AutoCAD®
Raster Design
2009

Features and Benefits

Use AutoCAD® Raster Design 2009 software to make the most of existing paper drawings. Take advantage of powerful image-processing, editing, and analysis tools. And support a wide range of image formats—from bitonal, color, and aerial to multispectral satellite imagery—all within applications based on AutoCAD® 2009 software.

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Introduction

Use AutoCAD® Raster Design software to get the most from raster data and enhance designs, plans, presentations, and maps by extending the power of applications based on AutoCAD software.

AutoCAD Raster Design adds value to existing digital design data by helping users

- **Unlock and extend the value of existing information—**Make the most of existing, scanned engineering drawings, plans, and maps by using them in current projects while saving redrafting time with powerful raster editing and raster-to-vector conversion tools.
- **Improve decision making and get projects approved faster—**Create drawings and present proposals that integrate information-rich plans, maps, satellite data, and other forms of imagery to enhance communication and understanding of design intent.
- **Enhance, preserve, and maintain valuable raster assets—**Easily clean up, edit, and maintain your archive of scanned drawings, plans, and maps; enhance, analyze, and edit satellite and aerial imagery.

AutoCAD Raster Design 2009 provides several improvements to existing features, including

- **64-bit support—**Raster Design 2009 supports the environment of its host Autodesk product: 32-bit or 64-bit. This flexibility enables you to easily install Raster Design 2009 on any compatible application using any supported operating system.
- **ESRI® GRID format improvements—**Discrete themed data is a form of raster data commonly used to represent such things as land cover, zoning, and other classified data. Discrete themed data in ESRI GRID format is now represented properly in Raster Design. This capability, coupled with the continuous themed data handling required for working with elevations, provides a more robust environment for accurately using raster grid data.
- **New Ribbon interface—**When Raster Design is installed on AutoCAD 2009–based software, tools and options are presented in a concise visual format—the Ribbon—enabling you to quickly select commands appropriate to the work you are doing. Moving between applications is now quick and intuitive. The Ribbon, which runs across the top of the application window, is both customizable and expandable, so it can be optimized for each user and to meet each company's standards.

AutoCAD Raster Design is one of the leading raster applications for design professionals in civil engineering, GIS/mapping, architecture, manufacturing, and any industry needing to use or reuse scanned paper drawings, maps, aerial photos, digital elevation models, satellite imagery, and similar digital design data.

AutoCAD Raster Design can be added on to AutoCAD and products based on AutoCAD, such as AutoCAD® Architecture and AutoCAD® MEP for building design; AutoCAD® Mechanical, AutoCAD® Electrical, and the AutoCAD-based components of the Autodesk® Inventor™ product family for manufacturing; AutoCAD® Map 3D for GIS and mapping; Autodesk® Topobase™ software for infrastructure design and management; and

AutoCAD® Civil 3D®, AutoCAD® Land Desktop, and AutoCAD® Civil 3D®—Land Desktop Companion software for civil engineering, land use, and development. Built on the AutoCAD platform, this family of products helps improve the overall productivity of design teams.

Image Editing and Analysis

Feature	Description	Benefit
Edit multiresolution image files	Edit multiresolution image files in formats such as MrSID® (LizardTech™) and ECW (ER Mapper) and save them in the industry-standard JPEG 2000 format.	Save changes or edits, such as cropping and highlighting areas of interest, to JPEG 2000 format and retain multiresolution advantages of small file size and fast performance while retaining high visual image quality.
Interoperability with AutoCAD Map 3D 2009 and Civil 3D 2009	Raster Design can retrieve and edit imagery accessed by the AutoCAD Map 3D 2009 and Civil 3D 2009 FDO raster providers.	Achieve greater flexibility by capturing AutoCAD Map 3D Display Manager layer-based raster data or data stylizations for use directly by Raster Design.
	Perform data preparation tasks such as true coordinate transforms, cropping unwanted regions, merging multiple images, and image processing operations. Once saved, these image edits and modifications can be accessed by AutoCAD Map 3D or Civil 3D through an FDO reconnect.	Prepare data in Raster Design for more effective use in AutoCAD Map 3D and AutoCAD Civil 3D.
Despeckle	Despeckle successive areas in an image without having to repeat the command or change settings.	Clean up successive areas within a drawing and process multiple drawings in a session faster and more easily.
Tonal adjustment	Use a nonlinear contrast curve to improve the appearance of scanned photos and satellite imagery.	Improve the clarity and usefulness of scanned imagery by bringing detail out of the shadows without affecting highlights.
Palette Manager	Examine and manage the colors in an image; for example, determine which colors are actually used, combine colors to highlight or remove image details, and change selective colors.	Standardize the use of color images, improve efficiency of color usage in images, and improve control of transparency color selection.
Rubbersheeting	Automate control point selection for grid points using triangular or polynomial transformation methods.	Improve accuracy and get more predictable results.

