Architectural design

Jeff Livingston

About the author

Jeff Livingston was born in Lompoc, California in 1976. An avid swimmer and aspiring architect, Jeff joined the University of Texas men's swimming team to pursue his Olympic dreams in competitive swimming and later pursued his master's degree in architecture at the Georgia Institute of Technology. He currently lives in Ottawa, Canada with his wife Ariadne and their three children. Jeff is a registered architect with over 10 years of experience. Over the last four years, Jeff has called GRC Architects in Ottawa his home, and has been engaged in a wide range of recreational, institutional, university, and office projects. With the design of recreation centers and natatoriums, Jeff has been able to combine his love of competitive swimming and sports with his passion for designing buildings and spaces.

Architectural design

I have used CorelDRAW and Corel PHOTO-PAINT for over 10 years in the design and production of architectural representation because of their speed and flexibility compared to other graphics programs. The following design was created for a proposed natatorium in Northern Ontario. The design concept was to create a swimming and leisure pool in which the skin of the exterior echoed the interior of the building.

After various schemes, I began to look at the structure and appearance of the water bubble as an inspiration. I used a 3D modeling program to develop renderings with generic materials. With the use of CorelDRAW, I was then able to explore various materials and color palettes quickly, as well as add plants, environments, and general entourage within CorelDRAW to make the rendering come to life.

In this project I am focusing on developing two perspectives, one for the exterior entry (Figure 1) and one from the interior pool deck (Figure 2).
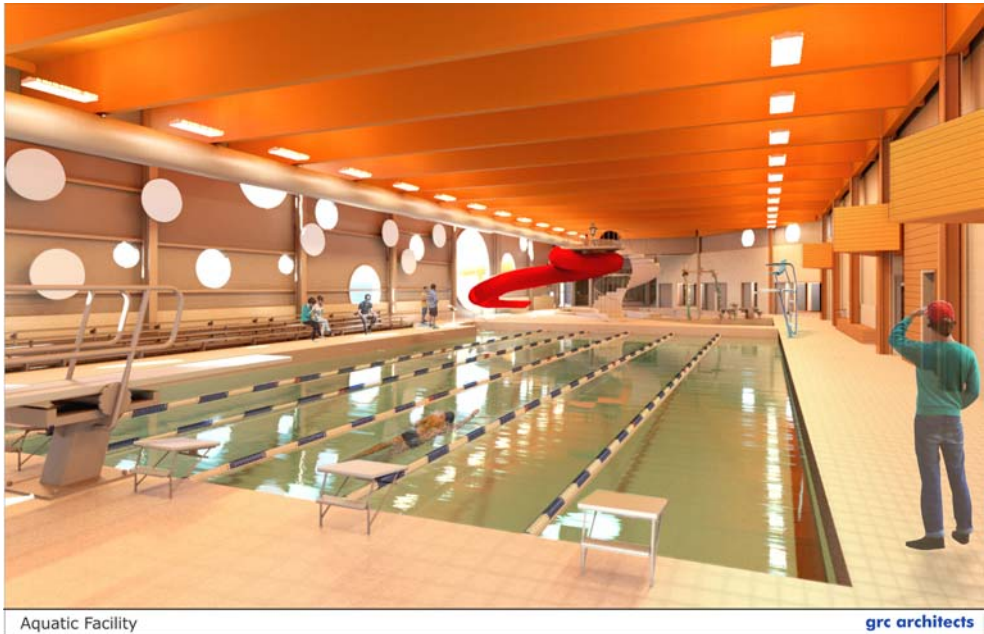

