

The background of the slide is a wireframe cityscape rendered in a light green color. It features several tall buildings, including a prominent tower with a spherical top section on the left and another with a similar top section on the right. The buildings are composed of a grid of lines, giving them a skeletal appearance. The sky is a solid, vibrant green.

Annotation Scaling: Making Drawings Smarter with Intelligent Text

David Cohn
Independent Consultant

Evaluation Forms

**Please remember to fill out
your evaluation form**

(In Hall B or via an email you receive. Complete by 8pm to be eligible for prizes)

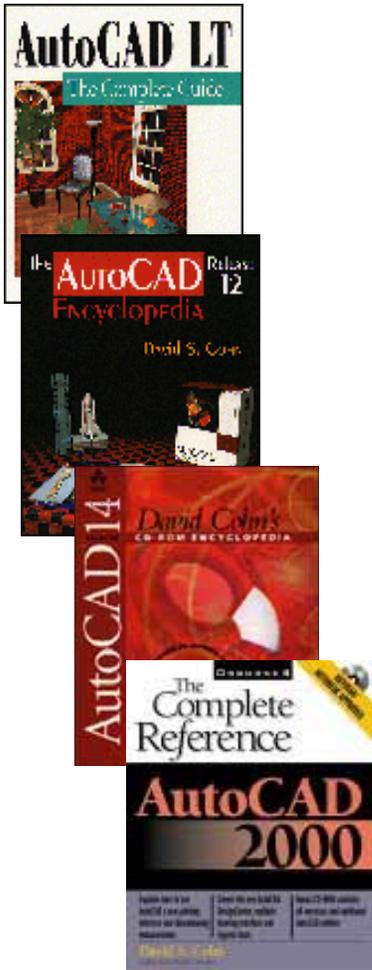
This is session GD315-1P



And, please silence your cell phone.

David S. Cohn

- Independent consultant
- Contributing editor *Desktop Engineering*
contributing editor
- Former editor of *CADalyst*, *Engineering Automation Report* and *CADCAMNet*
- Frequent contributor to *Computer Graphics World*, *PC Magazine*, and others
- Registered architect—25+ years experience
- AutoCAD experience—20+ years
- Author of numerous books & articles
- President of Eclipse Software



COMPUTER GRAPHICS WORLD

DE



David Cohn is a Registered Provider with The American Institute of Architects Continuing Education Systems. Credit earned on completion of this program will be reported to CES Records for AIA members. Certificates of Completion for non-AIA members are available on request.

This program is registered with the AIA/CES for continuing professional education. As such, it does not include content that may be deemed or construed to be an approval or endorsement by the AIA of any material of construction or any method or manner of handling, using, distributing, or dealing in any material or product. Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

You will receive an email on 12/8/08 explaining how to get your credit.



Learning Objectives

- Understand which objects support the annotative property
- Control annotation scale
- Update existing drawings for annotative scaling
- Using the annotative scale object property
- Work with annotation scale representations

Annotation Scaling

Problem

AutoCAD has no understanding of annotation scale

- Manual calculations
- Forced to duplicate information on multiple layers
 - Size
 - Placement
 - Visibility

