# AutoCAD 2019 Preview Guide

Subscribe to Autodesk® AutoCAD® including specialized toolsets and get access to industry-specific functionality, greater mobility with the new web and mobile apps, and the latest feature updates. Speed up your work with specialized features & libraries for mechanical design, architecture, 3D mapping, and more while working in a familiar AutoCAD interface. Only AutoCAD, with the new web and mobile apps, gives you the freedom and flexibility to work on anything, anywhere, at any time. Design and draft using the latest features and functionality included in subscriber-only updates.

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*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

# Specialized Toolsets

*Our specialized toolsets for architecture, mechanical design, 3D mapping, and more are now available when you subscribe to AutoCAD 2019.*

Speed up your work with specialized functionality & libraries. Beyond the core AutoCAD 2019 features, each toolset gives you industry-specific capabilities to:

- Automate the creation of annotations, layers and properties
- Easily create details and views from 3D models, and simply generate schedules, lists and tables
- Create rules-driven workflows to enforce standards throughout the design process
- Track updates of associated views, tables, and other content as designs change

When you subscribe to AutoCAD 2019, you will gain access to the following toolsets:

## Architecture Toolset

Use specialized building design features and 8,000+ intelligent architectural objects and styles to speed architectural drawing and documentation. Automate floorplans, sections, elevations, and other drawings with our architectural toolset.

## Mechanical Toolset

Use specialized mechanical design features and 700,000+ intelligent manufacturing parts, features and symbols to speed product design. Automate tasks, such as generating machine components and creating bills of material.

## Electrical Toolset

Use specialized electrical design features and 65,000+ intelligent electrical symbols to boost productivity for creating, modifying, and documenting electrical controls systems. Quickly design panel layouts, schematic diagrams, and other drawings with our electrical toolset.

## MEP Toolset

Use specialized MEP engineering features and 10,500+ intelligent mechanical, electrical, and plumbing objects to draft, design, and document building systems. Easily design ductwork, electrical conduit, and circuiting for HVAC, plumbing, and electrical with our MEP toolset.

## Plant 3D Toolset

Use the specialized plant design and engineering toolset to efficiently produce P&IDs and then integrate them into a 3D plant design model. Quickly create schematic diagrams, plant layouts, and other drawings with our 3D plant toolset.

## Map 3D Toolset

Incorporate GIS and CAD data to support planning, design, and data management. Access spatial data stored in files, databases and web services, and aggregate it with your AutoCAD design data. Easily manage your GIS data with standard data schema, automated business

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workflows, and report templates for Electric North America, Electric Europe, Water, Wastewater, and Gas industries in our 3D mapping toolset.

## Raster Design Toolset
Use raster to vector tools to help you edit scanned drawings and convert raster images into DWG objects. Quickly edit, cleanup and transform images, manipulate raster entities (images, lines, arcs, and circles), create vector shapes (lines and polylines), and more with our raster design toolset.

## Installing Toolsets
To take advantage of the industry-specific features and functionality include in the toolsets, you must download each of the toolsets individually. You can do this in two ways – the Autodesk Account, and Autodesk desktop app.

The Autodesk Account portal is ideal for administrators who need to download complete software packages to create deployments. Alternately, the Autodesk desktop app is the ideal way to access products, toolsets and updates right on your desktop.

**Autodesk Account**
Go to accounts.autodesk.com to sign in. From there you will be able to pick and choose to download AutoCAD or any of the specialized toolsets. For more information about getting started with Autodesk Account, please see the Get Started guide within the Autodesk Knowledge network.

**Autodesk desktop app**
You can also install the specialized toolsets from the Autodesk desktop app. When a toolset becomes available, the app displays a notification on the system tray. Open the app and click My Products and Tools to see all of the toolsets included with your subscription that are available to install, then click any of the toolsets to install them individually.
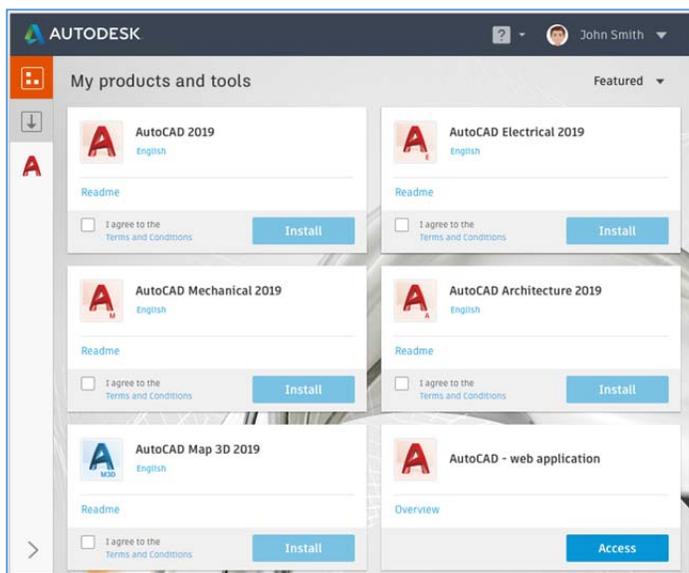


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# AutoCAD Anywhere

When you subscribe to AutoCAD 2019, you gain access to the new AutoCAD web and mobile apps. These apps provide fast, seamless access to DWG files wherever you are, from virtually any device. Files load quickly, and you can draft, edit, measure, and annotate with the core tools and technology of original AutoCAD. These powerful features make it possible to continue your CAD work with the most up-to-date files while on-the-go.

## AutoCAD Web App

*The new AutoCAD web app is included when you subscribe to AutoCAD 2019 including specialized toolsets.*

For the first time, you can access original AutoCAD directly in your web browser. With the AutoCAD web app, edit, create, and view your CAD drawings in a simplified web interface from any laptop. There's nothing to download – just type in [web.autocad.com](web.autocad.com) and login with your Autodesk account.

Some of the key features are highlighted below:

**DWG File Access**
Get quick access to your rich DWG files—not just flat PDFs—from the cloud.  Once you upload any DWG to web and mobile, the DWG can be easily accessed in the browser with the web app. This lets you access your drawings to make quick edits or present projects to clients on any laptop.
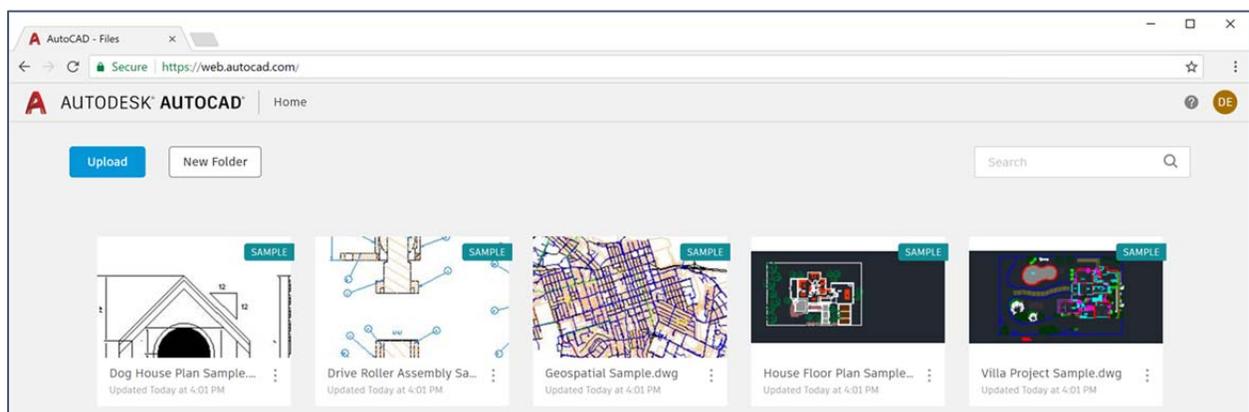


**Core 2D Drafting and Editing Tools**

The commands in the AutoCAD web app use the same technology as AutoCAD, so you can get started right away using familiar, powerful tools. You get core 2D drafting and editing commands so you can work on drawings even when you're away from your desktop. Use these commands, such as Polyline, Arc, Revcloud, Offset, Trim, Dimension, and more, and check back for new tools often.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.
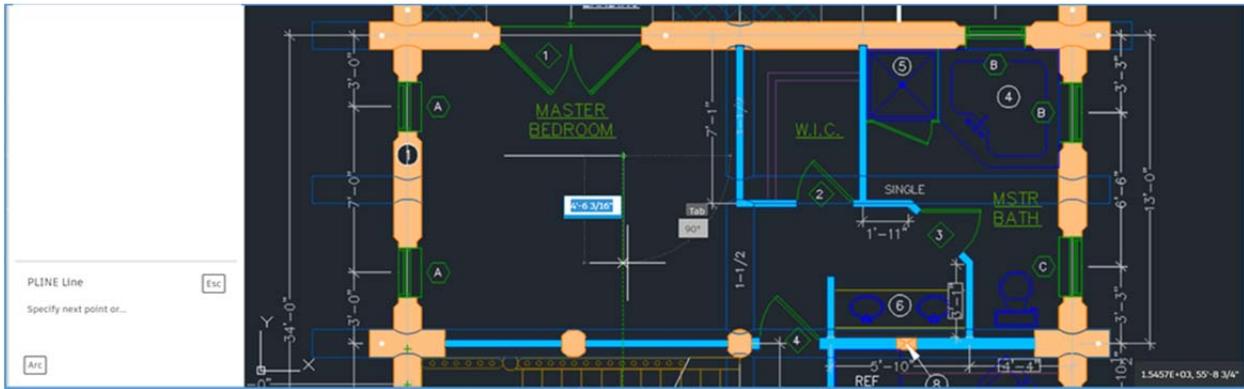
**Original AutoCAD Technology**

A DWG in the AutoCAD web app has same authenticity and precision as it does in AutoCAD. In the AutoCAD web app, you can view layouts, access basic object properties, and manage layers, units, and Osnaps. The AutoCAD web app also supports xrefs, so if you upload a drawing with xrefs in it, you can see those xrefs in the drawing. And what you see in the drawing area—graphics, lineweights, and colors—are what you expect to see when you're using desktop AutoCAD.
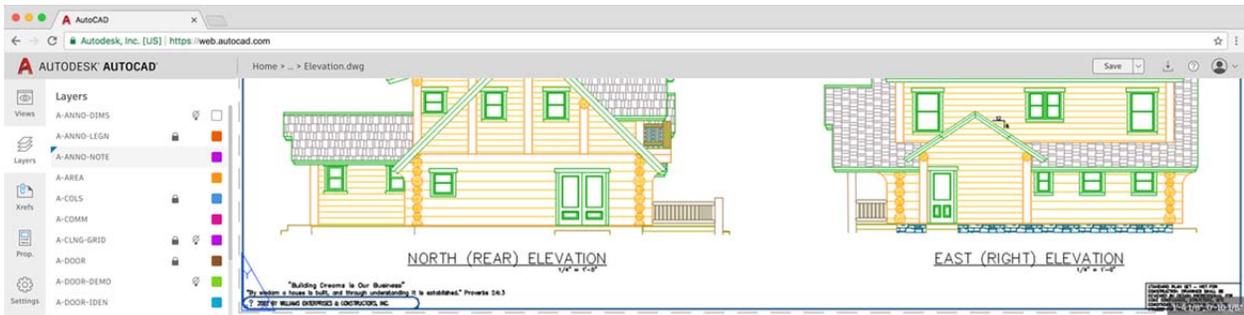


AutoCAD Mobile App
*The AutoCAD mobile app is included when you subscribe to AutoCAD 2019 including specialized toolsets.*

With the AutoCAD mobile app, you can view, edit, create, and share CAD drawings anytime, anywhere. Available across Windows, Android and iOS phones and tablets, the AutoCAD mobile app is also optimized for the iPhone X, iPad Pro and Windows Surface ensuring the best mobile experience.