Figure 1: Exterior view

Figure 2: Interior view

Setting up the sheets

First, in CorelDRAW, I created the title block that would appear at the bottom of the design by importing the GRC Architects JPEG logo, adding text using the **Text** tool (Figure 3), adding some line work, and then sizing the layout space based on the output size of the final images.
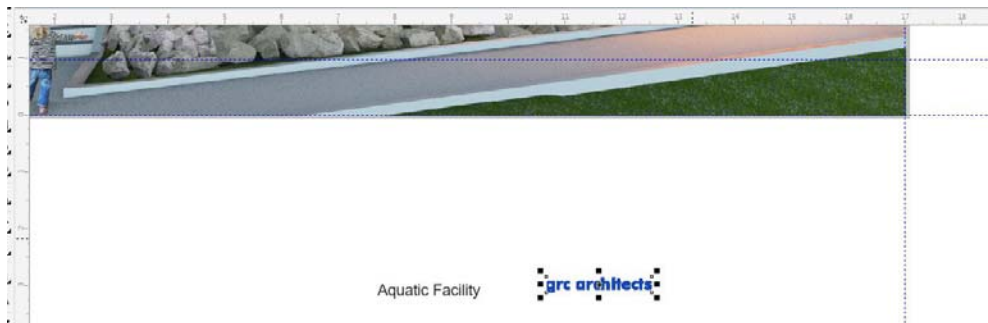

Figure 3: Creating the title block

Adjusting the original images

The original rendered JPEG images were brought in to begin the post-production process. The exterior shot was taken at dusk, and it appeared a little too dark. I adjusted the JPEG images by changing the brightness, contrast, and intensity (**Effects ▸ Adjust ▸ Brightness/Contrast/**

Intensity). I also used the tone curve (**Effects ▶ Adjust ▶ Tone curve**) for further adjustment (Figure 4 and Figure 5).
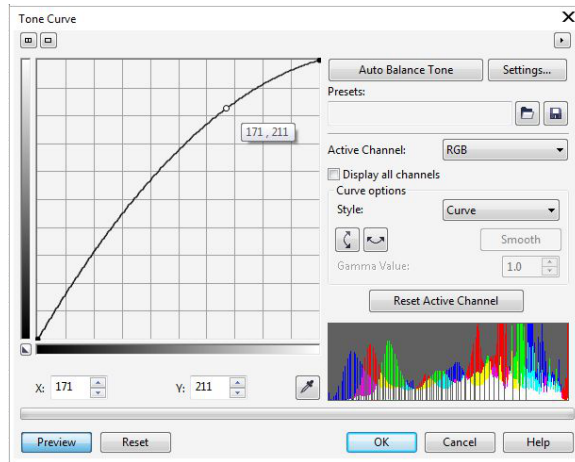

Figure 4: Using the tone curve

Figure 5: Adjusting the brightness

Correcting modeling mistakes

There were some details in the rendered images that I wanted to change, which could be done quickly in Corel PHOTO-PAINT instead of spending time re-rendering. For example, I wanted to remove the figure of the man in the image. One very useful tool for fixing modeling errors in renderings is the **Clone** tool, which lets you edit the bitmap directly in Corel PHOTO-PAINT (Figure 6). After various adjustments, including painting areas with multiply transparency, I brought the image back into CorelDRAW.

*Figure 6: Correcting modeling mistakes with the **Clone** tool*

Importing additional line work

In CorelDRAW, it is useful to create separate images for the line work in order to adjust the lines more freely. Line work is an important element in architectural design. Due to its ability to read vector-based images, CorelDRAW allows me to use wire-frame modeling and create crisp, clean lines, which are usually blurred or lost in bitmap-based programs.

