle for the captured area. Release the left mouse button. The rectangle will remain on the screen.



Figure 14-66: Selecting the cut out of the image

If you do not like what you have then just draw another rectangle

- When satisfied, press the **"space bar"** or the **"Enter"**-key to capture the image and return to ADE.
Hit **"Esc"** at any time to close the screen capture tool and return to ADE without taking a screen shot.
When using the screen capture tool, keep the following considerations in mind:
 - Make sure FS9 or FSX is in Windowed Mode
 - If you have multiple monitors, the screen capture may not pick up on the monitor where FS9 or FSX is located, and you may need to move it. You can always cancel the screen capture by using the **"Esc"** key.
 - ADE requires that the image be in .jpg format and that the name contains the full GUID of the object in FSX format.

When there are a large number of thumbnails available ADE may take a second or so to find the appropriate one for an object. ADE has an 'on-the-fly' indexer for thumbnails. The first time you mouse over an object it may take a short while for the tooltip to appear. However once ADE knows where the thumbnail file is it indexes the information, and the appearance of that thumbnail should be instantaneous. On-the-fly indexing also takes place anywhere a thumbnail is displayed so over time more and more are indexed and the delay in seeing the tooltip etc should be minimized

14.18 Recovery from Crash

In the case of a crash ADE has several ways to back up your project and protect against losing valuable work. The first is auto save, the second is a bak file and the third is the Project Backup Tool

14.18.1 Autosave

This is an automatic process. It does not provide a permanent back up of the project and generally you do not access the autosave data directly.

- Auto Save will only start when there are unsaved elements in the project.
- Auto save is timed. The default is 5 minutes which works well for most situations, and you can set how often you want it to happen. in Settings > Options > General (see [chapter 12.8.1.1 General](#) for details)
- In the Status Bar of ADE's main display there is a visual indicator (size and color of the indicator bar) of how long it is to the next autosave. The color goes from Green, then Orange and during the last minute to Red. When this indicator gets to Red then it may be worth not trying to save or compile your work until the autosave is complete



Figure 14-67: Time to Autosave Indicator

- The Autosave process stores the whole project file under the name "autosave.ad4" in the respective version folder inside ADE. If ADE is closed normally the autosave file is deleted.

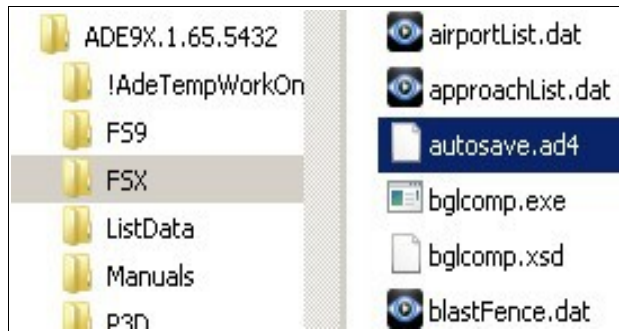


Figure 14-68: Location of "Autosave" file

- o If ADE crashes and there is unsaved work then next time you start ADE you should see this message.

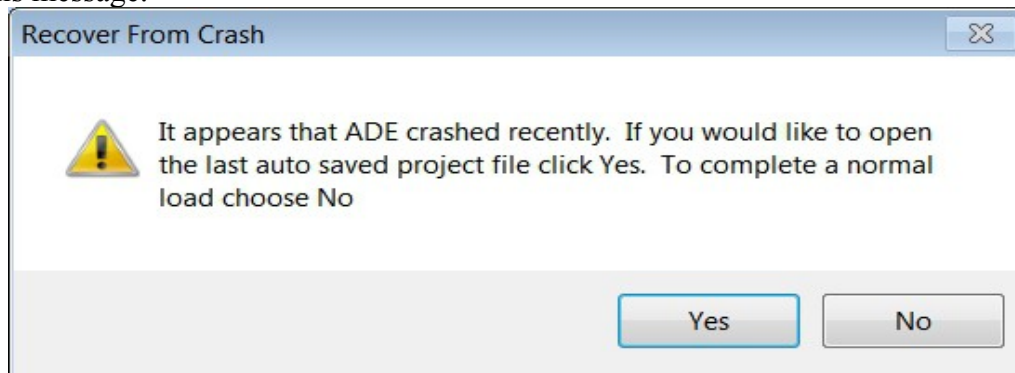


Figure 14-69: Message after a Crash

- o Click "Yes" to reload your work based on the last Autosave. If you choose No then ADE will start normally without loading the auto saved file.

14.18.2 Local Backup File

Each time you save a project ADE will not overwrite the existing file but rename it with .a "bak"-extension.

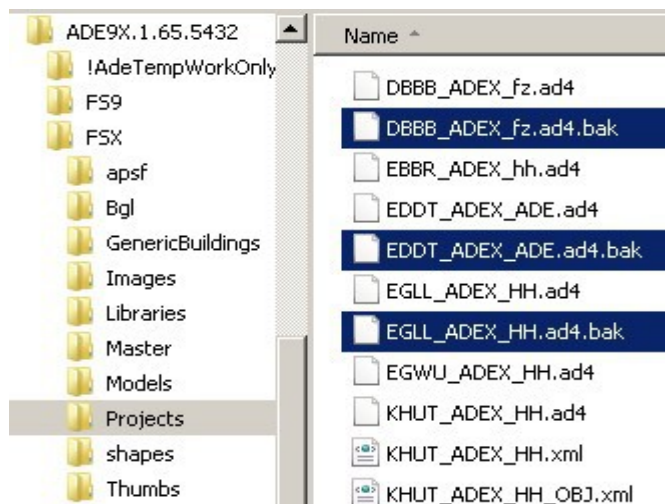


Figure 14-70 : "bak" files

This really only helps with the last changes. However if your current project file becomes corrupt or you delete it by mistake then you can get a recent copy by removing the .bak from the backup file name

14.18.3 Project Backup

This function, which is part of the "Project" Menu (see [chapter 12.7.3 Project Back Up](#)) allows you to take a backup of the project at any time and include background images and model files if you wish.