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Designed specifically for users working onsite, our mobile app has adapted many of the traditional desktop AutoCAD tools, and developed new mobile-only tools to extend the power of AutoCAD to mobile. Some of the key features are highlighted below:

**DWG File Access—Even Offline**
Get full access to your rich DWG files—not just flat PDFs—from the cloud. Access your DWGs saved to your Autodesk account, any cloud storage service (ex: Dropbox, Box, or Google Drive), even from email and messaging applications. Your DWGs can also be downloaded locally on your device so you can work offline without internet connectivity. This eliminates the need to carry heavy blueprints in the field, and lets you easily make edits on-the-go, or present projects to clients.
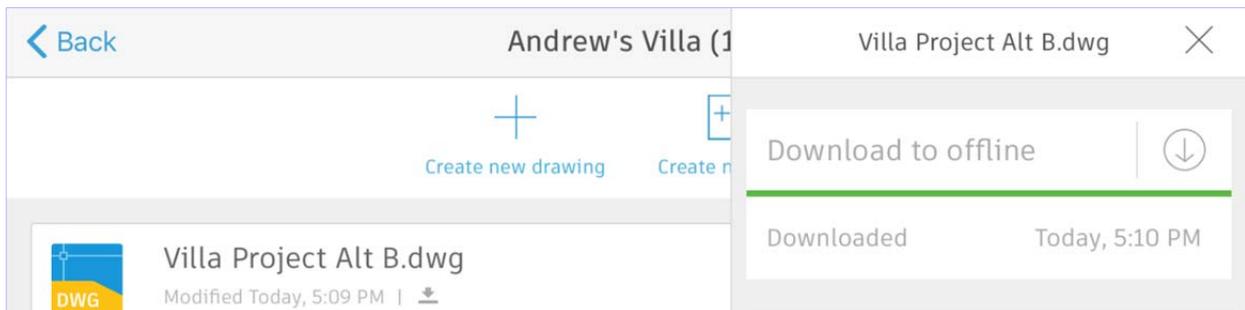


**Magnifier and Object Snap**
Make accurate edits and measurements with Magnifier and Object Snap. While your finger or Apple Pencil is touching the screen, a magnification window appears to show you a zoomed-in view of where you are pressing. The magnifier window appears in the corner of the screen so the view is not obstructed by your finger. For additional precision, objects snap to a grid in the mobile app. While drafting or editing this makes it easy align or join objects, create angles, and take measurements.
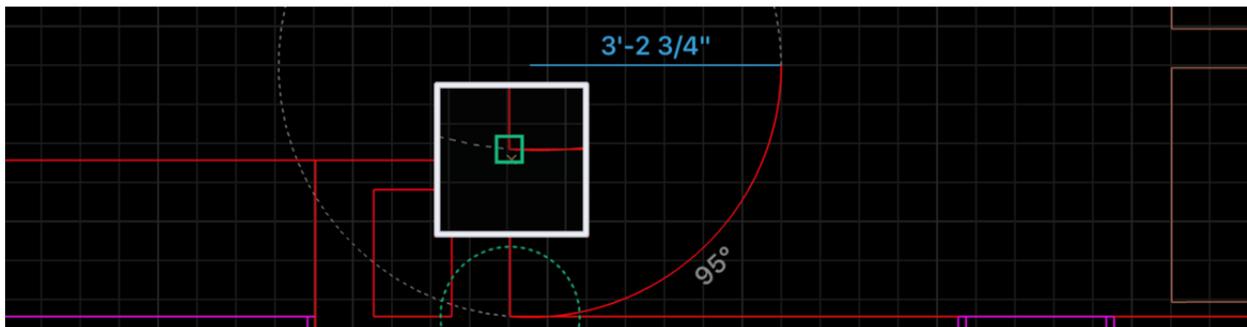


**Quick Trim and Measure**
Make quick edits and measurements with Quick Trim and Quick Measure, respectively. With a single tap on the screen, quickly take the measurements of an entire space. Quick Measure automatically finds the boundaries of a space and displays the distance between those boundaries.


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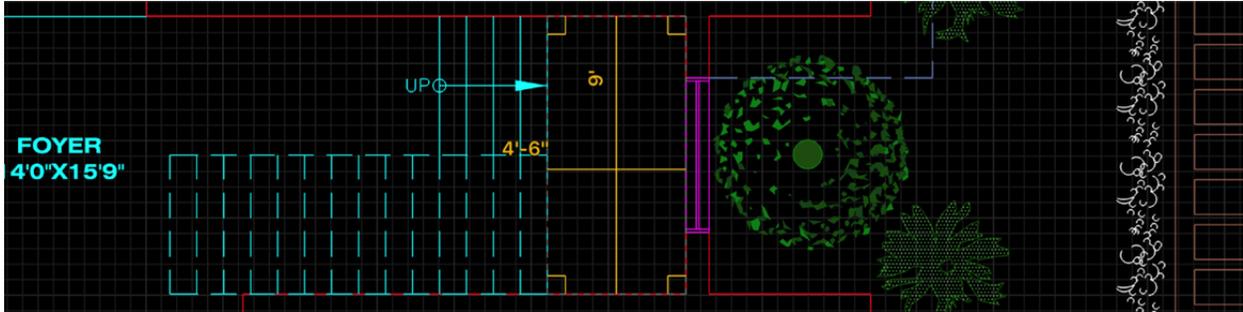
## Laser Measurements

Add laser measurements directly to your drawings by connecting the Leica DISTO to your mobile device via Bluetooth. It makes taking real-world and as-built measurements incredibly easy. The drawing is updated in real-time as you take a measurement with the Leica DISTO.



## Annotations and Photo Attachments

Log quick observations from the field using annotation tools like shapes, arrows, text, highlights, even photos directly on your drawings. For greater onsite clarity of progress and issues, take a photo from your device's camera, or add a photo from your camera roll.
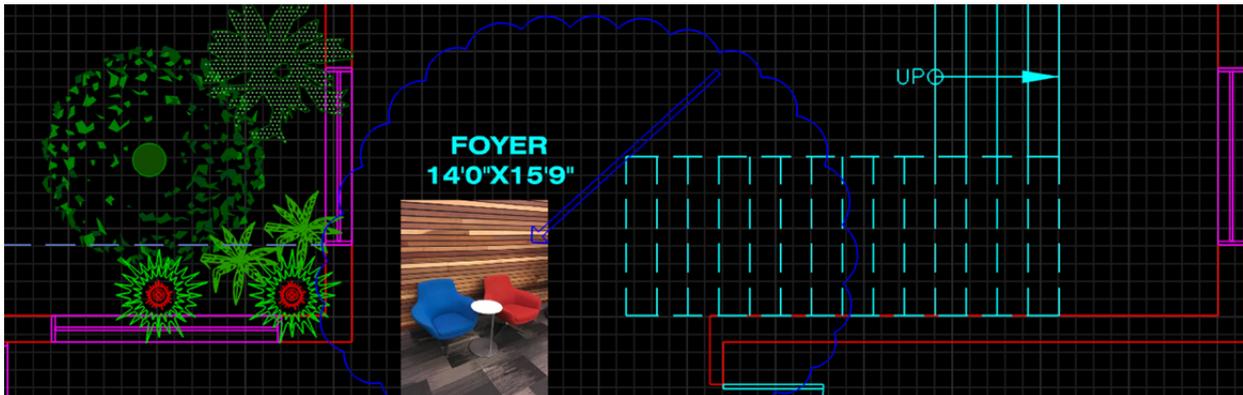


## Mobile Device Optimizations

The AutoCAD mobile app is available on a wide breadth of mobile devices, and takes advantage of the latest mobile technologies. On devices like iPad Pro and Windows Surface, the mobile app takes advantage of the high-resolution display to ensure drawings are easy to read and work with, and supports the stylus for more precise drafting, editing, and annotations. It even supports external keyboards like on the Windows Surface. As new mobile

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devices evolve, we continue to push the boundaries of what you can do on the AutoCAD mobile app.

### Save to Web and Mobile

To make the most of AutoCAD on web and mobile, AutoCAD 2019 includes new "Save To Web & Mobile" and "Open From Web & Mobile" capabilities. Together, these commands enable you to move files between your desktop, and web and mobile so you can work anywhere.

For example, you can take a drawing you were working on at your office, view and edit it in the field on the AutoCAD web or mobile app, and save it back to your local network drive to continue working at your office.
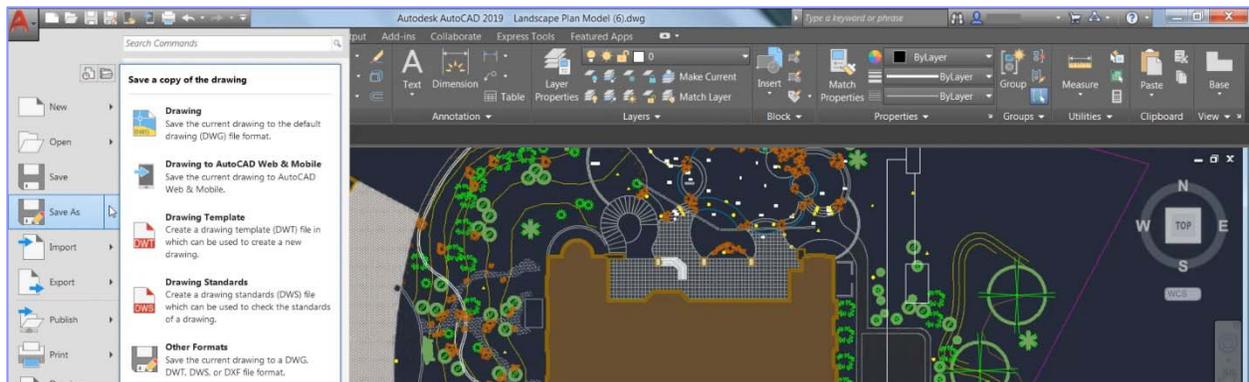


Specifically, "Save To Web & Mobile" lets you save your drawings from your desktop to be edited, viewed, or shared on mobile apps and the web. When you save with this option, a dialog box will open and you can select where to place your files. Now that file is available in AutoCAD on web or mobile.

Conversely, "Open From Web & Mobile" lets you access the latest drawings created or edited on the AutoCAD web or mobile app. When you open a file with this option, this drawing is stored in the cloud and not on your local computer. To bring the drawing to your local storage, you will need to Save As a new version or replace the old version on your local network.

These commands can be accessed from the App Menu as options within Open & Save, or the Quick Access Toolbar. The first time you use these commands, you will have to install our "Save to Web & Mobile" extension. Once the extension is loaded, you're all set.

## New Features & Enhancements

This year we have made a number of updates to AutoCAD. The new features and enhancements below are available in AutoCAD.