Line work is usually saved as a PDF or other vector-based image and then imported into CorelDRAW. In this case, I imported a PDF into CorelDRAW and adjusted the color and line weight. CorelDRAW is also able to break apart PDF, EPS, or similar vector files so that individual lines can be adjusted or even deleted as needed. I deleted any unnecessary interior building line work and adjusted the line weights, the line color, and the transparency, all within the **Object properties** docker (Figures 7-9).
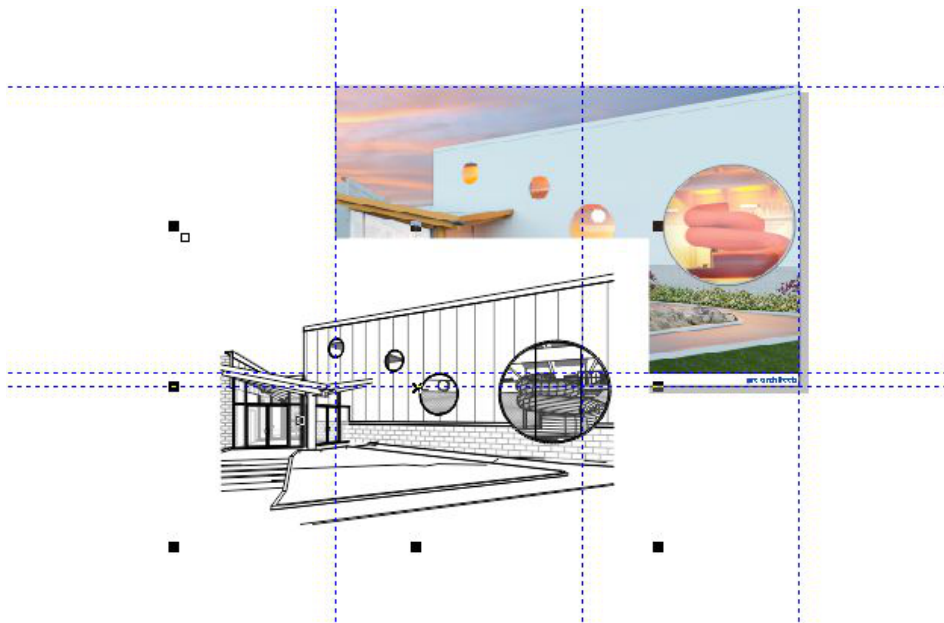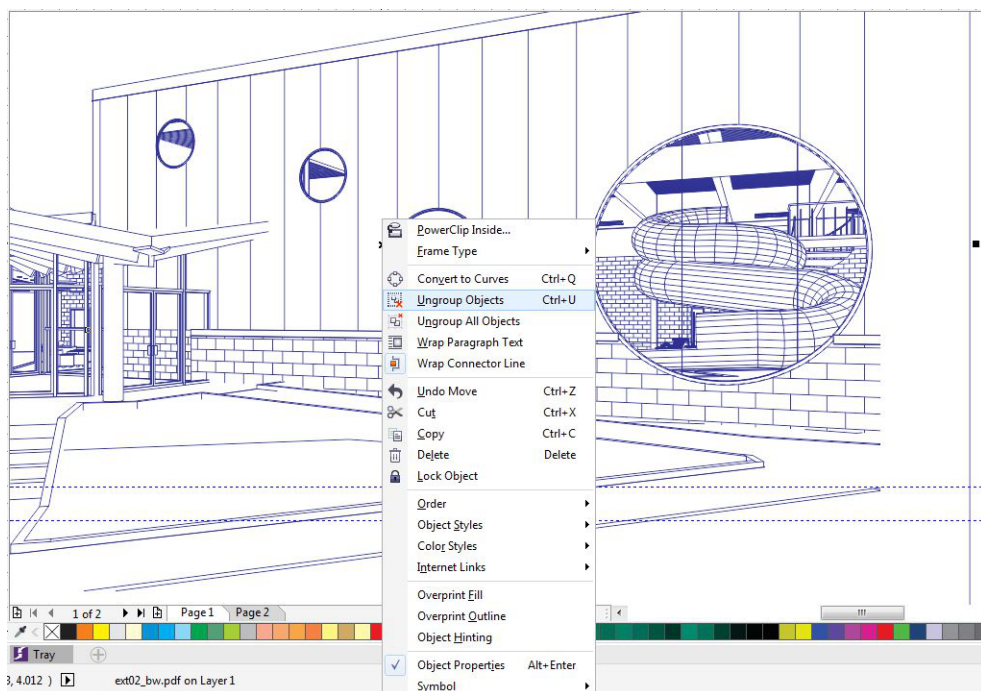
Figure 7: Importing line work as PDF