Error prone and difficult to create and to update



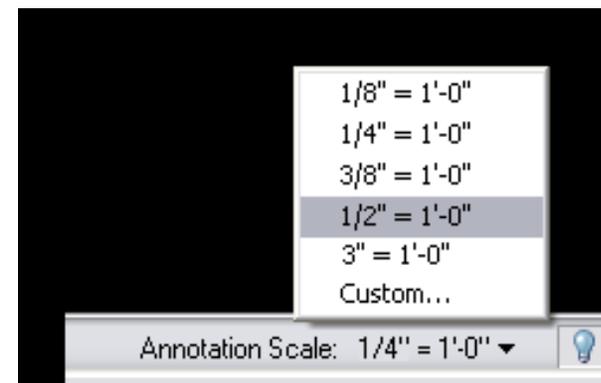
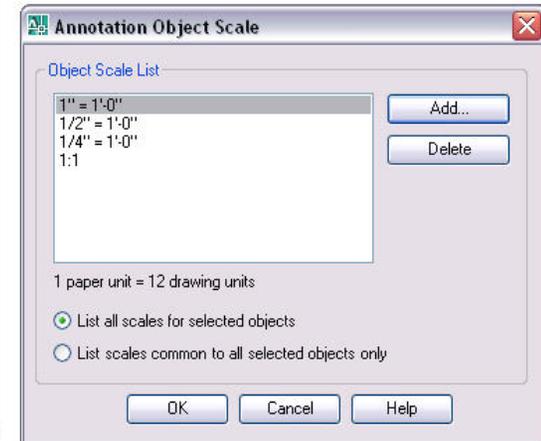
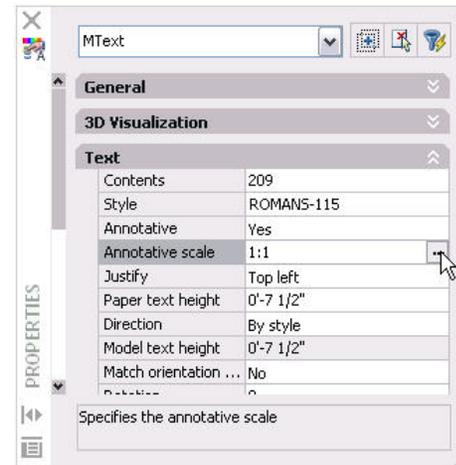
"ER... DO YOU RECALL SAYING THAT DIMENSIONS SOMETIMES PRINT AT THE WRONG SIZE?"

Annotation Scaling

Solution

Automated scaling of text, dimensions, blocks, hatches and attributes

- Text height, hatch size etc. automatically calculated based on scale
- Position and visibility can be controlled based on scale selected
- Single source of information, no data redundancy



Annotation Scaling

- Model Space
- Object Types
 - Text (Text, Mtext)
 - Dimensions (incl. Dimensions, Leaders, Tolerances)
 - Multileaders (New object type)
 - Hatches
 - Blocks
 - Attributes
- Easy to create! Easy to modify!

Easy to create and modify...

How do you scale annotations now?

1. Set the viewport scale (i.e. $1/8''=1'$)
2. Calculate scale factor (i.e. $1/8'' \times 12''=96$)
3. Set the dimension text (DIMTXT) to the proper height (i.e. $3/32''$)
4. Set the dimension scale (DIMSCALE) to the scale factor (i.e. 96)
5. Calculate the model space height for text (i.e. $3/32'' \times 96=9''$)
6. Set the text size (TEXTSIZE) to the model space height (i.e. 9'')

What if you want to change the viewport/plot scale?

Maybe a scale of $1/8''=1'$ doesn't fit on the sheet...

- Repeat process for new scale

What if you want to display the annotations at several different scales?

1. Copy the annotations to a new layer for each different scale.
2. Repeat previous process for each scale.
3. Turn on layers for appropriate scales in each viewport.

What if you want to edit the content?

- A. Give up?
- B. Bill by the hour?
- C. Use annotation scaling in AutoCAD!

How does annotation scaling in AutoCAD compare?

How does annotation scaling in AutoCAD compare?

1. Set the viewport scale (i.e. $1/8''=1'$)
2. Calculate scale factor (i.e. $1/8'' \times 12''=96$)
3. Set the dimension text (DIMTXT) to the proper height (i.e. $3/32''$)
4. Set the dimension scale (DIMSCALE) to the scale factor (i.e. 96)
5. Calculate the model space height for text (i.e. $3/32'' \times 96=9''$)
6. Set the text size (TEXTSIZE) to the model space height (i.e. 9'')

How does annotation scaling in AutoCAD compare?

1. Set the annotation scale (i.e. $1/8''=1'$)
2. ~~Calculate scale factor (i.e. $1/8'' \times 12''=96$)~~
3. Set the dimension text (DIMTXT) to the proper height (i.e. $3/32''$)
4. Set the dimension scale (DIMSCALE) to the scale factor (i.e. 96)
5. Calculate the model space height for text (i.e. $3/32'' \times 96=9''$)
6. Set the text size (TEXTSIZE) to the model space height (i.e. 9'')

How does annotation scaling in AutoCAD compare?