### Refreshed Icons

As part of our continuous efforts to provide a great visual experience to our customers, AutoCAD 2019 has new 'flat designed' icons in the Ribbon, Status Bar, Quick Access Toolbar

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(QAT) and Application Menu. The flat designed icons provide a better visual experience when using AutoCAD, especially on a high-resolution monitor. AutoCAD 2019 also dynamically matches icon sizes to your monitor resolution or pixel density.
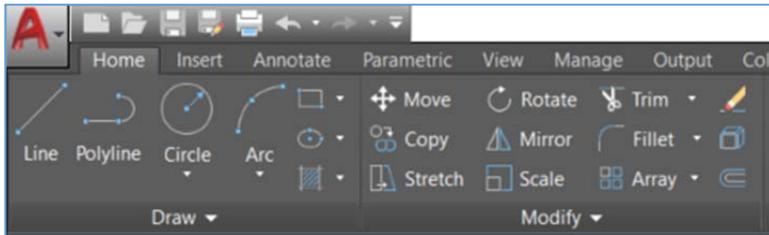


## DWG Compare

New DWG Compare tools in AutoCAD 2019 enable you to easily identify graphical differences between two revisions of any drawing. This new functionality is particularly helpful for quickly viewing changes, identifying clashes, reviewing constructability, and more. For example, consider these two versions of a floor plan. What is different between them? The change is small, but critical.



With the DWG Compare functionality, this is what you can see:

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The green and red graphics highlight the differences between the first version of the drawing (green) and the second version (red). All unchanged elements are shown in grey. Having displayed this important difference, now you can adjust the positions of the cubicles adjacent to this exit stair to maintain the required clearance.

**Starting a DWG Comparison**

DWG Compare can be accessed from AutoCAD's Application menu, the Collaborate Tab on the ribbon, or directly from the command line ("COMPARE"). It's available in the main Application menu when no drawing is active or under Drawing Utilities when there is a drawing active.
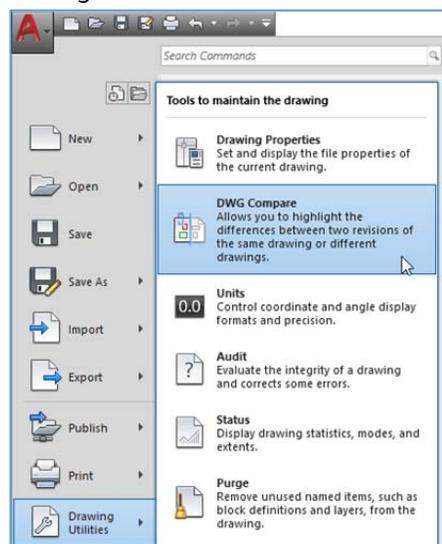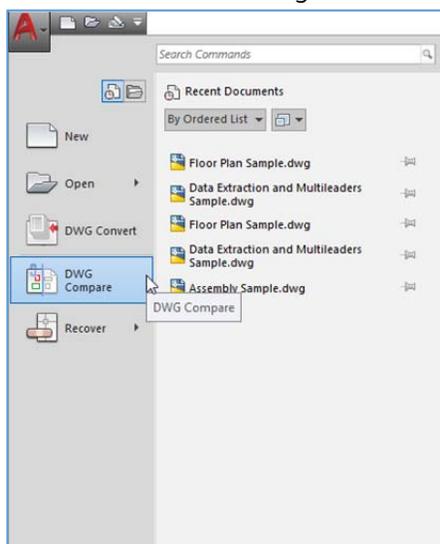


You can also access it from the new Collaborate ribbon tab.
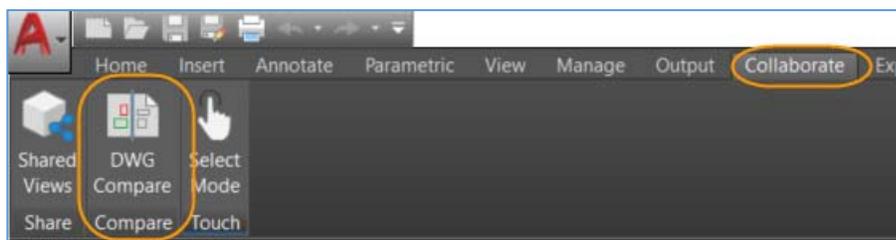


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If the current drawing has been saved, it is used as DWG1 in the DWG Compare dialog box. The dropdown list provides easy access to currently and recently opened drawings. You can also use the browse buttons […] to select a drawing from the file navigation dialog.
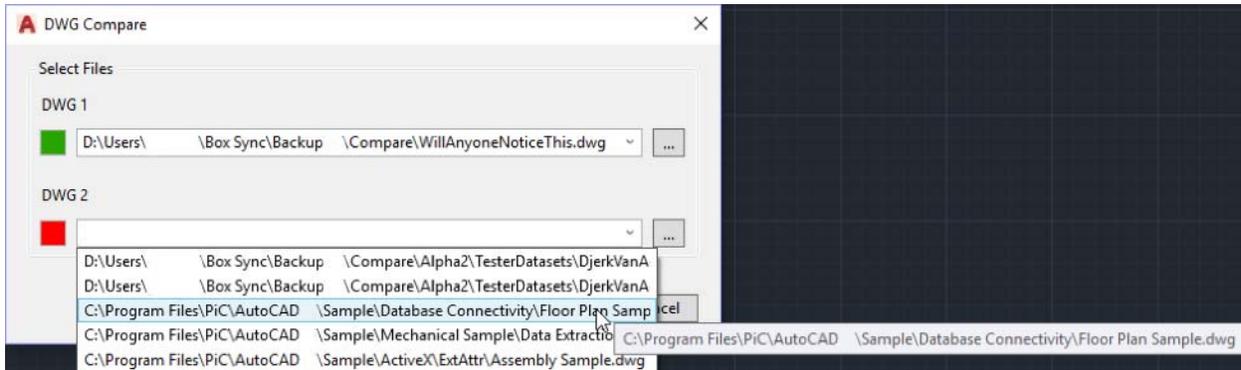


**Viewing Results**

The results of the comparison are displayed in a third drawing. Three categories of objects, or parts of objects, are displayed – those which are located only in the first drawing, those which are located only in the second drawing, and those which are identical in the two drawings. The default name of the new drawing is "*Compare_DrawingOne* vs *DrawingTwo*" (where these are the names of the two drawings being compared), but you can change it, if and when you save the comparison result drawing.
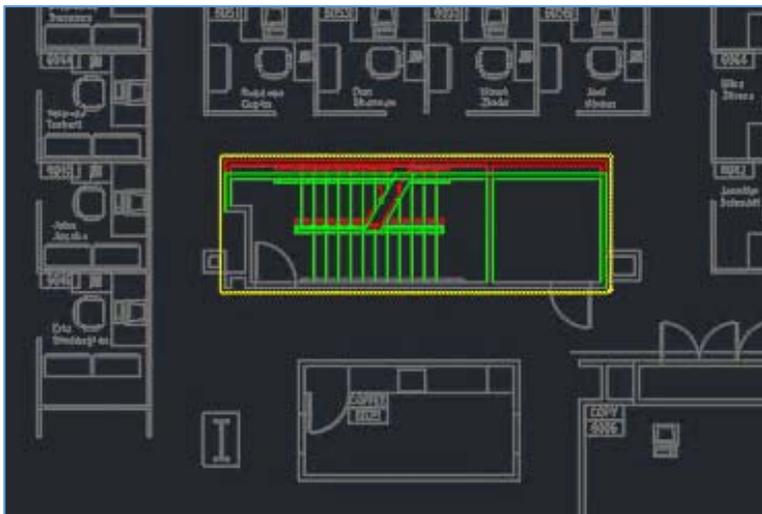


A contextual Compare ribbon tab lets you to control the appearance of results.
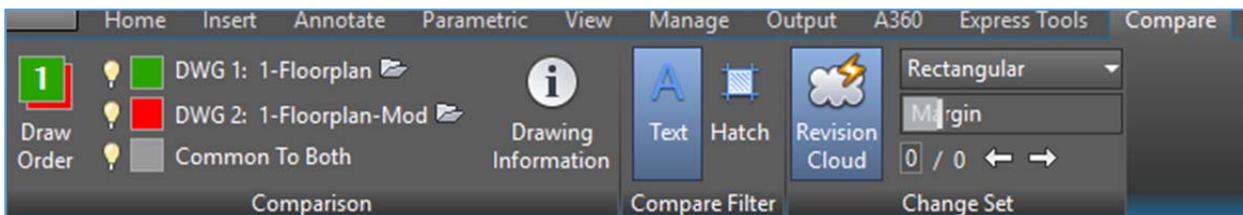


This tab has three groups of controls–Comparison, Compare Filter and Change Set.

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*Comparison*

To show or hide any of the three categories of comparison graphics, click the lightbulb icon in front of the appropriate category.

To change the color of one of the categories, click on the adjacent color tool. This will allow you to select any color for that category.

To change which drawing is displayed in front, click "Draw Order."

When you click the folder icon, the drawing will be opened (if it is found with the same name, in the original folder path) or it will be set as the current drawing if it is already open.

Click "Drawing Information" to display a dialog that contains the identity of the two drawings being compared. From this dialog, you can add a table to the compare result drawing with this information, or copy the text to the clipboard for use in other documents. The identity of these drawings (folder path, date saved and saved by) is preserved with the result drawing.
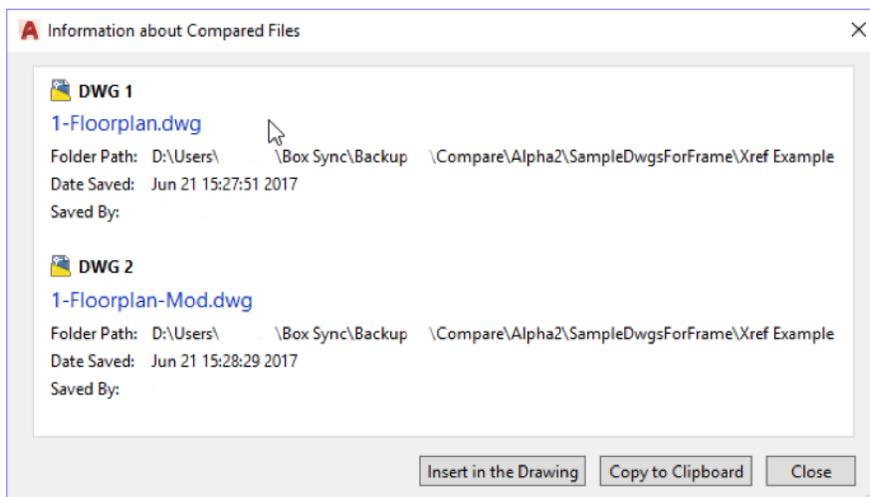


*Compare Filter*

To include text in or exclude text from the comparison result, click the Text button. This covers all text, such as block attributes and dimension text.

To include or exclude hatch in the comparison result, click the Hatch button. The boundary of the hatch (if any) will still appear and will be compared.

The settings for these two filters are saved with the drawing, but the default is to have Text included, and Hatch not included.

*Change Set*

The first button controls whether the automatic Revision Clouds are displayed or not. Even when they are turned off, the change sets remain.

The bottom line of the tools contains the number of the current change set, and the total number of change sets, based on the other controls. Use the left and right arrow buttons to zoom from one group of differences to another.