Note that this is a manual process.

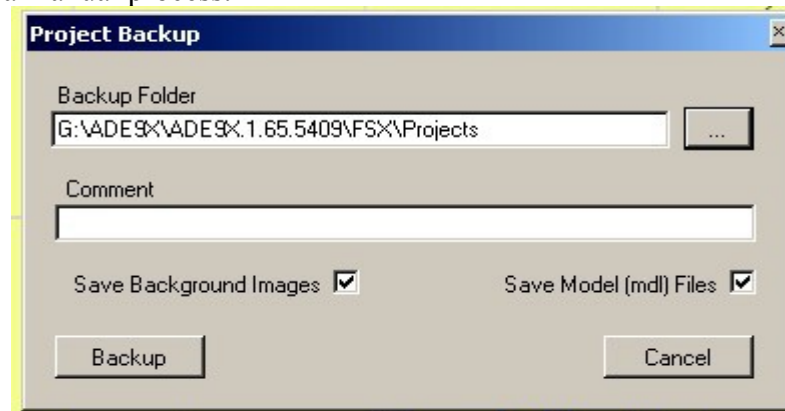


Figure 14-71: Backing Up a Project

This is a simple dialog where you can set your options and ADE will remember them

- * **Backup Folder** - This is the folder where your backup will go. It is recommended that this would be on an external drive or different drive from your ADE drive.
- * **Browse** - Set the backup folder by clicking this button
- * **Comment** - You can enter a comment here that reminds you about this backup. Such as where you are in the work or some other useful comment
- * **Save Background Image** - By default ADE will save any background images that are used in the project. If you don't want to save them then uncheck this
- * **Save Model (mdl) Files** - ADE will also save any model files that are used in the project. This could be useful if you accidentally delete one or lose track of it
- * **Backup** - Click Backup to save the project. This will also remember the settings for next time you make a backup

Generally this should only take a second or so and then the dialog will close

o Backup Files

The files are stored as zip files in the selected folder (see Figure 14-71) and have timestamped names. The project file name and a time/date stamp should make it easy to identify



Figure 14-72: File Name and Time Stamp

Within each zip file the different folders and files that are saved are found. If you added a comment then a small text file will be present with your comment in it.

o Restore Files

To restore files just open the backup zip and navigate to the files you want to restore. Generally the folder structure for each saved project will match the original so you can find them and make sure they go back in the correct place.

14.19 Log File

ADE maintains a log of what is happening as you use it. There is a log for each version of ADE that you open. This log is used to check when things are going wrong. If ADE crashes then it will automatically record what happened and ask you to send the log to the ADE Support Team.

The level of detail for logging can be changed. This can be set in the “Options” entry of the “Settings” menu (see [chapter 12.8.1.1 General](#))



Figure 14-73: Logging Level In Settings menu

- (1) The usually recommended level is Normal. This provides us with what we need to see in most instances and has the least impact on performance
- (2) Detail provides us with more information - this means that log files get bigger faster and performance may be affected especially on slower computers
- (3) Full is the most detailed level - it provides the most information, generates the largest log files and has the most impact on performance. Slower computers will be noticeably effected with this level of logging set

We strongly recommend that you keep your logging set to normal. If you get a problem and we need to see a higher level of logging then we will ask. There is no advantage in normal operation to having Detail or Full logging set

The log file is located in each version folder in ADE and is called “Log.tx1”. The size of a log is limited to about 500k. When that value is surpassed, it will then start again. However some archive logs will be retained.

ADE provides two ways to send the log file to the author of ADE for evaluation

- Via the “Send Log” button in the Tools Menu

When clicking this button, a dialog will open next:

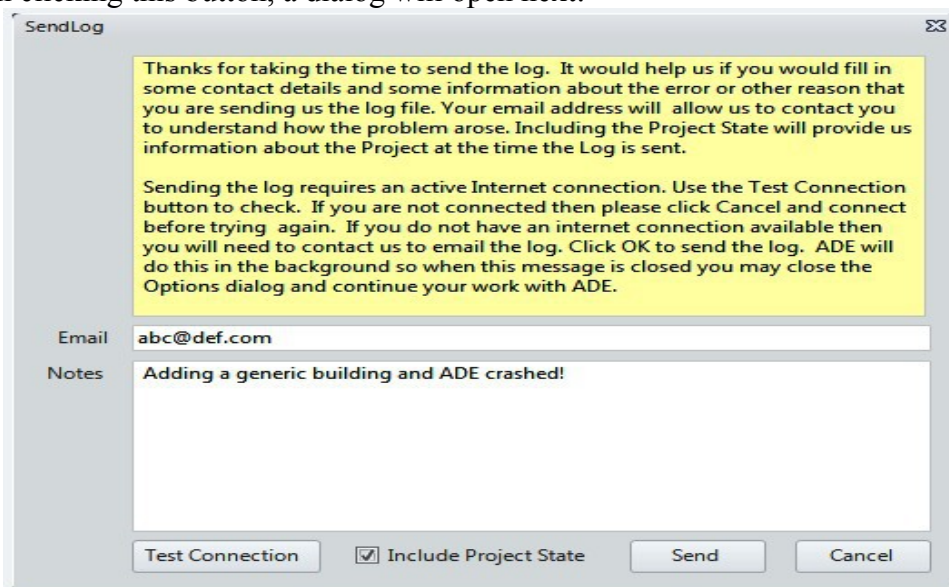


Figure 14-74: The "Send Log" Function in the Tools Menu

It explains what will happen if you press **Send**. It also provides an opportunity to give us a contact email and tell us what you were doing when a problem arose or some background if we asked you to send the log. If you give us an email address then we will be able to get back to you concerning any problems and also tell you when we have fixed things. Provided that you have an internet connection then the file should be sent. It will happen in the background so that you can continue working. Note that if you try to close ADE down before the transfer is complete you will get a warning and have to wait until the send is finished. The checkbox at the bottom is checked by default since it is preferred to get that project state to help with debugging. However to provide for users who do not wish to send information about the project this can be unchecked.

- **Via the Global Program Problem window** - Although we do try to catch problems sometimes we can't.

As a final remedy when a crash of ADE occurs, the Global Problem Window will show.

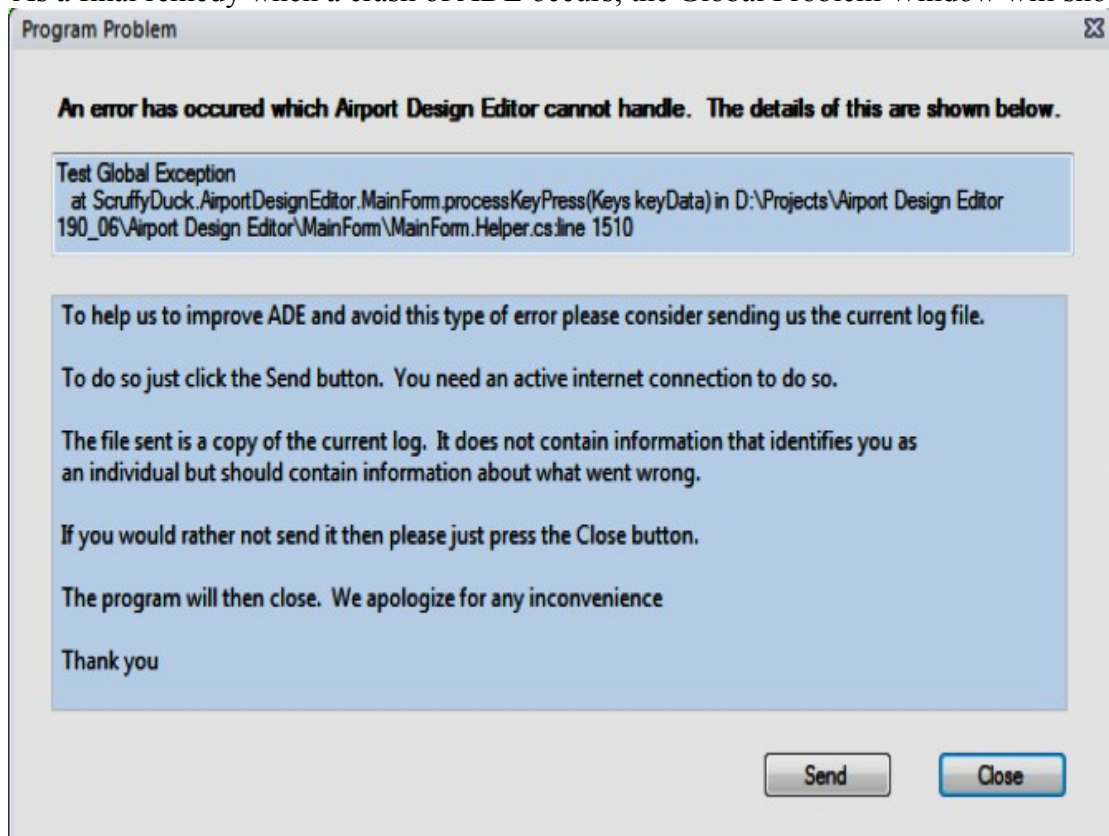


Figure 14-75: the Global Problem Window

This window has a **Send** Button. It will help us to diagnose issues if you do send us a log that contains an unhandled program problem. If you click **Send** then the **Send** dialog described above will open. Be sure to have an internet connection before clicking **OK**. ADE will wait until it has sent the log.

This will be signified by a wait cursor when the mouse is over this dialog. We cannot do this in the background because by now ADE has pretty much stopped working. When this dialog closes ADE will shut down. If you have unsaved changes then you will be given the opportunity to save the project.

14.20 Project Tree (in Lists Menu)

The Project Tree displays all user editable objects in a project. Navigating the tree allows the user to find and/or edit objects. This provides an alternative to individual lists and also provides access to some airport elements that are not available in another list view.

14.20.1 Open The Project Tree

To open the tree select the Lists Menu and then “Project Tree.” at the lower end.

