3ds Max Design 2014 and the 'New' Perspective Match tool.

3ds max Design 2014

w3ds Design MAX has in fact had this tool since v2.5 called Camera Match, although it is more accurate it requires that you have 6 known points ideally surveyed or measured on your model and then select the corresponding points in the background photograph, and the routine would then calculate the position of the camera, focal length and give a residual error to give an idea of accuracy. If distortions occur (due to poorly chosen or inputted points) then the positioning can be tweaked by adjusting the points and camera settings to give a better solution (and a lower residual error value)

Several years ago Sketchup provided a perspective match tool which was very easy to use AND didn't require any real knowledge of site conditions or point positions. All we needed to do was to indicate perspective lines for the X, Y and Z axis. Although potentially less accurate it was easy to use and was very popular for people wanting to model in 3d but found things rather difficult to achieve.

A feature very similar to the old Google tool is now included in Max Design 2014, called Perspective Match. It is located in the utilities section of the command panel in the max environment. (Camera Match is still available to those users who wish to use it! Under the more 'More...' button) this will make a photomontage project much easier for novice Max users.

The example shown here was used in the Autodesk 2014 Seminar in Amsterdam and was shown to the Infrastructure AE's however this paper should prove helpful to any dataset you might be working with.

NB. To help novice Max users I have put keyboard shortcuts in brackets and bold text. It is assumed that basic materials and texture mappings have been applied to your Max model geometry. This paper is just concerned with matching your model to a photograph, using the new toolset.
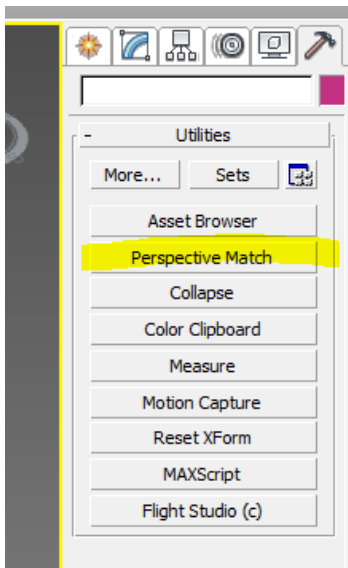
Clicking on this tool will give the following options for showing lines and camera tuning controls for a better fit to your current max view.
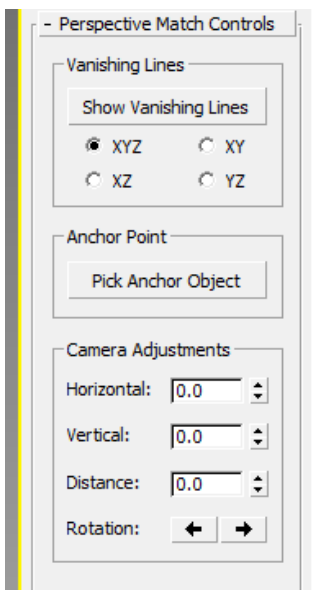
Enable 'show vanishing lines' to display perspective match lines for the 3 axes (red (x), Green (y) and Blue (z)) the lines or corresponding end points can then be dragged to convenient references like roof ridges, edges of roads, wall corners etc.

Let's look at the following example of a new bridge project in The Netherlands.

Image Courtesy of Peter Ingalls @ Autodesk - using Infrastructure Dataset from 2014 Summit

Open up your Max model (importing any CAD data as appropriate)

Enable the Environment Dialogue (shortcut - **8**) and select your desired background image (Jpeg, PNG etc...) This will have the backround image appear in the render only. However, to do the perspective match we need to see the environment image in the working viewport so that we can apply our lines.