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Adjust "Margin" to determine how Revision Clouds (change sets) combine with one another. This represents extra space around the bounding box of the individual difference graphics. When individual differences plus the margin overlap, they will be merged into a single change set. Dragging the slider to the left will separate changed entities from each other, resulting in more total change sets. Dragging the slider to the right will merge them together, resulting in fewer total change sets.

The Revision Cloud Shape controls whether the merging of individual changes results in a single larger rectangle, or whether the individual rectangles of each change are merged into a polygonal shape.
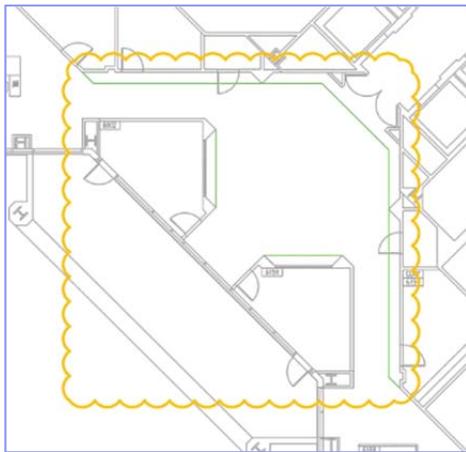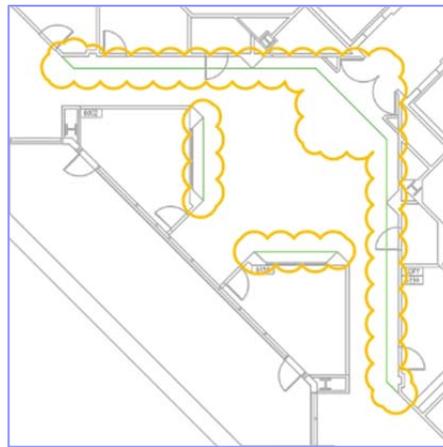


*Rectangular*                                                    *Polygonal*

This setting defaults to Rectangular, but is saved with the comparison result drawing.

**Commands and System Variables**
To support the powerful new DWG Compare functionality in AutoCAD 2019, the following new commands and system variables have been added:

| Command Name | Meaning |
|---|---|
| COMPARE or -COMPARE | Begin the calculation of differences between two drawings |
| COMPAREINFO | Display the dialog with information about the two source drawings |

| Sysvar Name | Meaning | Value |
|---|---|---|
| COMPARECOLOR1 | Color of the objects that are unique to DWG1 | String, depending on color setting – Index, True Color or Color Book |
| COMPARECOLOR2 | Color of the objects that are unique to DWG2 | String, depending on color setting – Index, |

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| | | True Color or Color Book |
|---|---|---|
| COMPARECOLORCOMMON | Color of the objects that are common to both drawings | String, depending on color setting – Index, True Color or Color Book |
| COMPAREFRONT | The number of the drawing that is drawn in front | Integer (1 or 2) |
| COMPAREPROPS | If zero, objects are not marked as different when properties are different. If non-zero, property changes will be marked as differences, according to the bit codes | Integer (0 to 127)<br>1 = color<br>2 = layer<br>4 = linetype<br>8 = linetype scale<br>16 = lineweight<br>32 = thickness<br>64 = transparency |
| COMPARESHOWCOMMON | Show/hide objects that are common to both drawings | ON/OFF |
| COMPARESHOW1 | Show/hide objects that are unique to DWG1 | ON/OFF |
| COMPARESHOW2 | Show/hide objects that are unique to DWG2 | ON/OFF |
| COMPAREHATCH | Show/hide hatch in the comparison result drawing | ON/OFF |
| COMPARETEXT | Show/hide text in the comparison result drawing | ON/OFF |
| COMPARETOLERANCE | The decimal point below which entities are considered identical | Integer (0 to 14) |
| COMPAREMARGIN | The margin between the bounding box of differences and the boundary of the change group, from very tight to very loose. | Integer (1~25) |
| COMPARERCSHAPE | Shape of the automatically generated revision clouds | Integer(0/1)<br>0 = Rectangular<br>1 = Polygonal |
| COMPARESHOWRC | Show/hide the automatic revision clouds | ON/OFF |

## Shared Views

The Shared Views feature makes it easier for you to share your designs with stakeholders within or outside your company without releasing your original drawing files. This feature is

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intended to replace the commonly used workflow of publishing DWF or PDF files, and then emailing them. Instead, views and data are extracted from your drawing, stored in the cloud, and a shareable link is generated that allows the design to be viewed in a browser and commented on from any web enabled desktop, tablet, or mobile device.

The recipients of the link can view, review, measure, comment and markup the design from the Autodesk Viewer in their web browser, and they can share their feedback with you. You can access the feedback from within AutoCAD.  Shared views automatically expire after 30 days, but you can extend or terminate the link at any time.

**Creating a Shared View**
The Share View tool can be accessed from AutoCAD's Application menu, under Publish.
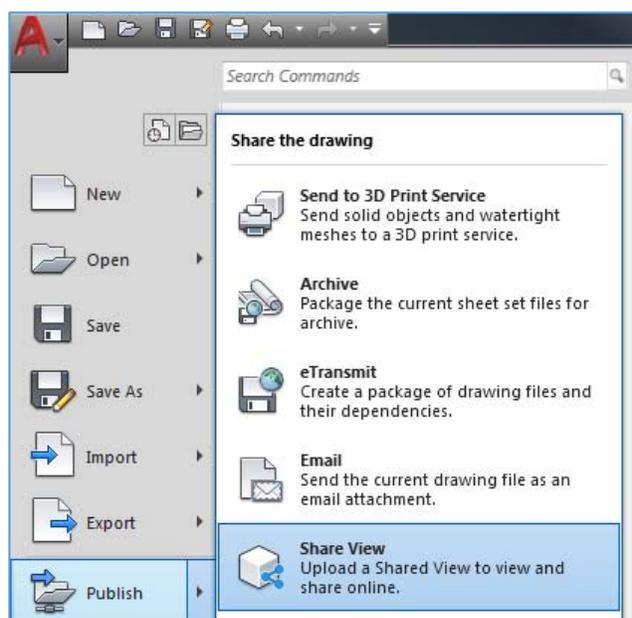


To create shared views, you must be signed in to your Autodesk account and be an AutoCAD subscriber. If you're running off a multi-user subscription license, your administrator may control whether you have access to Shared Views.

The Share View dialog informs you that you are about to publish a view of the opened file to share online.  There are settings in the dialog to control what design views you are sharing.

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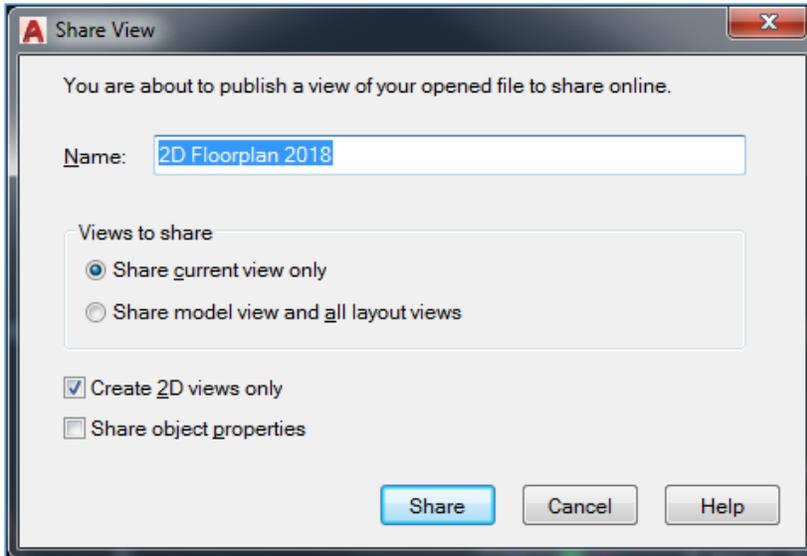
*View name*
The default name of the shared view is the same as the drawing, but you can change it.

*Views to share*
You can share the current view only - the extents of the model tab or a layout tab, whichever is current, or you can share views of the entire drawing including the model tab and all layouts.  Any named views in the drawing for the model or layouts can also be accessed in the Autodesk Viewer.

*Create 2D views only*
The Create 2D views only check box controls whether only 2D views are created or whether 3D views will be created as well.

*Share object properties*
When Share object properties is checked, properties will be extracted with the shared view. Similar to the AutoCAD Properties palette, these properties can be listed by the recipients when they click on objects in the Autodesk Viewer. Note that processing views will take longer when properties are shared.

**Background Publishing and Notification**
After clicking the Share button, you are notified that background processing has started, and that you will be notified when the shared view is ready for viewing.

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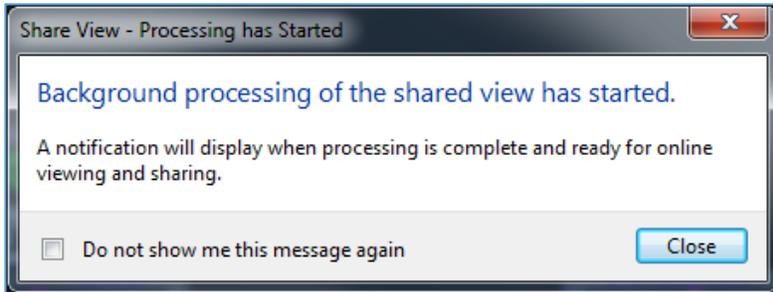
While the shared view is being created, an animated icon appears on the status bar and you can continue working in AutoCAD. To cancel the processing, right click the button and choose Cancel Share View from the menu.
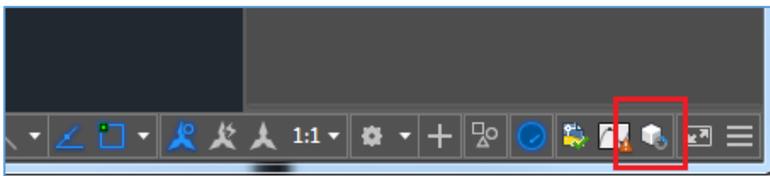


After processing is complete and the shared view has been uploaded to the cloud, a bubble notification displays on the status bar.
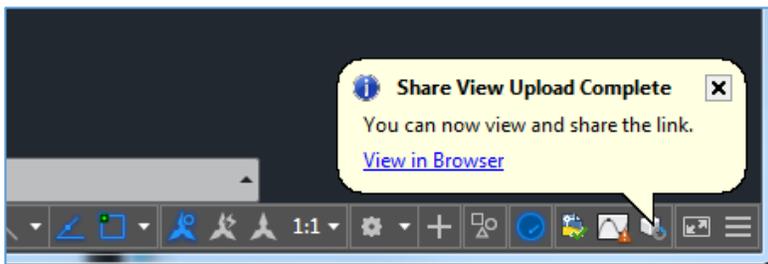


Clicking on the "View in Browser" link in the notification bubble opens your browser and displays the shared view in the Autodesk Viewer.