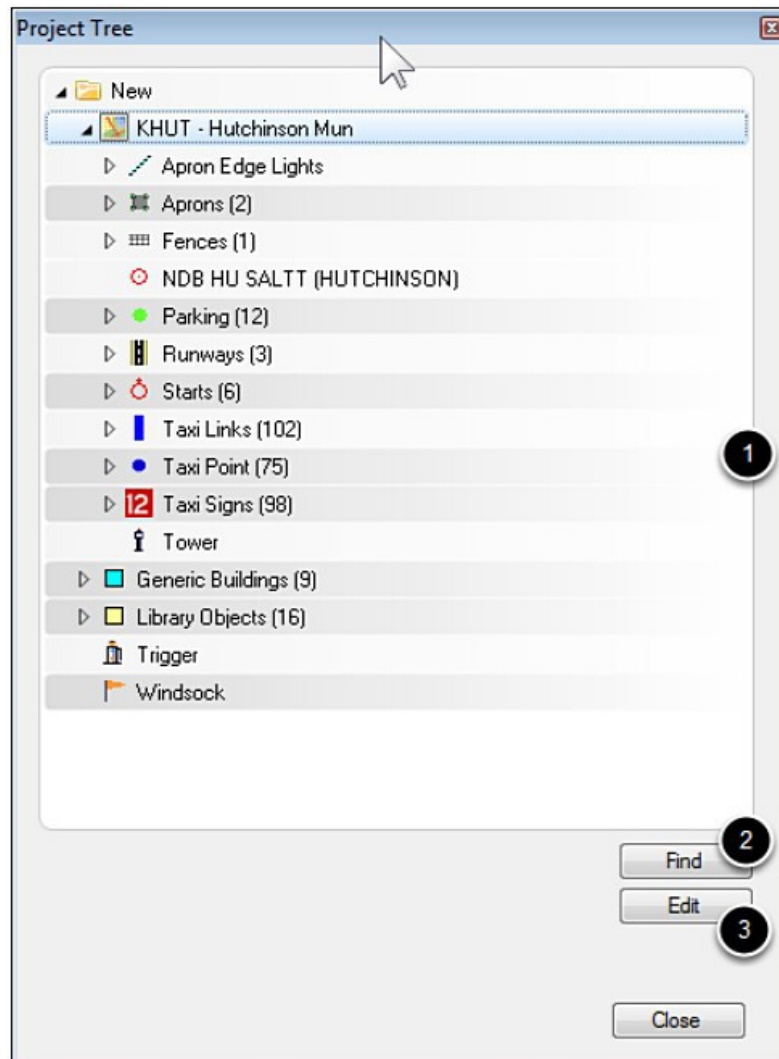


Figure 14-76: Project Tree

The tree (1) will start with the groups of objects closed. Select any group to open it. The Tree groups similar objects together to make them easier to find.

If you want to find a specific object in the display then use the Find button (2). Clicking the Edit button (3) will open the appropriate properties dialog to allow the object to be edited.

14.20.2 Find an Item

- Select an item (1)
- Click the Find button (2)
- ADE selects the item and centers the display on it. (3)

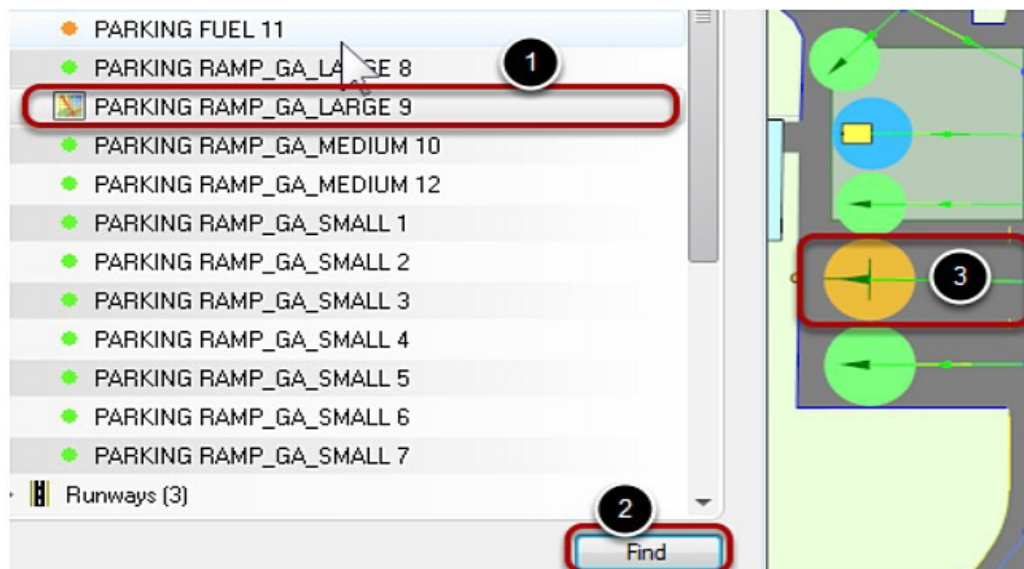


Figure 14-77

14.20.3 Edit an Item

- Select the item in the tree (1)
- Click the Edit button (2)
- ADE will open the properties dialog to allow the item to be edited. (3)