For the viewport backgound (shortcut **ALT+B**) tick use environment map and apply to active view. Use Shift F to enable safe frame and set Match to Bitmap aspect ratio. Failing to do this will cause distortions in the match lines workflow.
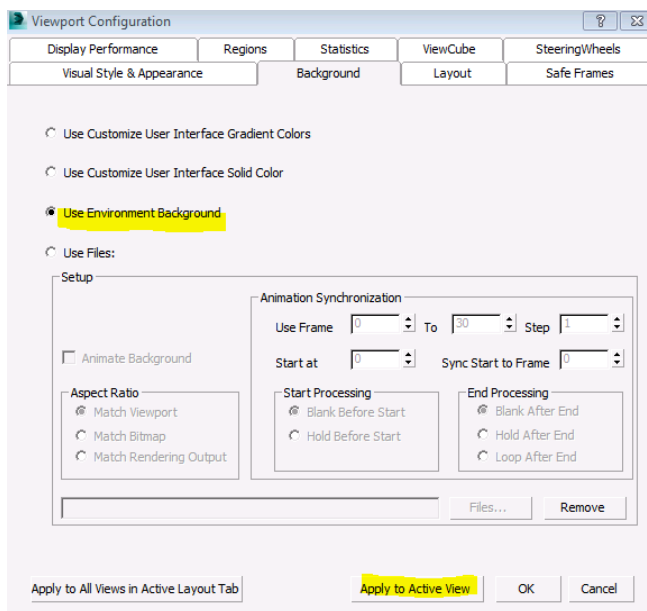
We should now be able to switch on the 'Vanishing Lines' and drag these to corresponding edges and points onto the photograph. (Located in the max command panel)

Fine tuning can be achieve by using the Pan and Zoom or Camera Adjustment controls if setting a (Free)

camera to your view (Ctrl+C)

We now need to look at producing a composite render with our overlaid model and photograph together.

A new feature for environment maps is to use spherical mapping. Which will mean that if we render the background image will be all distorted? (This used to be set to screen by default in prior versions of Max)

To correct this we need to bring up the Material Editor (**M**-Shortcut) - Either the Slate or Compact editor will do (Which editor you use is down to personal preferences and if necessary can be configured in Material Editor Options) for this document the Compact editor is assumed.

Drag the map button from the environment dialogue to the 'M' button on the (compact) material editor. Choose 'Instance Copy' to enable dynamic updates to any texture changes or assignments.
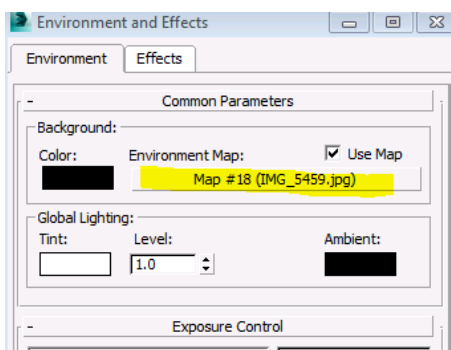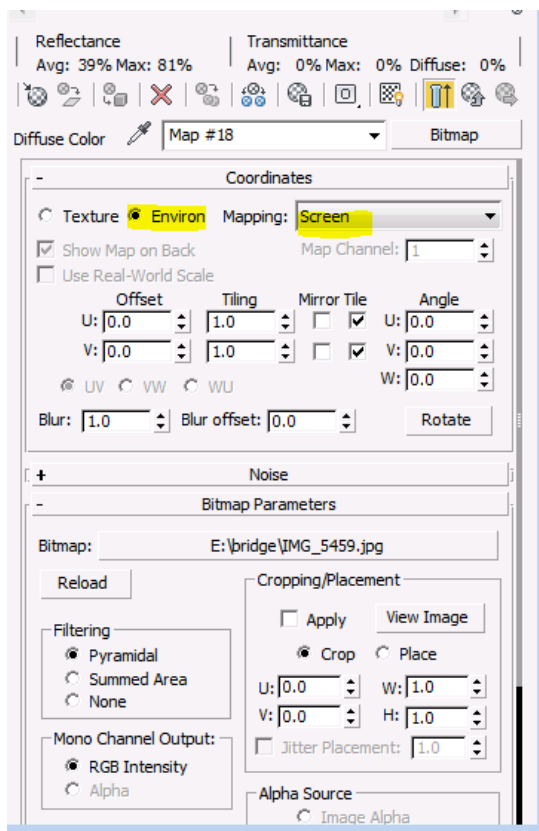