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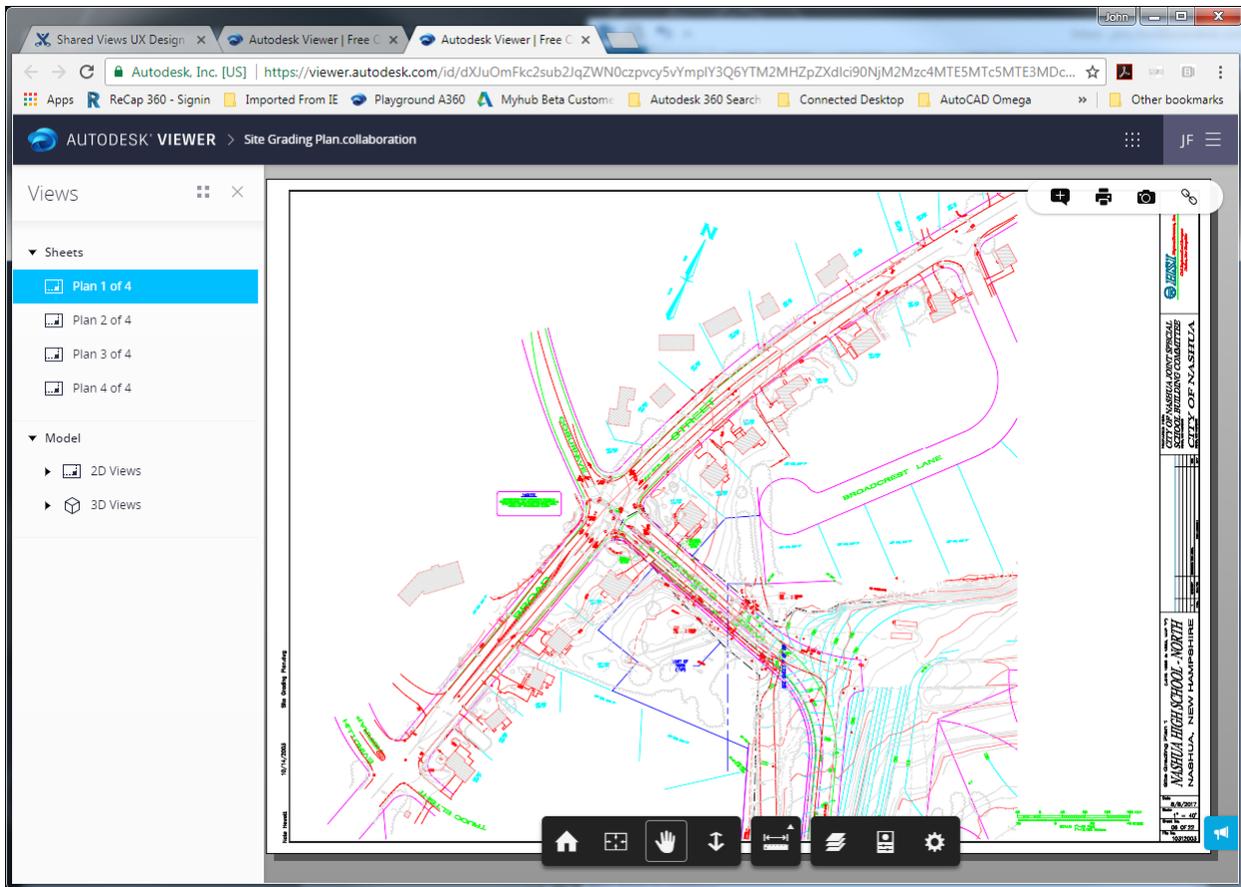
From the Autodesk Viewer, you can inspect the view, add comments, and get the temporary link to share with others.

Recipients of the link will also be able to view the design in the Autodesk viewer, respond to comments, and add comments of their own.

**Shared Views Palette**
From the new Collaborate tab on the ribbon, you can display the Shared Views palette in AutoCAD, which displays a history of the shared views that you have published. You can also create a new shared view from the palette.
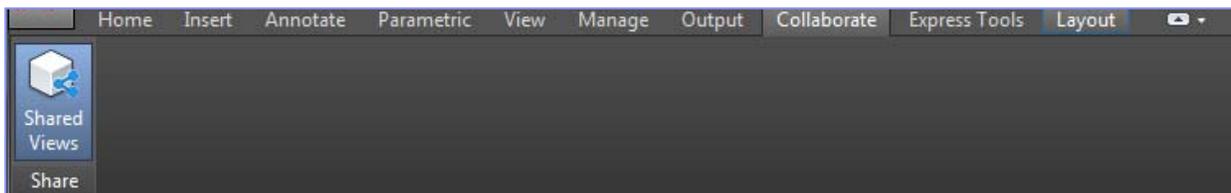


The latest comments and other information is retrieved when the palette is opened, and the palette can be refreshed at any time by clicking the Refresh button. Each view in the list displays a thumbnail image, a title, date created, day until it expires, and whether there are comments with the views.

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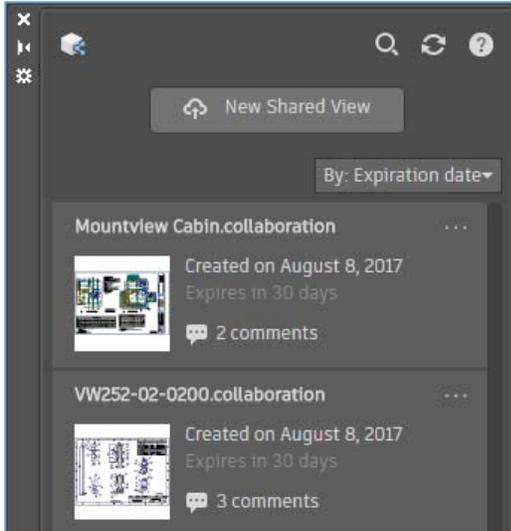
*Sorting and Managing Views*

You can sort the list of views by Title, Date created, or Expiration date. You can also filter the view list from the search control.

Each view listed in the palette includes a [. . .] button in the upper-right corner. Clicking the button displays a menu to manage the view. The menu options include:

- View in browser – displays the view in the Autodesk Viewer
- Copy Link – copies a link to the clipboard so you can share it with others
- Extend – resets the view to expire in 30 days
- Delete – deletes the view; shared links will no longer display the view
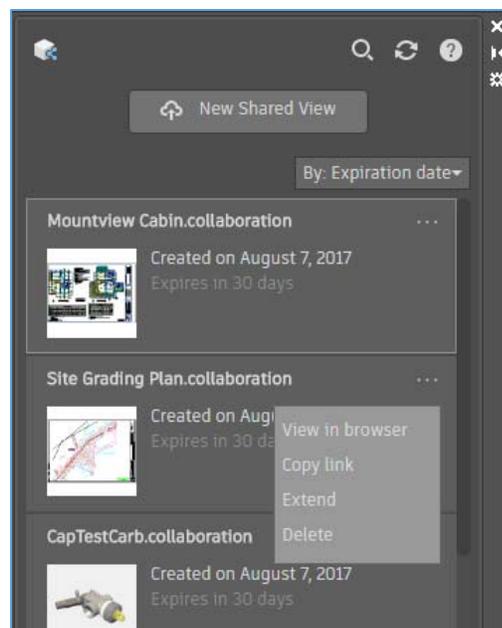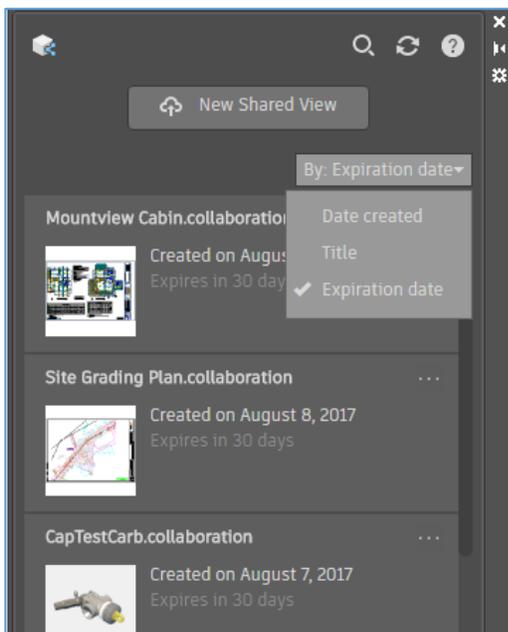


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## Viewing Comments and Responding

You can expand any view in the list to read or post comments, and to reply to any comments received from stakeholders with whom you have shared the view.  Clicking to the right of the thumbnail displays comments and a thumbnail of the area commented on.  Clicking Back returns to the list of views.
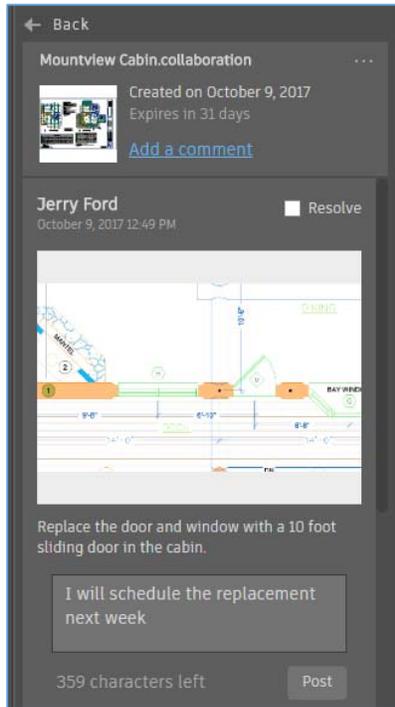


## Views and Viewports*

In AutoCAD 2019, views and viewports are easier than ever to create and edit!

**Named Views**

A new Named Views panel is added to the View ribbon tab with tools to easily create, restore, and edit named views.
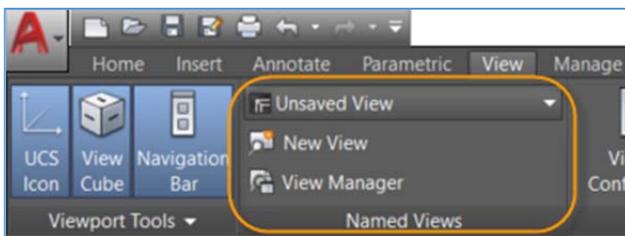


The View dropdown list in the panel allows you to easily restore named views by selecting it from the dropdown list:

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.
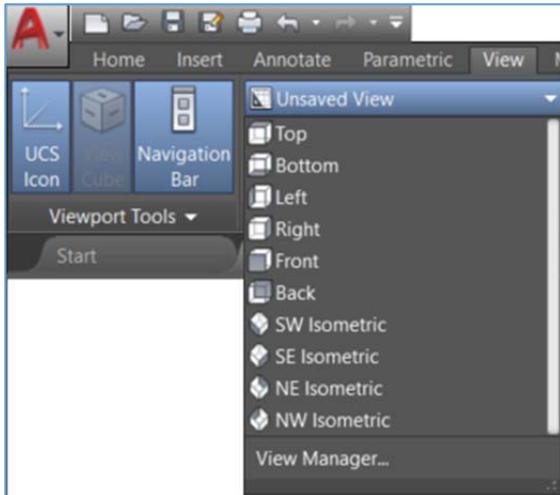
The New View tool offers a simplified version of the New View/Shot Properties dialog box with only the most basic controls for creating a new view. You can expand it to access the full set of View and Shot Properties.
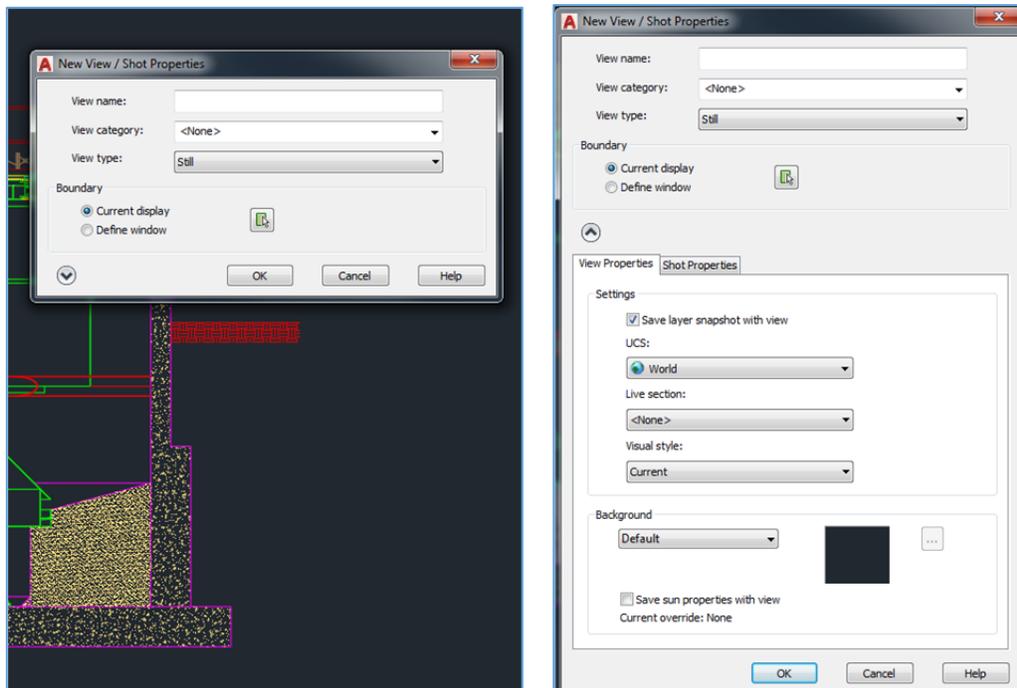


The View Manager button displays the View Manager dialog box. From there, you can edit and manage named views.

**Inserting Named Views as Viewports**
Now for the cool part: inserting named views onto a layout!

The Layout ribbon tab is a contextual tab that is displayed when a layout is made active. If you click on the Layout ribbon tab, you will see that it now includes a new Insert View tool.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

The Insert View tool displays all the named model views in the drawing as either a gallery with thumbnail preview images, or a simple list (depending on whether you have GALLERYVIEW enabled).
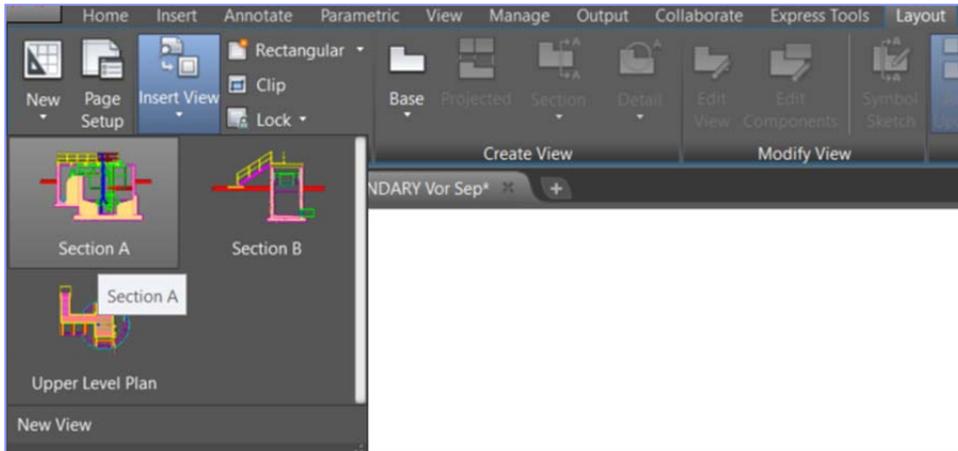


Simply select a view from the gallery and place it onto your layout. The result is the same as the multi-step process of creating a layout viewport, making it active, selecting a view, setting the scale, resizing the viewport, and locking it. Now, you can do it in a single step—enabling you to add many views quickly!

AutoCAD applies the annotation scale of the view to the viewport scale if it will fit on the sheet. If it doesn't fit, AutoCAD estimates and applies a standard scale based on the size of the named view and the layout so it fits on half the sheet. A preview of the view is displayed as you drag it onto the layout helping you visualize an appropriate scale.  You can easily change the scale during insertion by selecting the desired scale from the right-click menu with an existing viewport selected.
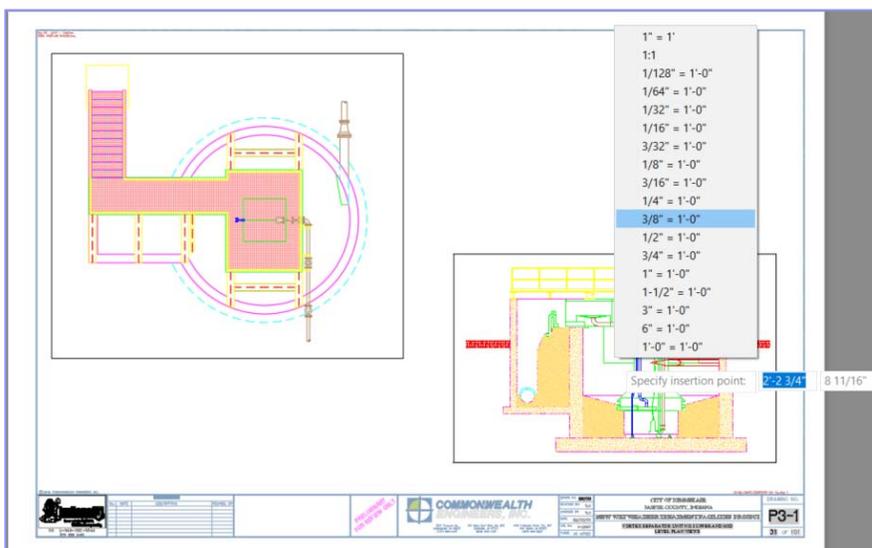


**Viewport Grip Enhancements**

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

You can easily change the scale of or move a paper space viewport at any time by selecting it and then using the move grip or the triangular scale grip. You can also use viewport grips at the corners to modify the viewport boundary—but you're much less likely to need them as viewport boundaries automatically resize when you change the viewport scale!
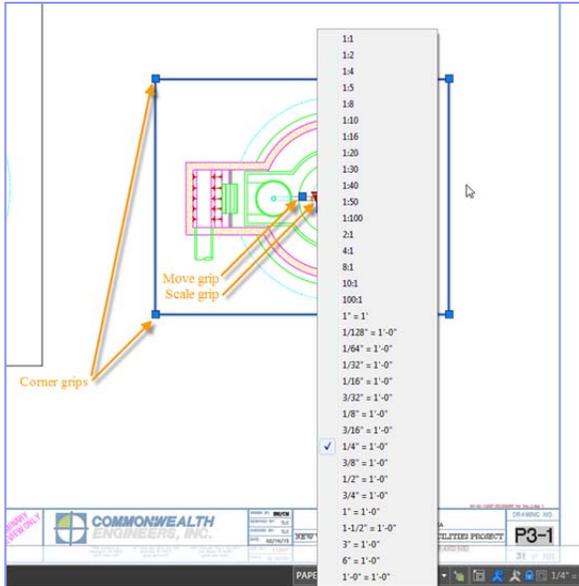


**Inserting a New View as a Viewport**

You can quickly create new model views—even while working on a layout—by selecting the New View tool from the Insert View gallery control.
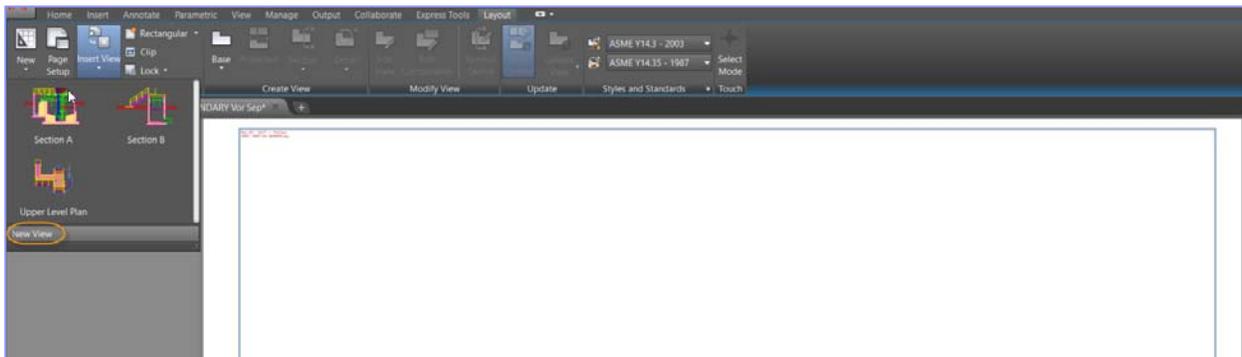


This allows you to specify the view area in model space and then immediately place the view on the layout. If the drawing contains no named views, selecting the Insert View tool from the Layout ribbon tab automatically launches the New View behavior.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.
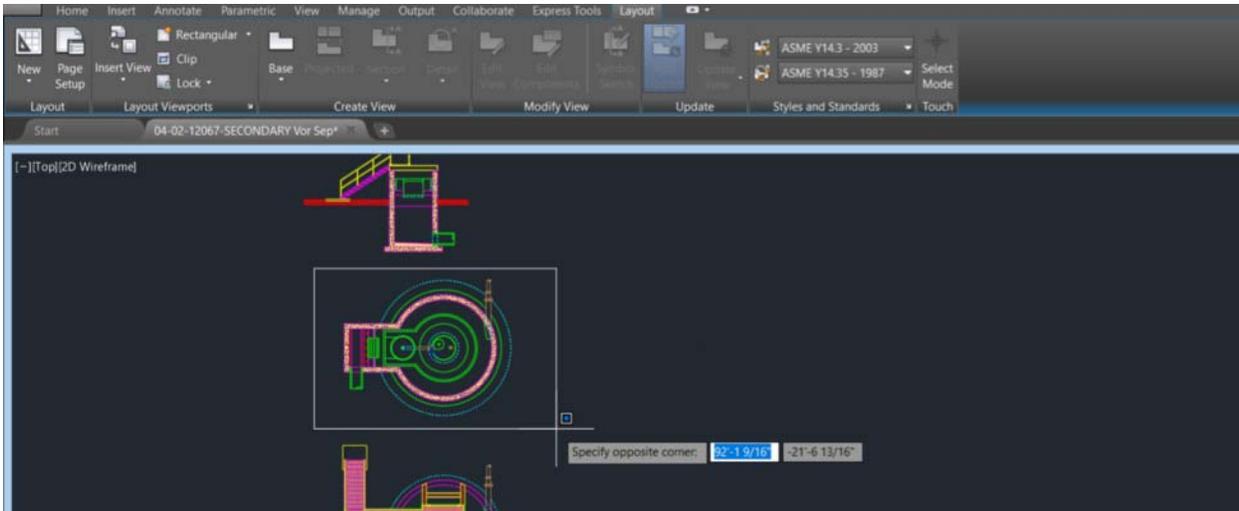
With these enhancements to views and viewports, you can reduce clicks and save time!