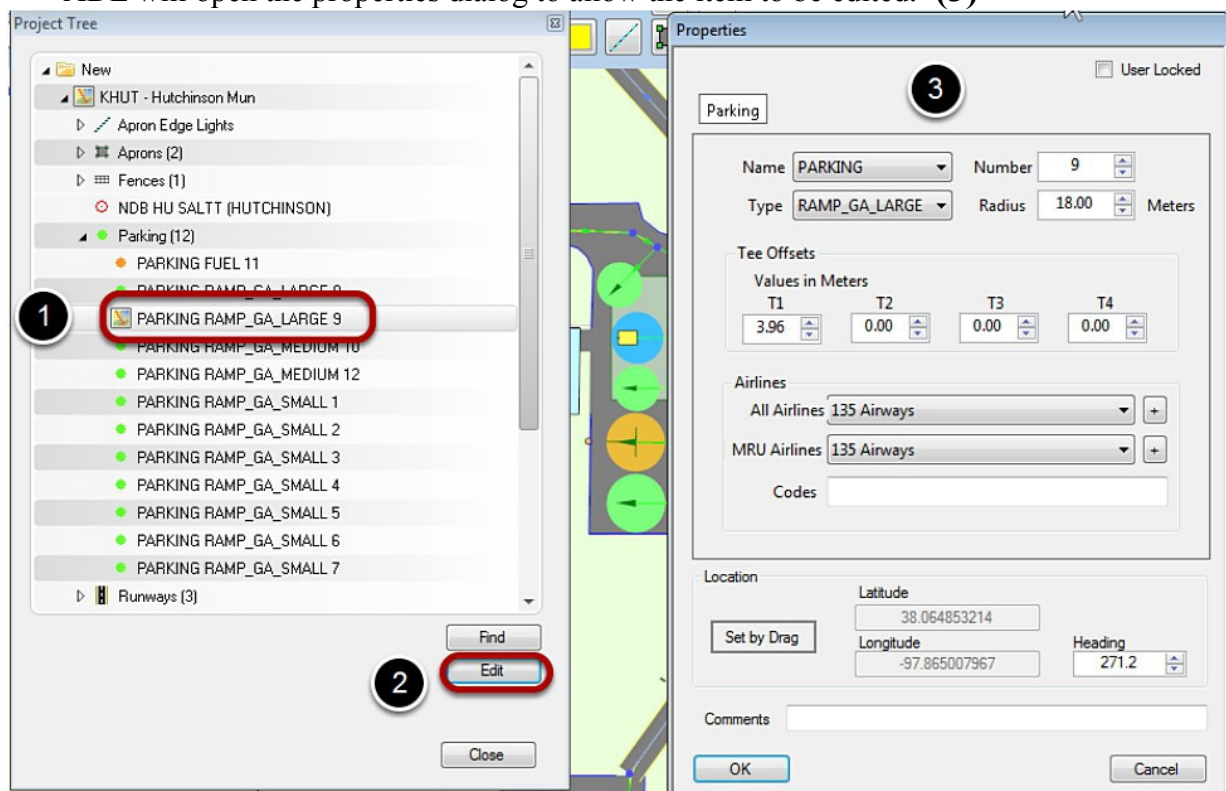


Figure 14-78: Editing an Item within the Project Tree

14.21 Reference Tables for Tools and Controls

ADE is full of tools, spread all over the place. Most of them are explained in conjunction with the elements and tasks which are described in the individual chapters.

Here they are presented in tables, sorted by alphabet and grouped by topics, together with references to the chapters where they are explained..

14.21.1 Object Controls

NAME	LOCATION	REFERENCE CHAPTERS
Add Beacon	Rightclick Menu	6.6 Beacons
Add Comment	Rightclick Menu	12.11.5 Add Comments
Add Effects	Rightclick Menu	6.7 Effects
Add Fuel Trigger	Rightclick Menu	6.8 Fuel Triggers
Add Generic Building	Rightclick Menu	10.1.1 Adding Generic Buildings
Add Helipad	Rightclick Menu	6.2 Helipads
Add Helper Shape	Rightclick Menu	14.10 Helper Shapes
Add Image (Background)	Rightclick Menu	14.15.1 Adding Background Images
Add Jetway	Rightclick Menu	6.4 Jetways
Add Library Objects	Rightclick Menu	10.2.2 Adding Library Objects
Add Marker (Beacons)	Rightclick Menu	8.2.2 User Created Marker Beacons
Add Models	Rightclick Menu	10.3.2 Add User Models to a Project
Add NDB	Rightclick Menu	8.5.2 User Generated NDB
Add Other Start	Rightclick Menu	4.7 Start Locations
Add Runway	Rightclick Menu	4.2.2 Creating Runways
Add Runway Start	Rightclick Menu	4.74.7 Start Locations
Add Taxi Sign	Rightclick Menu	6.1 Taxi Signs
Add Tower (Viewpoint)	Rightclick Menu	4.6 Tower View
Add VOR/DME	Rightclick Menu	8.4.2 User Generated VOR/DME
Add Windsock	Rightclick Menu	6.5 Windsocks
Bookmark	Additional Tools	14.11 Bookmarks
Copy Coordinates	Rightclick Menu	12.11.1 Copy/Paste Coord(inate)s
Copy Object	Rightclick Menu	12.11.2 Copy /Paste Objects
Crosswind Runway	Basic Elements	4.2.10 Crosswind Runways
Default Settings (Taxiways)	Rightclick Menu	5.2.5 Default Settings
Delete All Helpers	Edit Menu	12.2 Edit Menu
Delete Object	Rightclick Menu	14.5 Deleting Objects