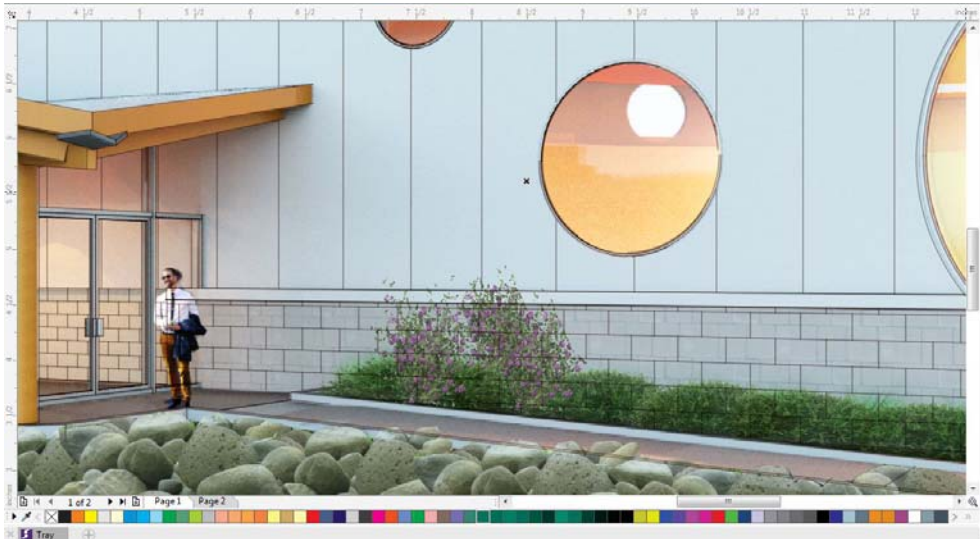*Figure 8: Making adjustments to the lines*

Figure 9: Making adjustments to the line work on the building

Adding material patterns and perspective

Material patterns such as grass, tile, and other textures can be created to add further detail. In rendered perspectives such as the one in this example, I can use the perspective effect in CorelDRAW (**Bitmaps ▸ 3D effects ▸ Perspective**) for larger perspectives or the **Free transform** tool for more detailed perspectives. For the pool floor tile, I used the **Rectangle** tool to create a rectangle, and I set the fill to a bitmap pattern fill. I selected a tile image from my office library and adjusted the scale as needed. This image was then brought into Corel PHOTO-PAINT in order to adjust the tile to fit the perspective. Finally, I brought the image back into CorelDRAW to be clipped and trimmed as necessary (Figures 10-13).
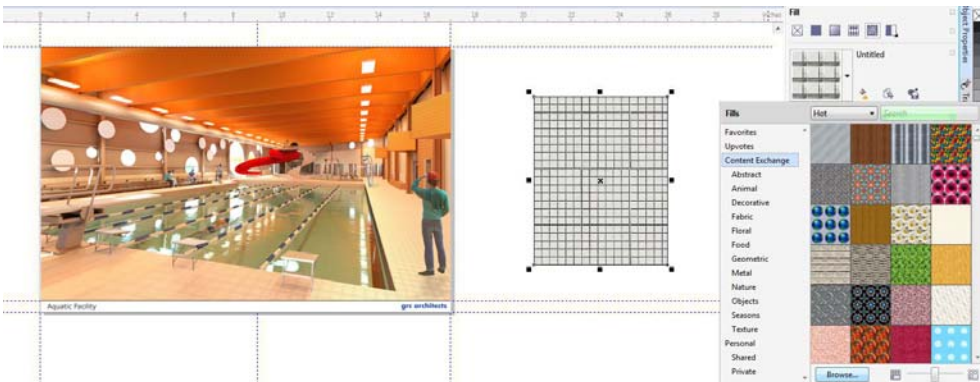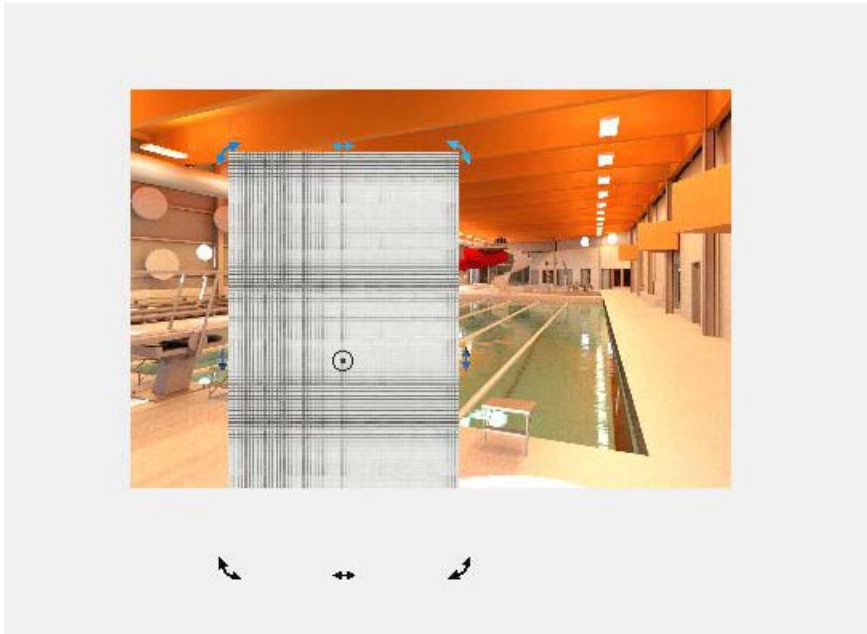

