

Using Multispectral and Multiframe Files

AutoCAD® Raster Design software gives you the power to unlock and extend the value of scanned engineering drawings and maps, aerial photos, satellite imagery, and digital elevation models using powerful and intuitive raster tools that integrate with applications based on AutoCAD® software. Using AutoCAD Raster Design software's comprehensive toolset, designers can integrate raster data within projects to communicate design intent accurately, and clean, edit, or vectorize scanned drawings without expensive redrafting or conversions. Realize the maximum value from your raster assets using AutoCAD Raster Design to incorporate scanned drawings, maps, and photographs into projects to improve the design process and decision making.

This white paper highlights the multispectral and multiframe capabilities of AutoCAD Raster Design 2008 software.

Multispectral and Multiframe Image Formats

AutoCAD Raster Design 2008 expands your ability to use multispectral image data by handling three additional, widely used formats: DigitalGlobe's QuickBird, NITF (National Imagery Transmission Format), and Landsat FAST. Many of the files produced in these formats are also multiframe, containing multiple images or pages in separate frames. AutoCAD Raster Design 2008 can work efficiently with multiframe images.

QuickBird

DigitalGlobe's QuickBird satellite, launched in 2001, offers worldwide coverage in what is currently the highest resolution available from any commercial supplier. QuickBird color multispectral imagery is available with a minimum pixel size of 2.4 m, while the panchromatic (grayscale) imagery has a much sharper pixel size of 60 cm. Combine these formats to produce pan-sharpened color imagery at a 60-cm pixel size. At this resolution, under the right contrast conditions, you can see people on the ground.

QuickBird's multispectral imagery is available in four standard spectral bands: blue, green, red, and near infrared. The supplied file format is GeoTIFF, either in the original 16-bit format, or converted to 8-bit format for easier handling.

- Image samples: www.digitalglobe.com/sample_imagery.shtml
- Image sources: www.digitalglobe.com/order.shtml

National Imagery Transmission Format (NITF)

The National Imagery Transmission Format is used primarily by departments and agencies of the U.S. government, especially the Department of Defense. AutoCAD Raster Design 2008 supports all versions of this format, including the latest, Standard 2.1. Widely used by members of NATO (North Atlantic Treaty Organization), this version is also called NATO Secondary Image Format (NSIF).

NITF images can have a complex file structure, with image insets, graphic overlays, and large amounts of metadata. Some NITF files include a set of related images in a tiled matrix. If you are working with these files, you may be interested in a small subset of image data for use in a drawing. This task is well-suited to AutoCAD Raster Design 2008, which you can use to select one or more images, edit them, and save them into another common format such as TIFF or JPEG.

- Image samples: www.gwg.nga.mil/ntb/baseline/software/testfile/Nitfv2_1/scen_2_1.html

Landsat FAST

AutoCAD Raster Design has been able to read Landsat multispectral GeoTIFF data since the 2005 release. The 2008 release includes support for the Landsat FAST L7A format. This format includes several metadata and preview files in addition to the primary image files. Image pixel size is 30 m for standard multispectral imagery, but color data from these bands can be combined with the 15-m panchromatic band to produce 15-m pansharpened images.

- Image samples: <http://landsat.gsfc.nasa.gov/images/>

- Image sources: <http://landsat.gsfc.nasa.gov/data/where.html>

Working with Multiframe Images

A multiframe file is a convenient way to keep a set of related images together, such as a series of slides, maps, or scanned documents. AutoCAD Raster Design 2008 enables you to easily preview thumbnails of the images and decide which frames to insert in your drawing. Figure 1 shows the initial preview screen for image insertion. Under Multi-Frame Options, click Select Frames and then click Open.