NAME	LOCATION	REFERENCE CHAPTERS
Edit Group of Objects	Additional Tools	14.7 Group Editing
Edit (Single) Object	Rightclick Menu	14.6 Object Properties
Import Settings	New User Wizard	13.8.1 The Welcome Page
Import BGL	File Menu	12.1.7 Import BGL
Import XML	File Menu	12.1.8 Import XML
Import CG Polys	File Menu	12.1.9 Import Ground Polys
Import/Export ADE Objects	File Menu	12.1.6 Import ADE Objects
Libraries Used	Lists Menu	10.2.6 Third Party Object Libraries
Lock Object	Rightclick Menu	14.8.1 Lock/Unlock Single Objects
Make Apron (Helper Shape)	Rightclick Menu	4.3.2 Using Helper Shapes
Make CG Line (- "" -)	Rightclick Menu	9.4.3 Use Helper Shapes for Custom Ground Polys
Make CG Poly (- "" -)	Rightclick Menu	9.4.3 Use Helper Shapes for Custom Ground Polys
Move Object	Additional Tools	14.4 Moving Objects
Move to Aircraft	Rightclick Menu	14.4.3 Move to Aircraft
Nudge Object	Additional Tools	14.4.4 Nudging
Paste Coordinates	Rightclick Menu	12.11.1 Copy/Paste Coord(inate)s
Paste Object	Rightclick Menu	12.11.2 Copy /Paste Objects
Position Image	Rightclick Menu	14.15 Background Images
Properties-Window	Additional Tools	14.6 Object Properties
Reverse Direction (Taxiway)	Rightclick Menu	5.2.6 Link Editing
Reverse Fence	Rightclick Menu	6.3.3 Reverse Fences
Rotate Airport	Rightclick Menu	12.6.6 Move Airport
Save Generic Building	Rightclick Menu	10.1.5 Importing Generic Buildings
Select Multiple Objects	Additional Tools	14.3.2 Multiple Selection by Clicking
Select Object	Additional Tools	14.3.1 Single Selection
Show XML	Rightclick Menu	12.11.14 Show XML
Straighten Link (Taxiway)	Rightclick Menu	5.2.6 Link Editing

14.21.2 ADE Display Controls

NAME	LOCATION	REFERENCE CHAPTERS
Center on Aircraft	Rightclick Menu	12.11.15 Center on Aircraft
Center on ARP	Rightclick Menu	12.11.16 Center on ARP
Center on Bookmark	Additional Tools	14.11 Bookmarks
Center on Mouse Location	Main Display Controls	2.8.5 The Main Display Controls
Center on Selected Object	Rightclick Menu	2.8.5 The Main Display Controls
Center on Tower Viewpoint	Rightclick Menu	2.8.5 The Main Display Controls
Display Options	Rightclick Menu	12.11.9 Display Options
Grid on/off	View Menu	12.3 View Menu
Grid Spacing	Settings Menu	12.8.4 Set Grid Spacing
Hide Object	Rightclick Menu	12.11.11 Hide Object
Move Aircraft Here	Rightclick Menu	14.13.2 Connecting to FS9/FSX/P3D
Move Back	Rightclick Menu	14.14.4 Editing of Layers in ADE
Move Forward	Rightclick Menu	14.14.4 Editing of Layers in ADE
Move to Back	Rightclick Menu	14.14.4 Editing of Layers in ADE
Move to Front	Rightclick Menu	14.14.4 Editing of Layers in ADE
Night Lighting	View Menu	Figure 12-24
Pan ADE Display	ADE at a Glance	2.8.5 The Main Display Controls
Reset Default Drawing Layers	Rightclick Menu	14.14.4 Editing of Layers in ADE
Restore Hidden Objects	View Menu	12.11.11 Hide Object
Rotate ADE Display	ADE at a Glance	2.8.5 The Main Display Controls
Zoom ADE Display	ADE at a Glance	2.8.5 The Main Display Controls

14.21.3 Toolbar Controls

NAME	REFERENCE CHAPTERS
Add Apron Edge Lights	4.4 Apron Edge Lights
Add Apron Link	5.2.2 Drawing Links
Add Apron	4.3.1 Creating Aprons
Add Blast Fence	6.3 Fences
Add Boundary Fence	6.3 Fences
Add Closed Link	5.2.2 Drawing Links

NAME	LOCATION
Add Custom Ground Line	9.5 Custom Ground Lines
Add Custom Ground Poly	9.4 Custom Ground Polygons
Add Exclusion Rectangle	14.12 Exclusion Rectangles
Add Gate	4.5.1 Creating Parking
Add Guidelines	14.9.1 Guidelines
Add Hold Short Taxi Point	5.1.1 Creating Taxiway Points
Add ILS Hold Short Taxi Point	5.1.1 Creating Taxiway Points
Add New Taxiway Name	5.2.3 Link Properties
Add Normal Taxi Point	5.1.1 Creating Taxiway Points
Add Polygon	9.2 Terrain Polygons
Add Position markers	14.9.2 Position Markers
Add Runway Link	5.2.2 Drawing Links
Add Taxi Link	5.2.2 Drawing Links
Add Vector	9.3 Terrain Vectors (Lines)
Add Vehicle Link	5.2.2 Drawing Links
Auto Connect with FS	14.13.2 Connecting to FS9/FSX/P3D
Connect with FS	14.13.2 Connecting to FS9/FSX/P3D
Default Apron Surface	4.3.7 Apron Properties
Default Blast Fence Type	6.3 Fences
Default Boundary Fence Type	6.3 Fences
Default Parking Type	4.5.2 Parking Properties
Default Surface for New Links	Figure 5-12: Surface Type and Surface Width
Default Width for New Links	Figure 5-12: Surface Type and Surface Width
Disconnect from FS	14.13.6 Disconnecting from FS9/FSX
Lock Connection with FS	14.13.2 Connecting to FS9/FSX/P3D
Pointer (Mode)	14.1 Pointer Mode
Redo	12.2 Edit Menu
Taxiway Designators	05/02/08
Taxiway Name	4.5.2 Parking Properties
Undo	12.2 Edit Menu

