Depth of Field Camera Settings

By
Theresa Strohbin
Why use Depth of Field?

- You see depth of field every time you look through a camera lens.
- It’s used in movies, television, animation and even your own eye sight.
- It’s a simple way to enhance the look of your renders.
What is Depth of Field?

- “The range of distance in front of your camera that is in sharp focus.”

- “The part of photography that appears the sharpest – in focus.”
  - Byron Wolfe (lecture notes)

- Sometimes referred to as DOF

- Shallow, Small, or Soft DOF = only a small portion of image is in focus.

- Deep, Large, Sharp DOF = most everything is in focus.
Focal Distance

- **Focal Distance** - Tells Lightwave where you want to be “focusing.”

- The **Lens F-Stop** setting tells Lightwave how much area around your focal distance will be “in focus.”
  - The higher the F-stop, the larger the area that will be in focus. (Deep DOF)
Ways to control Depth of Field…

- **Focal Distance** - The distance between the camera and the sharpest part of an object or scene.

- **Aperture** - “f-stop” controls how much light enters your camera.
  - Common aperture settings…f4, f5.6, f8, f11, f16, f22
  - (remember the higher the number, the more that will be in focus.)

- **Duration** – “shutter speed” the amount of time light strikes your film.
  - 2s, 1s, 1/2s, 1/4s, 1/8s, 1/15s, 1/30s, 1/60s, 1/125s…
  - Lightwave isn’t too concerned about this setting.
Camera Settings

- Click on the camera tab.
- Double click the top bar on your screen to expand the screen to give you access to all the settings at the bottom of the screen.
Camera Settings

- With the "Camera" tab still selected...
- Select "antialiasing"
- Turn the antialiasing to "Medium"

Having an antialias setting of "medium" or higher gives you access to the DOF settings.
- At the bottom of the screen, select the “Camera” button.
- Click on “Item Properties”
- Within the “Stereo and DOF” tab in the camera Properties panel, you can turn on Depth of Field by checking the box next to it.
After you check the Depth of Field box it allows to set the *Focal Distance* and the *F-stop*

The default setting for focal distance is 1m and the F-stop is set at 4.0
Camera Settings

- How can you tell how far away an object is in order to set the correct *Focal Distance*?
- Use Lightwave’s “grid” located in the lower left corner or your screen.
- The default setting is 1m
- Let's try it out....
Camera Settings

- My object is exactly 4 squares away from my camera.
- The part that I want in focus is also 4 squares away.
- So I will set my Focal Distance to 4m.
- This makes any object before or after the 4m mark out of focus.
F-stop Settings

- Much like the human eye, Lightwave cameras have an iris and pupil that allow in more or less light.
- While the human eye automatically takes care of this for us, the camera has to be set. This is done through F-stops.

F-stops - are numerical values that represent the amount of varying degrees of light transmission.

A smaller \( F\)-stop allows MORE light into the camera, and vise versa.
Here’s a better way to remember.

- 1.4 softest focus, allowing lot of light in.
- 2.0
- 2.8
- 4.0
- 5.6
- 8
- 11
- 16
- 22 Sharpest focus, allowing little light in.

Lightwave doesn’t require that you have exact settings, however, these are common setting found on a camera and will provide you with the best results.
Once you have set the DOF settings it is time to render.

Go to "rendering" button
- "Rendering options"
- Change "Render Display" to either "Image Viewer" or "Image Viewer FP"
- Turn on any or all of the "Ray Trace Shadow" options
- Hit "F9" to render
Here’s an example where I set the focal distance at 2.5 ft and the F-stop at 5.6.
Here’s the same scene with the focal distance set at 2 m and the F-stop set at 1.4 m
A Quick Overview

- Why should DOF field be used?
- How to control Depth of Field
  - Focal Distance
  - Aperture size or Lens F-stop

Where to find DOF camera settings in Layout.

- How to set depth of field settings.
  - F1/4 = softest focus, allows lots of light in
  - F/22 = sharpest focus, allows little light in

- How to use the “grid” to your advantage.
And that’s how to set the Depth of Field in Lightwave.

Thank you for your time.