## Layer Property Overrides*

Improvements to the Layer Manager and other Layer controls make it easier to identify overrides and to restore them to their default values.

**Layer Properties**

The Layer Properties Manager includes a new status icon to indicate when an Xref layer contains overrides. Passing the cursor over the icon displays a tooltip listing all of the applied the layer overrides.
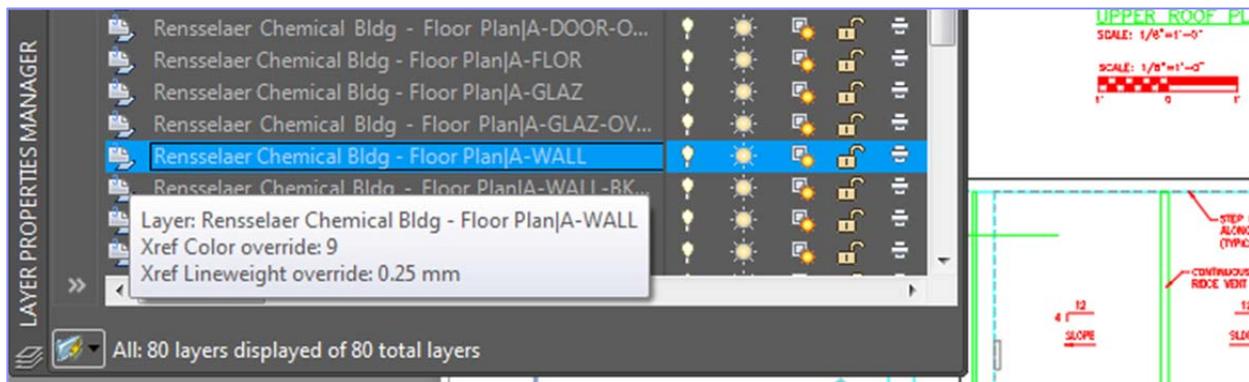


A new toggle in the Layer Properties Manager makes it even easier to identify Xref layer overrides by applying a background color to any and all layers and properties with overrides— including both Xref and viewport overrides.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.
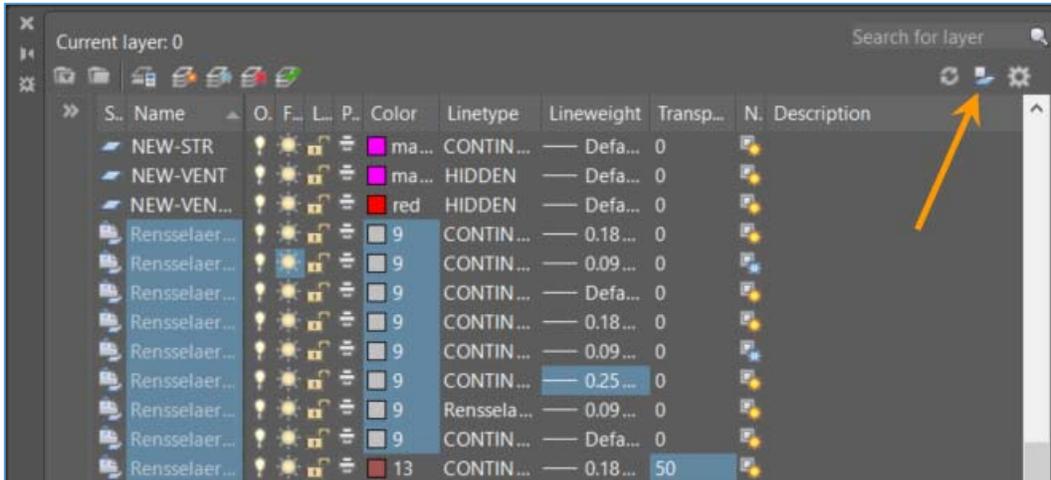
To further aide in identifying Xref layers with overrides, a new Xref Overrides layer filter is available. Simply select the Xref Overrides filter to see a list of all the Xref layers in the drawing with applied overrides. A right-click menu option enables you to easily reset any or all of the Xref layer properties to their original values.
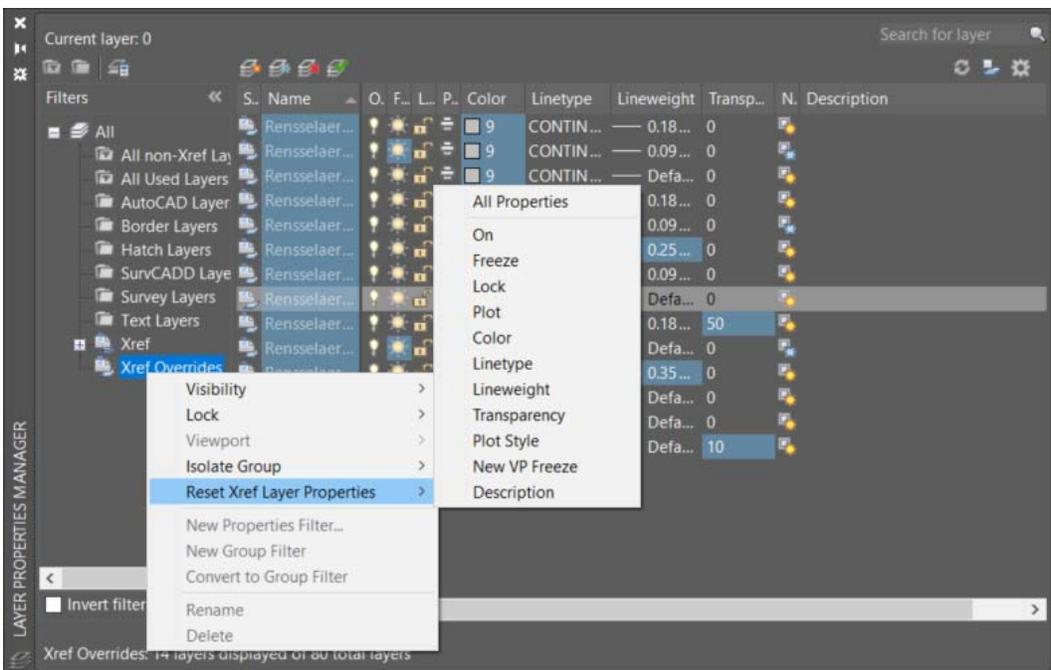


A similar option is available when you right-click on any layer in the layer list with Xref layer overrides. You can choose to reset Xref layer properties for just the selected layers or for all layers.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.
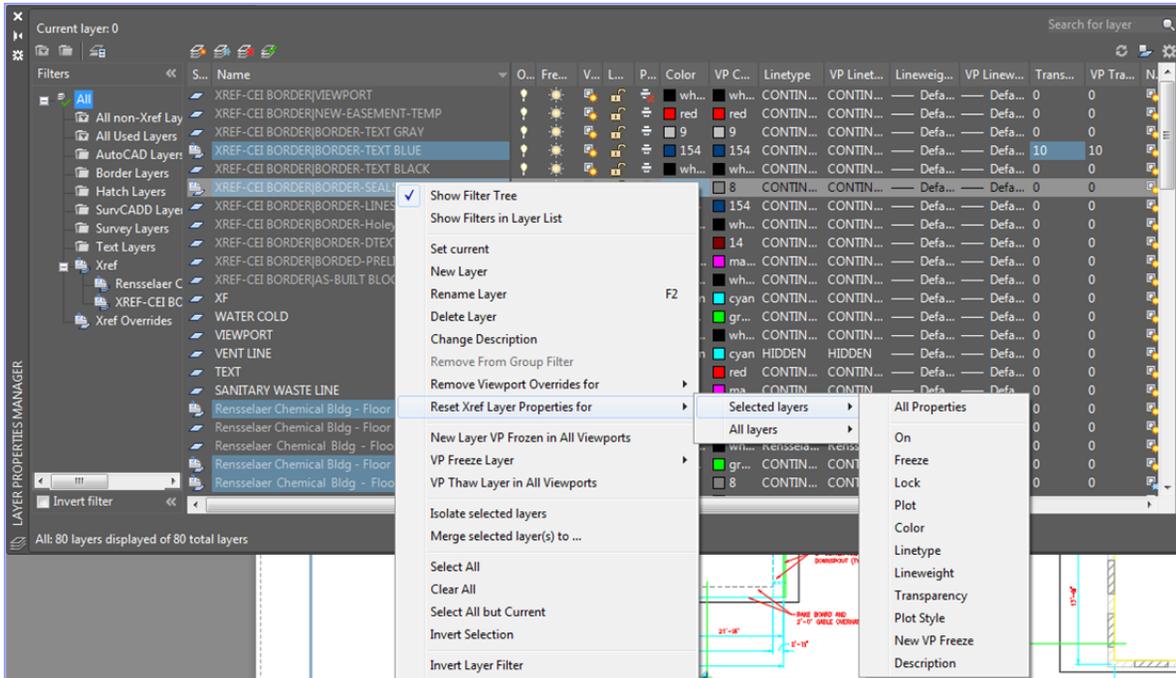
Additionally, a new XREF option in the -LAYER command offers command line access to remove Xref overrides, and a previously hidden option in the VPLAYER command for removing Viewport Overrides [reMoveoverrides] has been exposed.

To help you quickly identify if layer property overrides have been applied to an Xref or viewport, the Layer Property Overrides option has been added to the Properties palette for selected Xrefs as well as the rollover tooltip for viewports.
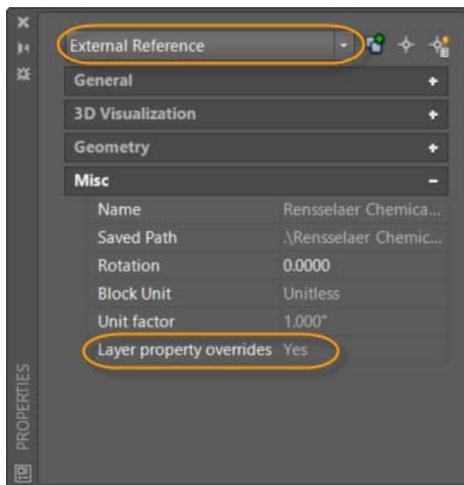


*Note: The order of the columns in the Layer Properties Manager has changed for Layouts and the Global and VP properties for each Layer property are now grouped together. To simplify the Layer Properties Manager, the Plot Style and VP Plot Style columns are no longer displayed for drawings in Color Dependent mode (PSTYLEMODE-1).*