14.21.4 Miscellaneous Tools

NAME	LOCATION	REFERENCE CHAPTERS
Add Comment	Rightclick Menu	12.11.5 Add Comments
Bookmarks	Additional Tools	14.11 Bookmarks
Change Airport Reference Data	Tools Menu	12.6.1 Change Airport Reference Data
Add Helper Shape	Rightclick Menu	14.10 Helper Shapes
Load Stock Data	Tools Menu	12.6.9 Load Stock Data
Move Airport	Tools Menu	12.6.6 Move Airport
Project Tree	Lists Menu	14.20 Project Tree
Properties Windows	Additional Tools	14.6 Object Properties
Raw Data View	Tools Menu	12.6.8 Raw Data View
Recover from Crash	Additional Tools	14.18 Recovery from Crash
Remove Stock Data	Tools Menu	12.6.10 Remove Stock Data
Send Log	Tools Menu	12.6.11 Send Log
Thumbnails and Screenshots	Additional Tools	14.17 Thumbnails and Screenshots
Tooltips	Mouse Controls	15.1.1 Tooltips

15.0 Controls

15.1 Mouse Controls

15.1.1 Tooltips

ADE displays a tool tip whenever you mouse over an object. Tool tips provide key information about every element in your airport project except background images.

The display of the tooltips can be toggled on/off in a check box under "Settings" or by the key combination "**Ctrl + T**".

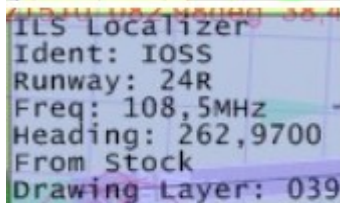
The tooltip can be temporarily hidden by holding down the '**Q**' key. This can be used if the tooltip gets in the way of what you are doing but you do not want to turn it off.

Some Tool tips also indicate the lock status of an object.

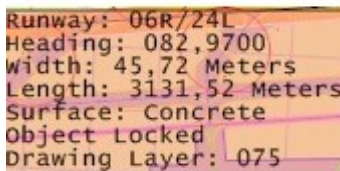


A **yellow** background indicates an element that is not locked in any way. One can move, delete, and edit this element as you wish.

Elements with this status are compiled into the .BGL file.



A **purple** background indicates that this is a stock element. It can be edited but not deleted. Elements with this status are compiled into the .BGL file. One will see this with some nav aids and ILS Localizers. It may also appear with some scenery objects

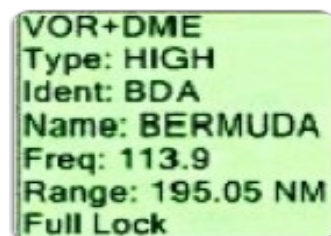


A **pink** background indicates an element that has been locked by the user to stop it being moved or deleted. This status is set or cleared via the Rightclick Menu when the element is selected. Elements in this status are compiled into the .BGL file.



A **black** background indicates an Approach Leg (in white)

A **red border** around the black icon indicates, that the Approach Leg has an error



A **green** background indicates the element is not part of the airport and is shown in ADE for information purposes only. Such elements cannot be moved, deleted or edited. ADE won't compile these objects into the BGL-file

Figure 15-1: Tooltips

These tooltip elements are stored in the .ADE project file but nowhere else.

15.1.2 Left Mouse Button

The left mouse button is used in ADE to do the following:

- o **Left Click** – Selects the object whose tool tip is currently displayed
- o **Shift + Left Click** – Selects multiple airport elements for group edit
- o **Ctrl + Left Click** – When the pointer is over a selected apron edge or polygon you will see in the “Apron”-tool tip a line saying “Ctrl + Left Click to add Vertex”.
- o **R + Left Click** – Generates a multiple selection “rubber band” rectangle
- o **Double Left Click** – Opens the property dialogue for the currently selected object.
- o **Left Drag** – Moves the currently selected object to another location. Can be undone .
- o **Alt + Left Drag** – Moves via a currently selected object the whole airport to another location.

15.1.3 Right Mouse Button

The right mouse button opens the rightclick menu with options that are appropriate for the selected element or situation.

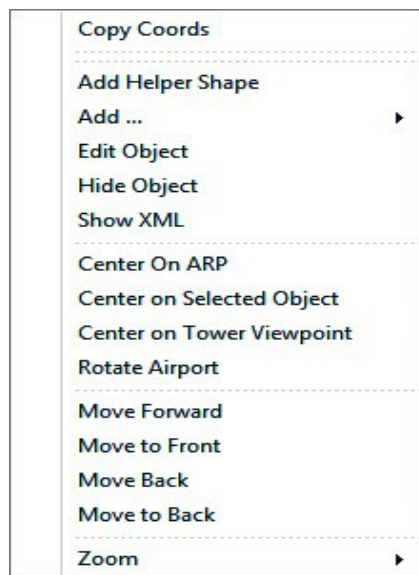


Figure 15-2: Example of Rightclick Entries

15.1.4 Mouse Wheel

You can use the mouse or scroll wheel to zoom and rotate views and objects in ADE:

- o **Press Wheel** – Moving the mouse with the wheel pressed down pans the ADE display
- o **Scroll Wheel** – Adjusts the zoom or scale of the airport schematic
- o **Ctrl + Wheel** – Rotates the airport schematic in five degree increments around the mouse location
- o **Shift + Wheel** – Rotates the airport schematic in one degree increments around the mouse location
- o **Alt + Wheel** – Rotates selected airport objects in one degree increments
- o **Ctrl + Alt + Wheel** – Rotates selected airport objects in five degree increments
- o **Alt + Shift + Wheel** – Works only with Arc Helper Shapes. It changes the degrees of arc (see chapter 8.5)