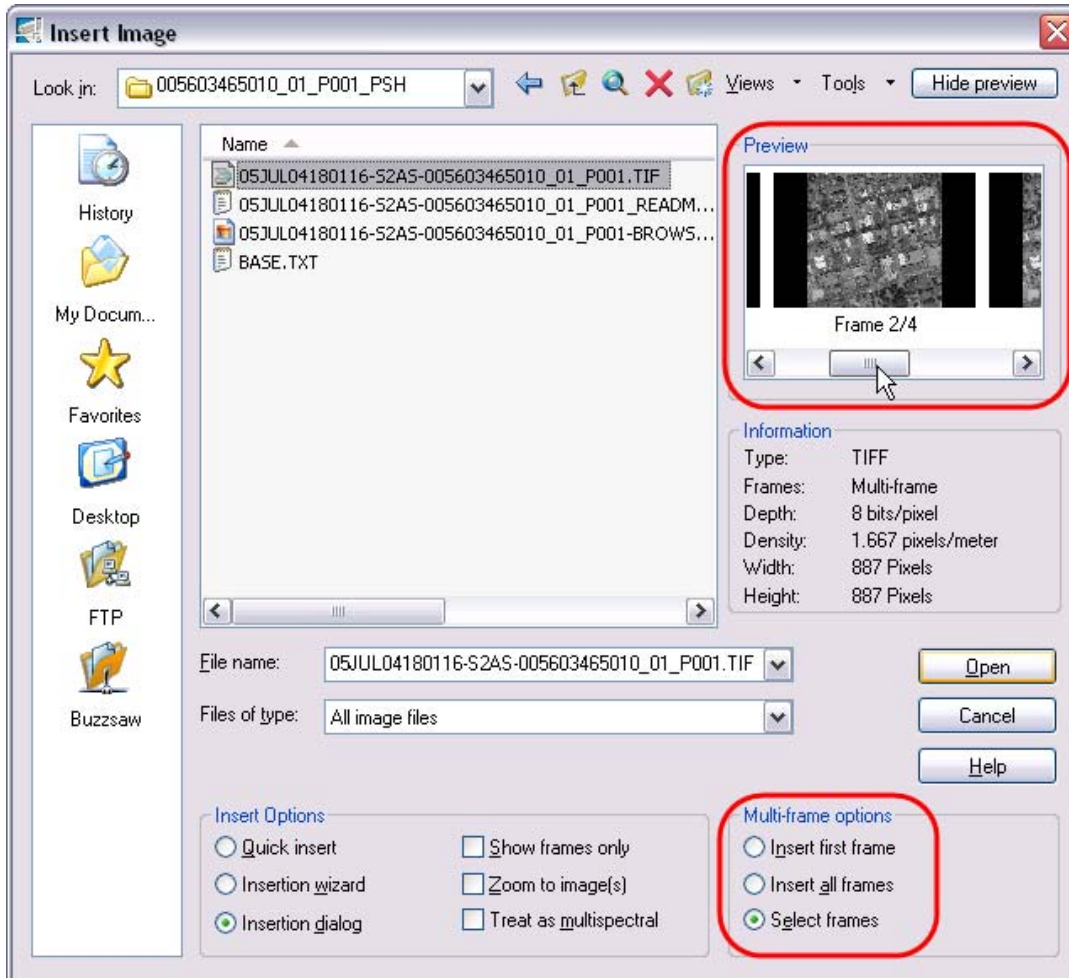


Figure 1: Multiple frame preview

In the Multi-Frame Select dialog box, you can select the image frames you want to insert in the drawing. You can then use the Image Manager (Image menu>Manage) to control the draw order, visibility, and color maps.

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Note: If you select the Treat As Multispectral check box, you can choose to assign color channels to the inserted frames.

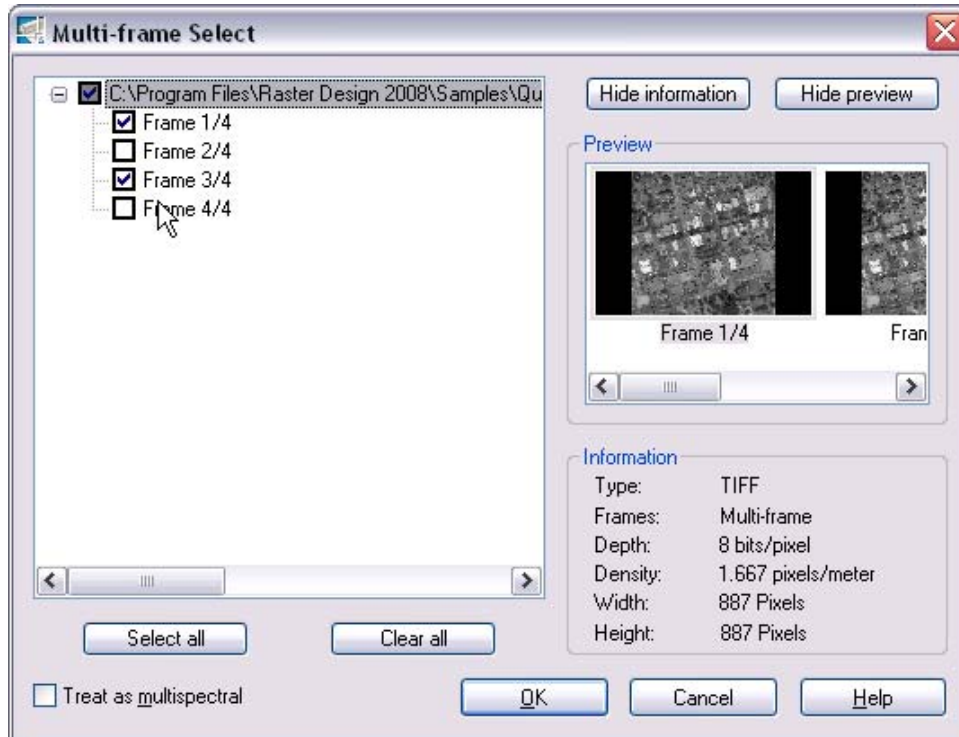


Figure 2: Selecting a subset of images

After inserting the frames you want in your drawing, you can edit these images and save them to other image formats for ease of handling.

Conclusion

Almost every engineering firm, utility, and government agency faces challenges brought on by working with information that does not fall within the traditional computer-aided design (CAD) arena. Projects from land development to infrastructure design and maintenance can benefit from the use of data such as satellite imagery and aerial photographs. By using AutoCAD Raster Design software with AutoCAD and AutoCAD-based software, you can incorporate just about any raster data format to help with tasks such as preliminary site design review as well as adding real-world context to proposed and existing projects.

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