Feature	Description	Benefit
Edit images by smoothing raster geometry	Use the bitonal filters to clean up raster images scanned from paper drawings. Use these filters with other cleanup commands such as Despeckle and Deskew.	Get the full value from scanned drawings. Transform old, illegible data into useful design information.
Support for multispectral imagery	Use and analyze multispectral data from sources such as Landsat, IKONOS, and others. Color-map bands of visual, infrared, and thermal data to show features such as vegetation or urban development in false color displays.	Use new sources of information for better analysis and decision making.
Support for DEM format data	Analyze DEM (digital elevation model) data for elevation, slope, and aspect. Use color-mapped DEM files for interpretation and map composition.	Take advantage of easily obtained, low-cost data for timely and effective evaluations and presentations. Use DEM data as input for site analysis.
Transform, edit, and save 16-bit, multispectral imagery and DEM files	Transform multispectral (8-, 11-, or 16-bit) and DEM data from native coordinate systems to the current coordinate system when using AutoCAD Map 3D or AutoCAD Civil 3D. Crop these images and merge images to cover larger areas with a single image. Change image density to handle images more efficiently. Save the results of edits on DEM or multispectral data in GeoTIFF or DEM format.	Adapt existing multispectral and DEM data to match the current coordinate system. Reduce large multispectral images to cover just the area needed for the project. Move imagery between applications using industry-standard methods. Retain complete georeferenced information that remains tied to the image data. Reuse multispectral imagery that has undergone edits or a coordinate transform.
Raster data point query	Retrieve pixel values from multispectral imagery, DEMs, and other image types.	Analyze raster images for underlying data values such as reflectance, elevation, slope, aspect, and current display color. Avoid multiple trips to the field by getting the answers from the imagery. Users dynamically “see” raster data values as they draw AutoCAD geometry over an image.
Control display order and manage images and insertions	Use the Display Order buttons to move an insertion forward or backward in the display order in relation to other insertions.	Create powerful image mosaics with streamlined control of images and image insertions.
Bias, Mirror, and other raster cleanup tools	Bias corrects distortions in an image’s aspect ratio. Mirror reflects an image along the horizontal or vertical axis to correct reversed-image problems in scanned drawings.	Improve usability and legibility of scanned images with powerful image cleanup tools.

Feature	Description	Benefit
Change color depth and image density	Reduce file size by decreasing the number of colors displayed. Control image density to shrink the file size of the image or drawing.	Standardize image formats for your organization. Adjust and improve images. Save time, money, and disk space, and reduce transmission time with smaller files.
Erase raster using existing geometry	Use existing vector geometry to remove portions of the underlying raster image. For instance, trace a complex spline in an image and then remove the traced raster.	Save time and reduce confusion during vectorization of raster images.
Use unlimited-point rubbersheeting	Transform or stretch an image so that specified control points in the image match corresponding points in the drawing as closely as possible.	Reduce costs by using readily available aerial photography and scanned maps instead of expensive ortho-corrected imagery.
Erase and crop raster data	Crop or erase (rub) raster data in an image or across multiple images. Frame size changes in cropped images to compensate for any removed border data.	Update images as an alternative to costly and time-consuming vectorization.
Match images to AutoCAD scale and rotation based on known points	Align an image to existing vector linework by specifying control points on the image and drawing. The Match command rotates, scales, and moves the image.	One-step image registration helps to save time and improve accuracy when working in raster or hybrid files.
Save image correlation information to the drawing file or to an external file	Civil, mapping, and GIS projects require correlated imagery to enhance presentations. Use powerful options to save the correlation information to a resource file, a world file, or the image file.	Save processing time and file storage space by exporting a correlation as a world file without the associated image.
Save images to different file formats	Read in the supported image format and then save in your standard image format. Use images in other software applications. Save an image to another file name, file type, or location without saving the drawing file.	Share and use data in other applications. Standardize image formats for consistency within your organization.