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

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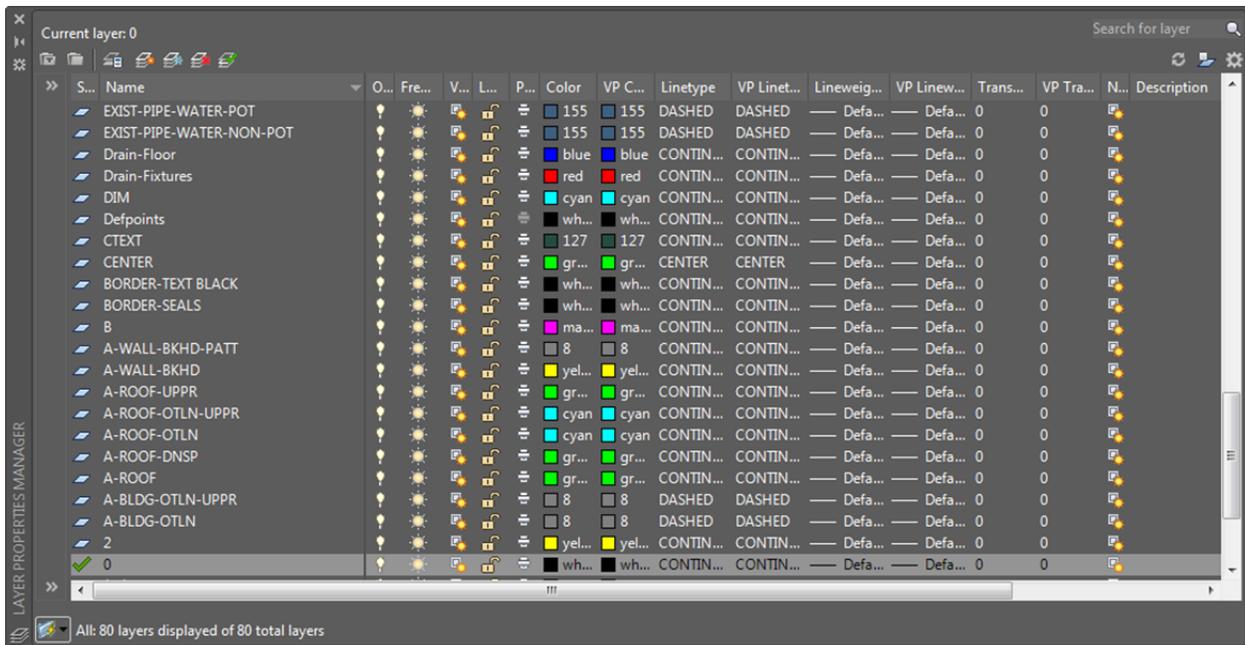
## Layer Settings

The Layer Settings dialog box is updated to include new controls for managing Xref layer properties. Access it from the Settings icon in the upper right-hand corner of the Layer Properties Manager. The option to Retain changes to Xref layers (VISRETAIN system variable) has moved from the Options dialog box (Open and Save tab) to the Layer Settings dialog box.

With the option to retain overrides to Xref layer properties enabled (VISRETAIN = 1), you can now specify which, if any, Xref layer properties you want to reload, offering you more flexibility to control Xref overrides. The various layer property options are stored in the registry via the new VISRETAINMODE system variable.

Another new control in the Layer Settings dialog box, treat Xref object properties as ByLayer, offers easy access to the XREFOVERRIDE system variable (which enables you to force object properties of Xref objects to use ByLayer properties).
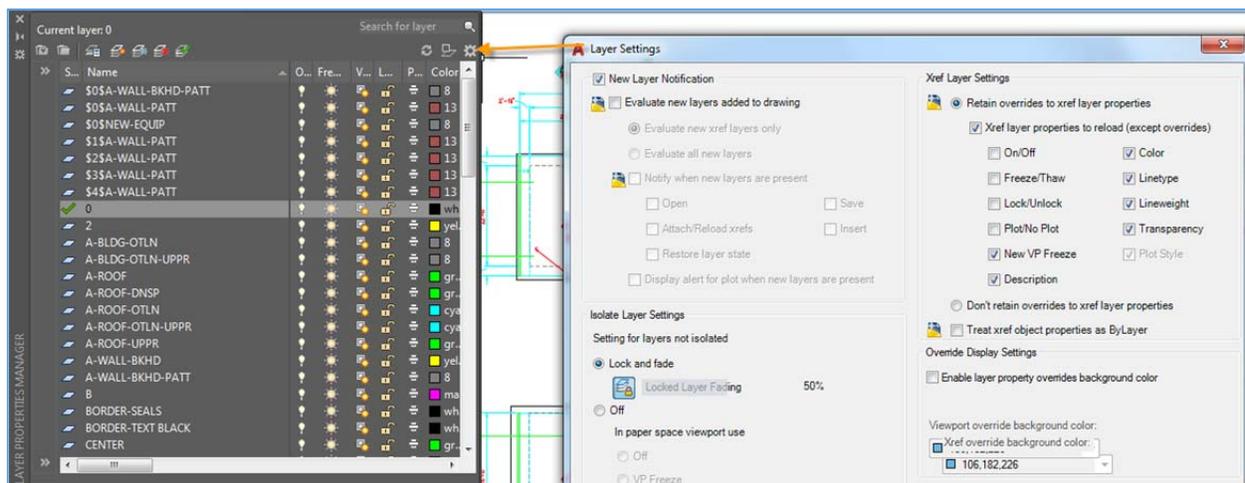


*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

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**Xref Layers**

A new XREFLAYER system variable enables you to specify a default layer on which new Xrefs are inserted. The Xref layer is only displayed in the Layer Manager when an Xref is attached to the drawing.

```
Command: XREFLAYER
Enter new value for XREFLAYER, or . for use current <"use current">: Xrefs
>_ ▾
```

When you rename or delete an Xref layer in the Xref drawing, it is automatically renamed/deleted when you reload it in the host drawings.*

## Performance Enhancements

AutoCAD 2019 offers many performance enhancements.

**2D Graphics Performance**

Operations that typically require AutoCAD to redraw or regenerate 2D graphics have been streamlined in AutoCAD 2019 offering substantial performance improvements. For example, changing draw order, zooming, panning, and changing layer properties, particularly in large drawings or drawings with raster images, can be up to twice as fast!

New controls in the Graphics Performance dialog box enable you to configure 2D graphics behavior with minimal effort. A dropdown list offers three settings for the mode used by capable graphics cards – those which are DirectX 11 compatible – Basic, Intermediate, and Advanced. The controls for Smooth line display and High-quality geometry as well as a new control for setting how much of the GPU memory will be used for display caching, can be accessed by expanding the Details section. Depending which of the three preset modes you select, the controls in the Details section are automatically turned on or off.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.
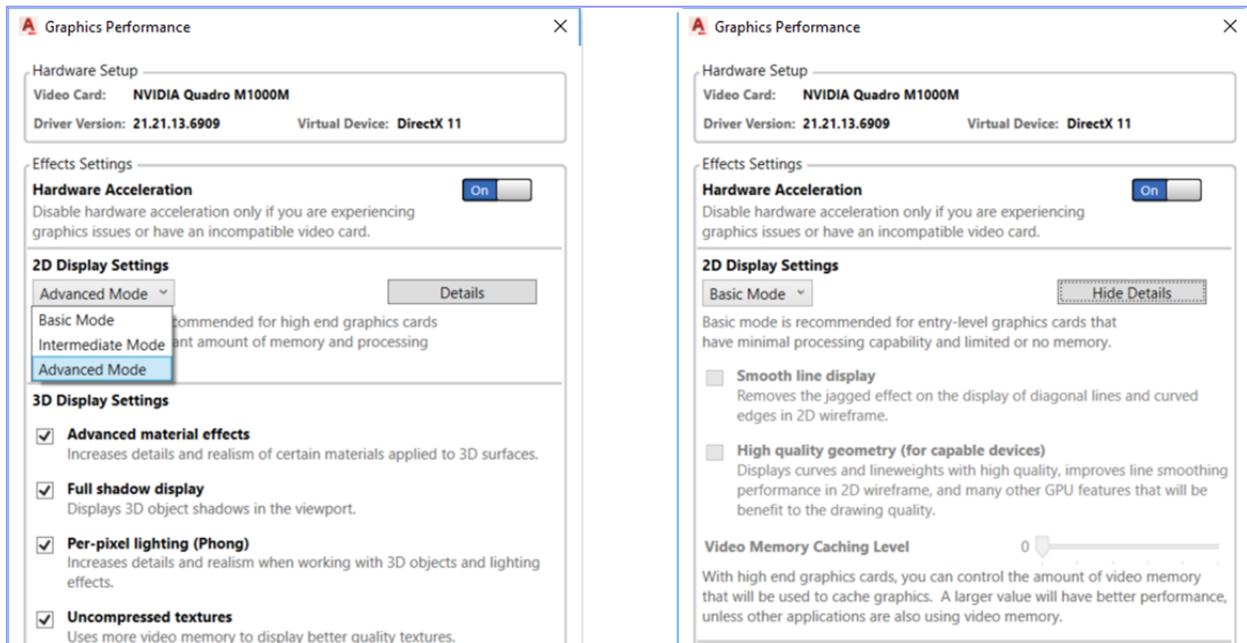
You can access the Graphics Performance dialog box with the GRAPHICSCONFIG command. This tool is also available from the status bar. However, in AutoCAD 2019 the display of the tool on the status bar is turned off by default. You can turn it on from the Customize menu.
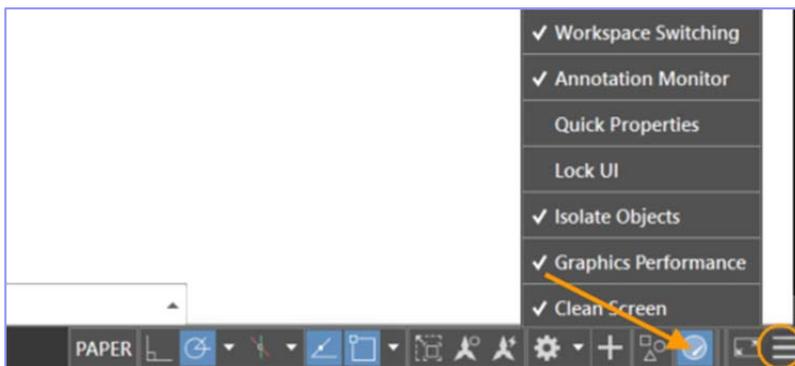


**Plot and Preview Performance***
Plot and Preview offer major performance improvements for drawings with missing SHX fonts.

**3D Navigation Performance***
The navigation speed of 3D models (when viewing with common visual styles) continues to improve with the AutoCAD 2018.1 Update. The 3D graphics performance for the Wireframe, Realistic, and Shaded visual styles has increased significantly, depending on the content of the DWG files tested. Measuring the frames-per-second (FPS) performance in six large benchmark models, the median FPS increase in AutoCAD 2018 Update was 1.37x faster than before AutoCAD 2018 Update, and 2.75x faster than the FPS in AutoCAD 2017. For best results, use these 3D visual styles in their default states on a 64-bit machine with a compatible

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

graphics card. The commands offering the greatest benefit from these performance improvements include those that are most used: 3DORBIT, ZOOM, PAN, and VSCURRENT.

## High-Resolution (4K) Monitor Support*

Support for high-resolution monitors continues to be improved. More than 200 dialog boxes and other User Interface elements have been updated to ensure the best possible viewing experience on 4K displays and higher. Just a few examples include the Edit Layer State and Insert Table dialog boxes as well as the Visual LISP editor.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.

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## Standards Checking *

Custom line type properties are supported when checking STANDARDS with multiple custom line type definitions in drawing.

## Object Selection*

Crossing window and Fence selections are supported when trimming or extending lines that are not on the current UCS plane.

*Functionality first made available to AutoCAD subscribers via the AutoCAD 2018.1 Update.