However as mentioned earlier we need to change the environment map type to screen which is achieved by;
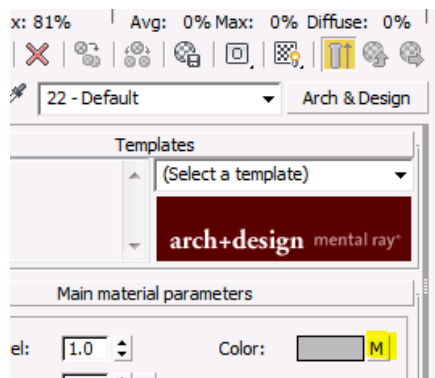
Clicking on the 'M' button (or map) will take you to the following Material Editor Dialogue box.

(Or if using Slate Editor - double click on the map node on the current View display)

Adjust the settings highlighted in yellow marker.

The example discussed here is using the compact editor interface, but the options that need to be altered are exactly the same, it's just addressed by using the Slate editor controls instead.

To get a realistic image it is often necessary to add a Daylight System for shadows and illumination. The Daylight system can be adjusted to set the north point and time of day to correspond to the settings in the photograph. (Modify & Motion Tab in the Command Panel)

However, as we are using a bitmap for a background this will result in an image that is excessively exposed (resulting in a bright white image). This is due to in effect we are illuminating the photograph twice. To correct this we need to go into our exposure settings (Shortcut - 8). Choose MR (Mental Ray) Photographic Exposure Control on the drop down list.

For contrast the easiest way to tweak settings is to adjust the EV value. For an external scene is usually about 12 or 13 (or for internals 7 or 8 - dependent upon background, model, units and lighting setup) If you know a lot about photography you can use the Shutter speed and aperture controls instead! (This writer doesn't!)

We also need to switch off real world lighting values and try some unitless values in this civil example about 23000 gives a reasonably satisfactory result. (Brighter photos might a value to be as high as 50000 or more)
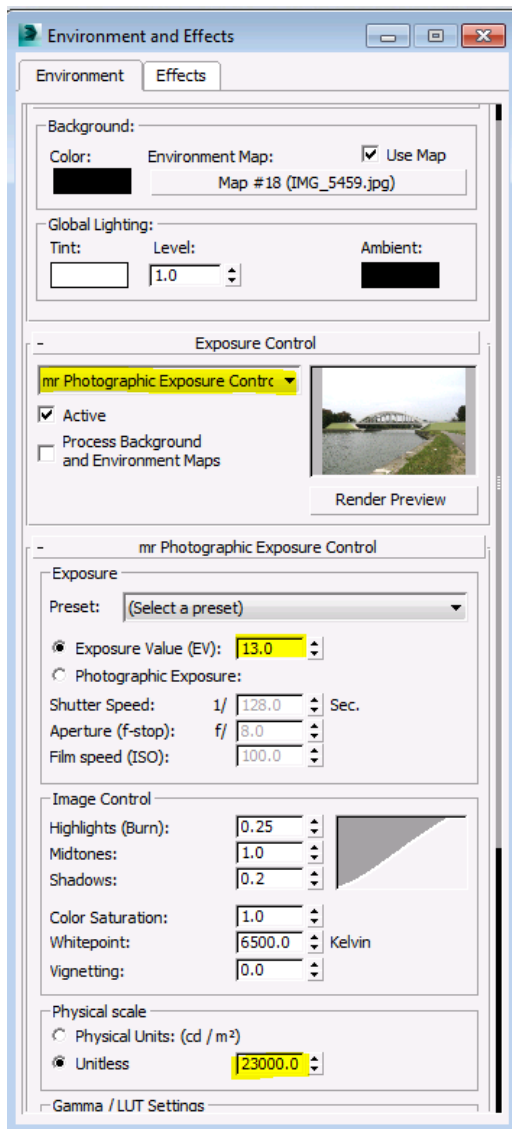
Render the image using the Render Button (Keyboard Shortcut **F9** for quick render **F10** for render options including image size, file formats and general configuration options)

Sub headings