Feature	Description	Benefit
Enhance images with Histogram, Convolve, and Invert commands	The Histogram command equalizes images, adjusts brightness and contrast, converts grayscale or color images to binary images, and converts color images to grayscale. The Convolve command uses smoothing filters to reduce ruggedness and noise. Use sharpening filters to make differences in shading more distinct. The Invert command reverses the light and dark shades of binary, color, and grayscale images.	Improve and adjust the appearance of images. Take full advantage of your investment in existing imagery.
Highlight image details by adjusting red, green, and blue (RGB) or individual color channels	In color images, adjust the brightness and contrast of individual color channels for the whole image or a subregion.	Improve and adjust the appearance of images to better communicate project information.

Image Display

Feature	Description	Benefit
Image embedding	Save bitonal raster images within the DWG file instead of maintaining the image as an external reference. Embed or unembed images at any point in the process.	Avoid the need to track external image references. Simplify document management tasks when it is necessary to maintain and transport only one file. Easily and reliably send drawings containing images to clients, partners, and agencies, and avoid problems with image paths at the receiving end.
Support for DigitalGlobe® QuickBird multispectral imagery	Raster Design now supports QuickBird TIFF format multispectral imagery.	Use the highest commercially available resolution satellite imagery for map creation and image analysis.
Support for Landsat-FAST multispectral imagery	Raster Design now supports Landsat FAST-L7A format multispectral imagery.	Increase the range of data available for use in projects with the FAST-L7A format, a widely used format for Landsat multispectral imagery.
Support for the National Imagery Transmission Format (NITF)	Insert NITF 2.0 and 2.1 format imagery as supplied by the major satellite vendors.	Increase the range of data available for use in projects with the NITF format. This capability is particularly important for the U.S. Department of Defense and the federal intelligence community.
Image Insert, Save, and Export functionality	Choose individual frames of multiframe imagery for insertion, and use them as independent image insertions or as bands of a multispectral data set. Image preview during insert now has its own processing thread. See when image defaults are being applied during insertion.	Choose from a wider range of image data for use in projects. Independently threaded image preview enables users to take action regardless of the state of the preview. No more canceling or waiting for the preview to complete before proceeding. Insert images as planned and reduce confusion as to the source of image insertion parameters.
Improved Support for ESRI GRID files	Insert both ASCII and binary format ESRI GRID files into a session. Display both discrete and continuous themed data.	Autodesk civil engineering and geospatial users can now take advantage of data available in the ESRI GRID raster format, for better interoperability with other systems and more sources of data for projects.

Feature	Description	Benefit
Read support for DTED format elevation data	Insert DTED format level 0, 1, and 2 files.	Increase usability of Raster Design for federal agencies such as the U.S. Department of Defense. Increase the range of data available for use in projects.
Raster data provides more than background imagery	Represent and analyze raster data in new ways through color mapping. Visualize raster data in pseudocolor and false color infrared.	Bring a wider range of information into projects.
Additional support for raster data formats	The software reads and writes 16-bit TIFF integer and 32-bit TIFF floating-point files. It provides support for writing GeoTIFF files and reading DOQ files.	Use a wider range of raster data for display, analysis, and project application without additional software.
Image capture	Create a TIFF format “snapshot” of color-mapped imagery at the same insertion point and scale as the original.	Extend DEM or multispectral data analysis results for use in applications such as Microsoft® Word and PowerPoint®, and AutoCAD software. Use the snapshot to produce what-if scenarios and enhance presentations.
Transfer georeferenced images across the Internet with URL support	Extend your file system to include Internet and intranet file locations. Use sophisticated imagery in civil, mapping, and infrastructure management projects. Use precorrelated image data to match the project coordinate system.	Improve productivity and communication of information through seamless data sharing, and reduce the time required to position images accurately.
Adjust correlation parameters using the Correlation wizard	The Correlation wizard divides the correlation process into several phases, beginning with the data included in the correlation source and ending with the actual coordinates of the image after it has been inserted into a drawing.	Save time using precorrelated image data to match the project coordinate system. Save money by adapting existing data to your new project.
Access object properties in the AutoCAD Properties window	View and change object properties for any object using the standard AutoCAD interface. Control image, raster entity manipulation (REM) object, mask, and other properties from the drawing database.	Reduce learning time and improve productivity with AutoCAD integration.
View image properties and thumbnails before insertion	Use the Insert Image dialog box to select one or more images to place in a drawing. View information about an image and preview the image before inserting it.	Save time and improve accuracy by helping to ensure that users insert the correct image.