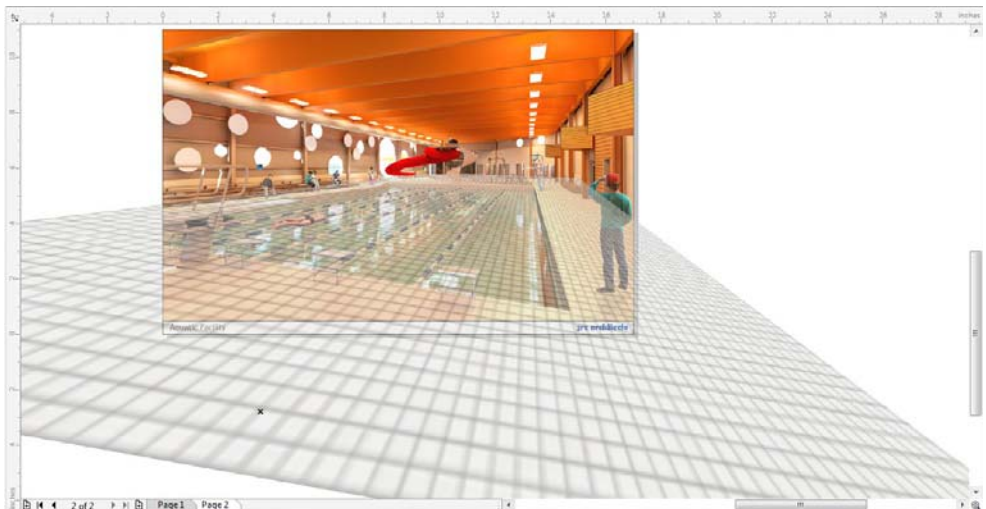*Figure 10: Creating a pattern fill*

Figure 11: Moving the rectangle
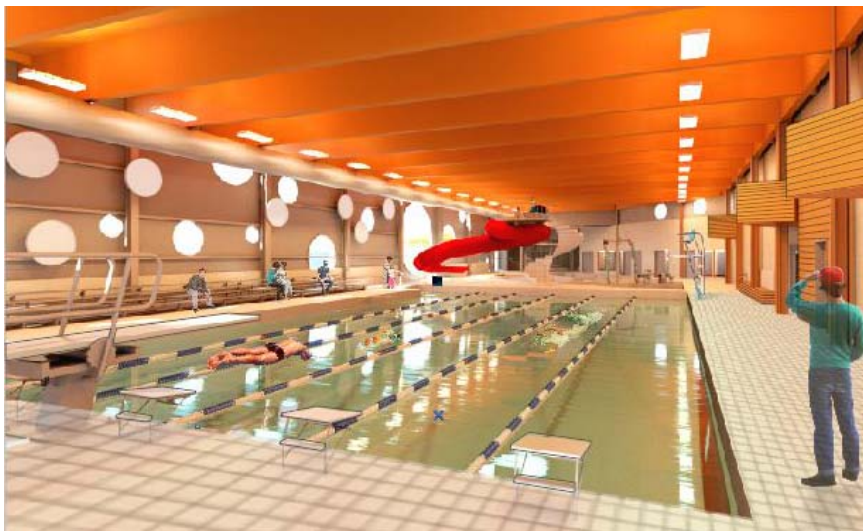

Figure 12: Adjusting the perspective

Figure 13: The finished tile

Adjusting the colors

The colors of objects can be adjusted by placing new objects over the rendering and applying transparency with the **Multiply** merge mode. These objects can be converted to curves and then nodes can be added and adjusted with the **Shape** tool to suit