

technology

For Authors A Digital Lesson



Structural engineering is certainly not just calculations and drawings. We all know that promotion is an integral part of engineering projects. Whether public relations, marketing, or simple historic reference, photos and graphics depicting what we design and how it is constructed are integral tools for the profession.

Advances in technology, and falling prices, have made digital cameras and scanners a common tool for structural engineers. Digital cameras can save us from the old dilemma of “Did I get the shot?” It is common to see design professionals strolling construction sites, snapping digital photos of work that demonstrates their expertise and the project’s unique aspects.

“In many cases, we were unable to use their digital photos.”

This new found freedom to record our achievements is fantastic! It does, however, mean that we all need to learn some new techniques... transitioning from 35mm film to digital cameras means learning about resolutions and file sizes, so that digital records can be shared across different media outlets. Over the course of the last two years, we at STRUCTURE magazine have worked with many engineer authors to produce printed versions of their project stories or technical articles, including “pictures worth a thousand words”. In many cases, we were unable to use their digital photos.

The problem... *resolution*. Most of us are aware that the resolution of digital photos/graphics relates directly to file size. And, for many, we assume that the default setting on our digital camera or scanner is appropriate for our needs. Unfortunately, this is not the case. Digital camera and scanner manufacturers set defaults to low

resolutions/size to save on disk storage space, not to accommodate the needs of different presentation media (websites, PowerPoint® presentations, newspapers, magazines, etc.). Their goal is to allow you to fit as many photos on the disk as possible, so as not to have you frustrated with carrying, and changing, too many disks.

“...to accommodate the needs of different presentation media...”

It’s time to educate engineer “authors/photographers” on digital photo requirements. First, resolutions vary depending on the camera or scanner, and where the photo will eventually be used. Make sure you know what your camera/scanner offers in terms of resolution options, and how to adjust settings. Both size and resolution are important, and are related. For example, a photo/graphic at a low resolution and a large size may be able to be “resized” to a higher resolution. Once you understand your requirements, you should refer to your owner’s

manual for proper settings.

Second, understand what resolutions are required for the various venues in which you may want to publish the photo. Here are some general rules of thumb:

“Both size and resolution are important...”

- For websites, photo resolutions at 72 dpi are sufficient. Most photos at this resolution will look fine on monitors. However, it is important to remember that 72 dpi is only appropriate for

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“If this is all too much to handle, remember... ‘Out with the old and in with the new’ is not always the best choice. Professional prints of your photos are always welcome! Publishers and editors have access to high quality scanners, and can easily convert your prints to digital files.”

Terri Sloat

Art Director, STRUCTURE magazine

Photo Courtesy of Steve Schaefer Associates, Cincinnati, Ohio



72 dpi



150 dpi



300 dpi

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photos and graphics that will be 'looked at' on a monitor. If the purpose is to have someone download the photo and use it somewhere else, make sure that the resolution fits that final purpose.

- For PowerPoint presentations, 72 dpi is also usually sufficient. Incorporating photos and graphics at a lower resolution keeps the total PowerPoint file size down. However, it is wise to test the presentation on the projector that will be used. Projectors also have different capabilities. Photos and graphics may display better at higher resolutions, depending on the projector.

- For reports that will be printed on good color printers, or at the copy shop down the street, 150 dpi will work well. Remember, this is only for reports that you plan to print on regular office printers, for non-commercial use.

- For grayscale newspaper print, 300 dpi will suffice. If you submit photos to newspapers regularly, check with the editorial staff to determine their requirements.

- For magazines and other color print media, like STRUCTURE magazine, a minimum of 300 dpi is a must! Resolutions of 600 or 1200 dpi are even better, especially if you would like to see your photo used as a cover.

The examples included with this article demonstrate how different resolutions print; the higher the resolution the better the print quality. At 72 dpi, the picture is most definitely NOT worth a thousand words.

"...you lose quality and size when going from a low resolution to a higher resolution."

Finally, don't take for granted that photo-editing software will solve all of your problems. Photos that are taken, or scanned, at low resolutions can be adjusted in photo-editing programs. However, you lose quality and size when going from a low resolution to a higher resolution. Take a photo with a digital camera at a low resolution/size, say 5x7 – 72 dpi, and convert it to a higher resolution, say 300 dpi, and you will end up with a photo smaller than a postage stamp! And, for news print, editors are concerned about line-screen requirements. Always check before 'playing' with the editing software.

This brief article is in no way intended to make you an expert at digital photography. It is, however, intended to make you aware of limitations in the new digital age, and help you understand minimum requirements associated with getting photos and graphics of your projects into print!

In parting, we leave you with the two most important rules:

1. Take, or scan, pictures/graphics at the highest possible size/resolution the first time. For photos, you will not get a second chance, and you may just want to have that photo end up in print.

2. Check with your media source (editor, publisher, marketing director, etc.) for photo/graphic requirements before you snap the first shot.

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