15.2 Keyboard Shortcuts

These are the keyboard shorts-cuts you can use in ADE:

- o **F1** – Opens the ADE Help Site
- o **Shift + F1** – opens Commands Help window
- o **Ctrl + F1** – opens ADE support forum.
- o **F3** - Moves the aircraft to the position of a selected object
- o **F4** - Moves a selected object to the aircraft position,
- o **F5** - Changes the heading of a selected object to match the aircraft heading
- o **F6** - will both move the object to the current aircraft position and match the heading
- o **F8** – hide a selected object (needs ProKey)
- o **F9** – Log current state of standard parameters
- o **F10** – Selects the File Menu
- o **A** – decrease size of aircraft symbol (ADE – FS connected)
- o **Shift + A** – increase size of aircraft symbol (ADE – FS connected)
- o **Ctrl + A** – select single apron at cursor position
- o **Ctrl + Shift + A** – Multi-select aprons and/or polys
- o **B** – Places a bookmark at the location of your mouse pointer, used to centre display later.
- o **Shift + B** – Centers the airport diagram on the centre bookmark placed earlier.
- o **Ctrl + B** - Remove bookmark
- o **Ctrl + Shift + B** – Set bookmark to selected object reference point
- o **Ctrl + C** – Compiles the current project
- o **Ctrl + Shift + C** – Copy object location (ProKey)
- o **D** – temporarily show hidden objects
- o **D** - moves an existing approach-, missed approach- or transition leg one place down in the approach tree
- o **Alt + E** – Open Edit menu
- o **Alt + F** – Open File menu
- o **G** – Show/Hide Grid
- o **Alt + H** – Open Help menu
- o **Ctrl + H** – Toggle for showing apron outlines
- o **Alt + I** – Save Image of current display
- o **Ctrl + I** – Select Background Image
- o **Shift + Ctrl + I** – Multi-Select Background Image
- o **L** – Toggle for Night Lighting Mode
- o **Alt + L** – Open List menu
- o **Ctrl + L** - produces a Log File
- o **Alt + Ctrl + L** – lock selected object
- o **M** – Centers the ADE display on your current mouse location.
- o **N** – decrease nudging distance
- o **Shift + N** – increase nudging distance
- o **O** – makes aprons and polys display less transparent
- o **Shift + O** – makes aprons and polys display more transparent
- o **Ctrl + O** – Opens an ADE project file
- o **Shift + Alt + O** – Opens an ADE project file from clipboard
- o **Alt + P** – Open Project menu
- o **Ctrl + P** – Prints the airport schematic area to the current Windows printer.
- o **Ctrl + Shift + P** – Paste Object Location (ProKey)
- o **Q** – while pressed, hides the tool-Tip
- o **R + Left Click Drag** – rubber band selection

- o **S** – Select object under mouse
- o **Alt + S** – Open Settings menu
- o **Shift + S** – Multi-Select object under mouse
- o **Ctrl + S** – Saves the current project file
- o **T** – Highlight taxiways with next taxiway name
- o **Alt + T** – Open Tools menu
- o **Shift + T** – Highlight taxiways with previous taxiway name
- o **Ctrl + Alt + T** – color taxiways by designator
- o **U** - moves an existing approach-, missed approach- or transition leg one place up in the approach tree
- o **Alt + U** – Open Un-Lock menu
- o **Ctrl + U** – Redo last undo
- o **Ctrl + Alt + U** – Unlock selected object
- o **Alt + V** – Open View menu
- o **X** – Opens the XML code for the selected airport object
- o **Ctrl + X** – Exit ADE
- o **Ctrl + Y** – Undo
- o **Z** – decrease vertex size
- o **Shift + Z** – increase vertex size
- o **Alt + Z** – set vertex to default size
- o **Ctrl + Z** – Redo
- o **Plus** – fine increase zoom of display
- o **Shift + Plus** – coarse increase zoom of display
- o **Ctrl + Plus** – increase size of helper shapes
- o **Minus** – fine decrease zoom of display
- o **Shift + Minus** – coarse decrease zoom of display
- o **Ctrl + Minus** – decrease size of helper shapes
- o **Ctrl + Left Arrow** – decrease width of helper shapes
- o **Ctrl + Right Arrow** – increase width of helper shapes
- o **Ctrl + Up Arrow** – increase height of helper shapes
- o **Ctrl + Down Arrow** – decrease height of helper shapes
- o **Ctrl + Numeric Pad Plus** – make helper shapes bigger
- o **Ctrl + Numeric Pad Minus** – make helper shapes smaller
- o **Alt + Arrows** – Nudging elements (small position adjustments)
- o **Alt + Tab** – Toggle between programs
- o **Alt Key** – Selects the File Menu
- o **Enter Key** – Edit single selected object
- o **Shift + Enter** – **Edit selected object**
- o **Home Key** – Resets the airport schematic to the default North orientation.
- o **Ctrl + Home Key** – Move selected object forward
- o **Alt + Home Key** – Move selected object to back
- o **Page Down** – Coarse rotates the airport schematic clockwise (5° steps).
- o **Shift + Page Down** – fine rotates the airport schematic clockwise (1° steps).
- o **End** – Coarse rotates the airport schematic counter clockwise (5° steps).
- o **Shift + End** – fine rotates the airport schematic counter clockwise (1° steps).
- o **Ctrl + End** – move selected object backward
- o **Alt + End** – move selected object to back
- o **Esc** – Return to pointer mode
- o **Space Key** – Resets the airport schematic to the default North orientation.
- o **Delete** – delete selected object