1. Set the annotation scale (i.e. $1/8''=1'$)
2. ~~Calculate scale factor (i.e. $1/8'' \times 12''=96$)~~
3. Set the dimension text (DIMTXT) to the proper height (i.e. $3/32''$)
4. ~~Set the dimension scale (DIMSCALE) to the scale factor (i.e. 96)~~
5. Calculate the model space height for text (i.e. $3/32'' \times 96=9''$)
6. Set the text size (TEXTSIZE) to the model space height (i.e. 9'')

How does annotation scaling in AutoCAD compare?

1. Set the annotation scale (i.e. $1/8''=1'$)
2. ~~Calculate scale factor (i.e. $1/8'' \times 12''=96$)~~
3. Set the dimension text (DIMTXT) to the proper height (i.e. $3/32''$)
4. ~~Set the dimension scale (DIMSCALE) to the scale factor (i.e. 96)~~
5. ~~Calculate the model space height for text (i.e. $3/32'' \times 96=9''$)~~
6. Set the text size (TEXTSIZE) to the model space height (i.e. 9")

How does annotation scaling in AutoCAD compare?

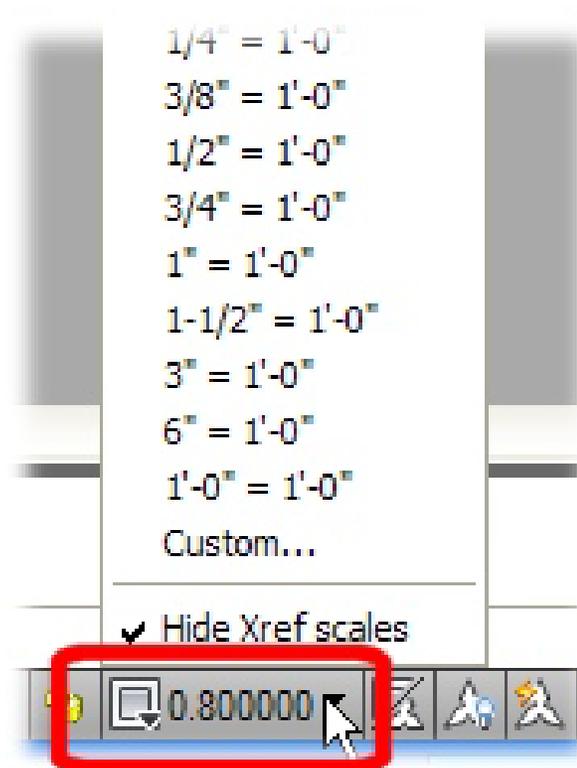
1. Set the annotation scale (i.e. $1/8''=1'$)
2. ~~Calculate scale factor (i.e. $1/8'' \times 12''=96$)~~
3. Set the dimension text (DIMTXT) to the proper height (i.e. $3/32''$)
4. ~~Set the dimension scale (DIMSCALE) to the scale factor (i.e. 96)~~
5. ~~Calculate the model space height for text (i.e. $3/32'' \times 96=9''$)~~
6. Set the text size (TEXTSIZE) to the proper height (i.e. $3/32''$)

Annotation Scaling Tools

- How do you adjust Viewport Scale (layout viewports)

Annotation Scaling Tools

- Viewport Scale (layout viewports)
 - Zoom (i.e. 1/96xp)
 - Viewports toolbar
 - Status bar

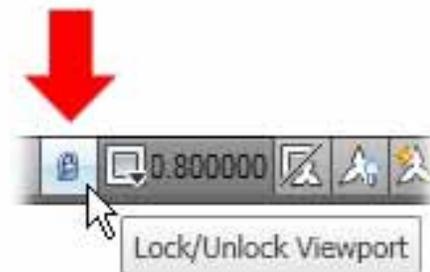
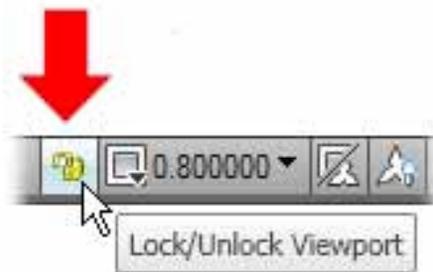


Annotation Scaling Tools

- Viewport Scale (layout viewports)
 - Zoom (i.e. 1/96xp)
 - Viewports toolbar
 - Status bar
- What do you have to do before you can change the viewport scale?