the underlying objects. In this case, I created a rectangle (Figure 14) and converted it to curves by right-clicking it and choosing **Convert to curves** from the pop-up menu. Then I was able to reshape the rectangle (Figure 15), adjust the nodes with the **Shape** tool to match the underlying object, and adjust the transparency (Figure 16).
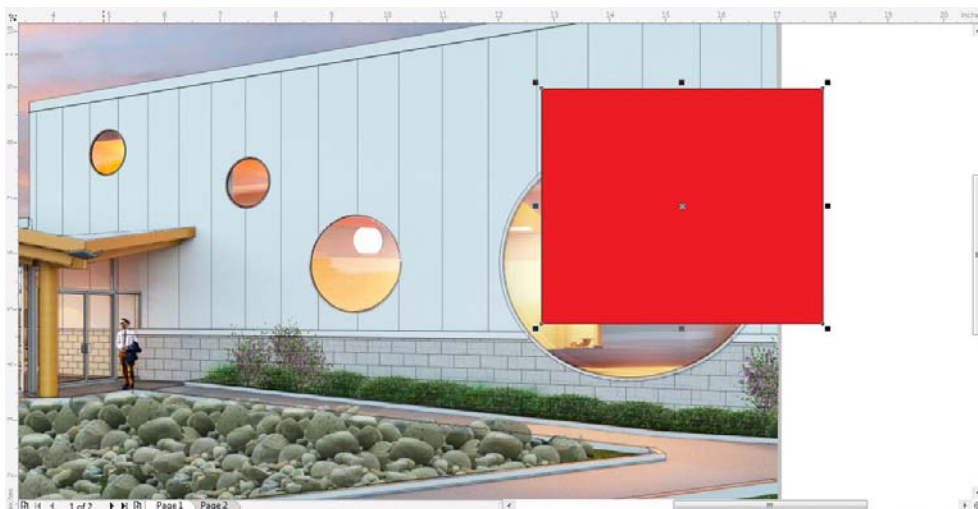

Figure 14: Creating a rectangle
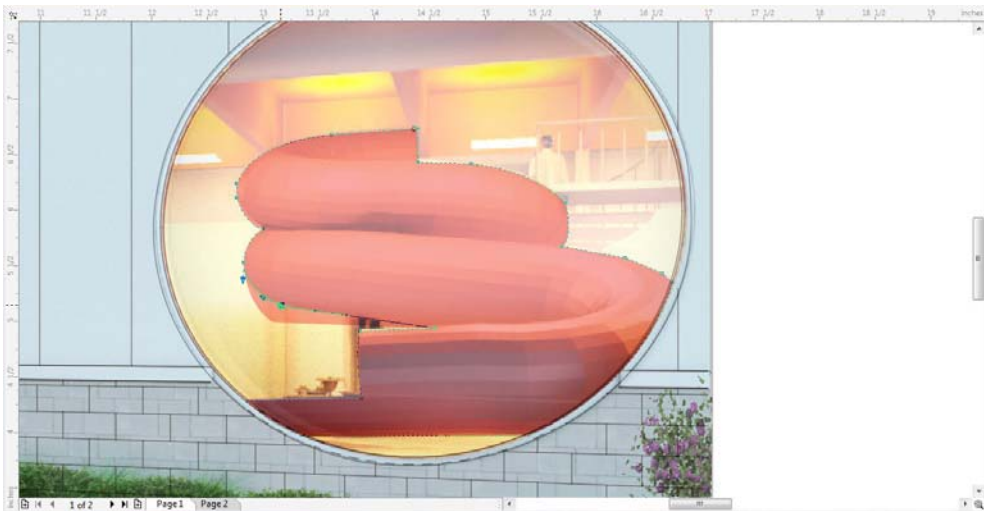
Figure 15: Reshaping the rectangle