Feature	Description	Benefit
Use a polygonal mask boundary to display image subsets	The Mask feature provides greater flexibility than the Image Clip feature in AutoCAD software by working across multiple image boundaries. Use Mask to display and plot a subset of the images in a drawing.	Save time and improve accuracy by working with a single image mask instead of multiple clip objects.
Access right-click image object and context-sensitive commands	Raster Design commands and operations are integrated with standard AutoCAD menu systems.	Integration with the familiar AutoCAD interface helps reduce learning time and improve productivity.
Use and customize Places List in the Insert and Save dialog boxes	Customize the Insert and Save dialog boxes to quickly and accurately handle commonly used Internet and network file storage locations.	Save time locating raster data for a project.

Vectorization Tools with SmartCorrect

Feature	Description	Benefit
Create circles, arcs, and rectangles with dynamic dimensioning and grip editing	VTools primitives are now Dynamic Input–enabled so users can enter and verify geometry directly on the screen.	Take advantage of heads-up input, dynamic dimensioning, and real-time feedback to increase productivity with the vectorization process.
	Grips are now available to assist in the verification process.	In conjunction with dynamic dimensioning, grips allow intuitive, accurate, and speedy geometry verification. Increase the value of existing design data with faster conversion.
Optical character recognition (OCR)	Recognize machine- and hand-printed text and tables on raster images to create AutoCAD text or multiline text (mtext). Use interactive verification to correct results with dictionary matching.	Save manual data-entry time and improve accuracy when converting drawings with lots of text.
Follow raster to create polylines and generate contour objects on the fly	Quickly create polylines or AutoCAD Land Desktop contour objects, controlling the process with sophisticated options by tracing the raster data semiautomatically.	Improve accuracy when using vector models.
Control output with Vector Separation options	Vector Separation assigns layer and polyline width values to created vectors based on the width of the underlying raster for continuous and noncontinuous objects. Control contour creation using integration with AutoCAD Land Desktop settings.	Save time and get results that meet your design standards.

Feature	Description	Benefit
Create profiles from raster drawings with the 3D Polyline Follower command	The 3D Polyline Follower command traces a defined fence or existing vector polyline, stopping at each point where it intersects the raster to prompt for elevation data. The resulting AutoCAD 3D polyline represents the elevation of the raster contours it intersects.	Save time by capturing the most appropriate data for rapid analysis of existing conditions. Quickly analyze profiles or surfaces.

Raster Entity Manipulation (REM) with SmartPick

Feature	Description	Benefit
Touchup tool	Edit raster at the pixel level with multiple resizable brushes that paint in either foreground or background image color.	Reduce time and effort in cleaning up scanned drawings and maps.
Use standard AutoCAD commands to operate on raster regions and primitives	Edit raster entities in binary, color, and grayscale images. Adjust the radius of a raster circle; extend, trim, or offset raster lines; remove some dimension lines on a mechanical drawing; create fillets between REM entities; or use REM to copy electrical symbols between images. Use AutoCAD commands to move, scale, copy, rotate, and perform other operations on REM objects. Merge modified raster data into an existing image or create a new image from the data.	Save time by reusing existing data instead of redrawing. Smooth integration with AutoCAD software speeds learning and improves productivity.
Create REM primitives using SmartPick, One Pick, or multipoint selection methods	Use a primitive object to select a raster object. Primitives are more flexible than regions because users can change their dimensions. Change a circle's diameter but maintain its original line width. Use grip stretch commands or the Properties window to change the dimensions of a primitive. Use SmartPick to quickly identify and delete a raster line, arc, or circle defined as a primitive object.	Fast, accurate, and powerful raster selection methods help save time and improve productivity.

Feature	Description	Benefit
Create enhanced bitonal REM regions using smart or connected options and standard data selection techniques	An enhanced bitonal region object includes complete raster entities within the region, which is defined by the selection option you choose. After you define an enhanced bitonal region object, use AutoCAD commands to modify it. Merge the REM objects back into the original raster image, or create new images from them.	Save time using powerful AutoCAD selection techniques for raster data.

Raster Snap

Feature	Description	Benefit
Snap to raster in any command, on the fly, across multiple images	Snap the cursor to end, center, corner, intersection, or edge points on a binary raster entity. Raster snap works on raster objects the same way that AutoCAD object snap works on vector objects. Snap to more than one image at a time.	Save time and improve accuracy when modifying scanned drawings.