Figure 16: Adjusting the shape and transparency of the object

Different color schemes can be created quickly by simply changing the fill color of the various objects. In this case, I applied a red color by clicking the red swatch on the default color palette. Then, I right-clicked the "no fill" button ⊠ on the color palette to remove the outline around the object. This ability to control the line work color independently of the fill color is a great advantage.

Adding entourage

The final touches of the rendering are then added by importing images of trees, plants, people, and other elements. There are two tools in this process which I could not live without: the bitmap color mask and the **Drop shadow** tool. After importing the image of the woman and child (Figure 17), I used the bitmap color mask (**Bitmaps ▸ Bitmap color mask**) to quickly delete the white background (Figure 18) and placed the entourage within the image.

Figure 17: Importing images for the entourage

Figure 18: The white background is removed

Then, by simply using the **Drop shadow** tool and adjusting the shadows to match the perspective, I made the people appear to blend into the landscape (Figure 19 and Figure 20).

Figure 19: Adding a drop shadow

Figure 20: The drop shadow helps the figures blend into the environment.

In order to create further depth, I also selected images in the background and added a Gaussian blur (**Bitmaps ▶ Blur ▶ Gaussian blur**) (Figure 21).
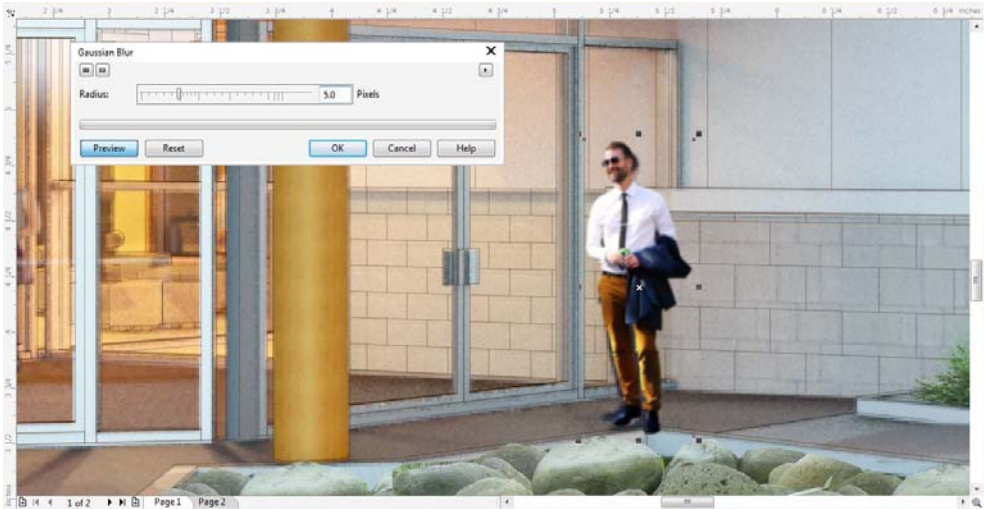
Figure 21: Applying a blur effect to objects in the background

After the final touches are added to the perspective, it is now time to produce the images which will be sent to the printer and finally presented to the client. Due to the availability of paper selection and the quality of printers, I often have these images produced at a professional printing office. I have found over the years that publishing the images to PDF provides the best results. As mentioned earlier, the vector line work and line weights created in CorelDRAW are retained best within PDF images, since bitmap images blur lines when they are produced. In this example, the page dimensions were set to 11 x 17 inches for the presentation boards. The design was now ready to be presented.

Some of the images of people were provided by skalgubbar.se.