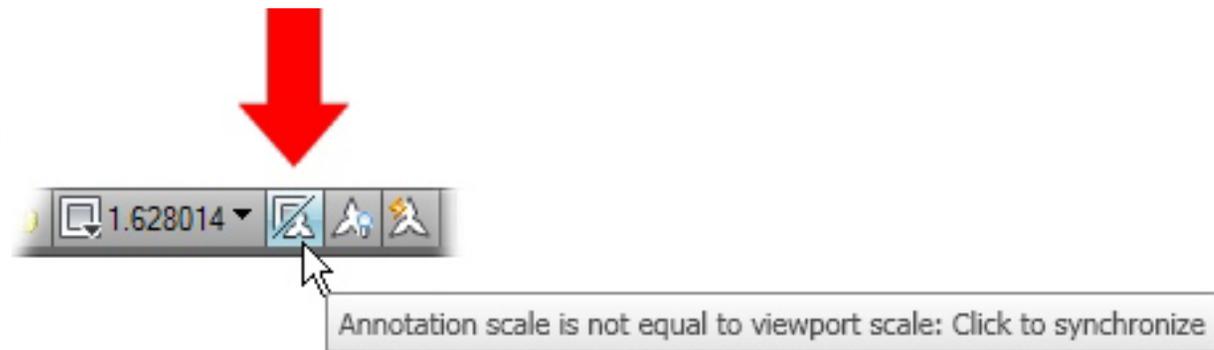
Annotation Scaling Tools

- Viewport Scale (layout viewports)
 - Zoom (i.e. 1/96xp)
 - Viewports toolbar
 - Status bar
- Viewport Locking (layout viewports)
 - Properties palette
 - Right-click menu
 - Status bar



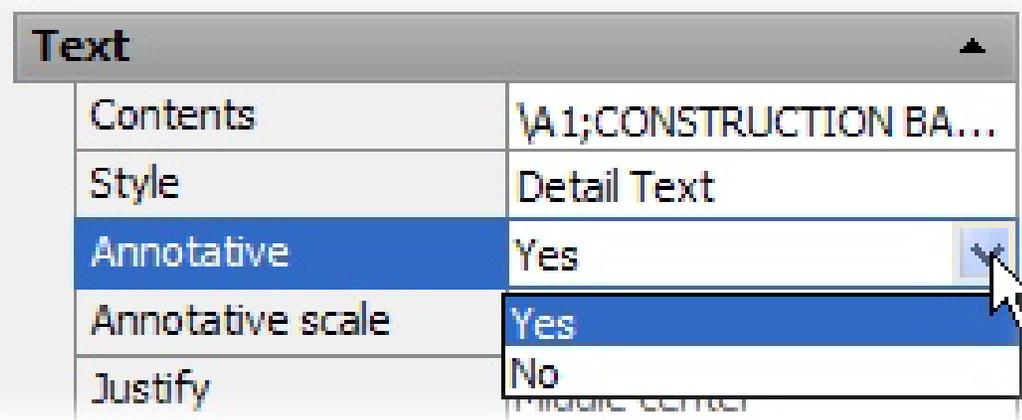
Annotation Scaling Tools

- Viewport Scale (layout viewports)
 - Zoom (i.e. 1/96xp)
 - Viewports toolbar
 - Status bar
- Viewport Locking (layout viewports)
 - Properties palette
 - Right-click menu
 - Status bar
- If the viewport scale gets out of sync with the annotation scale
 - Sync button



Annotative Objects

- Text, Mtext, Dimensions (incl. Leaders & Tolerances), Multileaders, Hatches, Blocks, Attributes
- Annotative Object Property (Yes/No)
- Properties palette



Text	
Contents	\A1;CONSTRUCTION BA...
Style	Detail Text
Annotative	Yes
Annotative scale	Yes
Justify	No

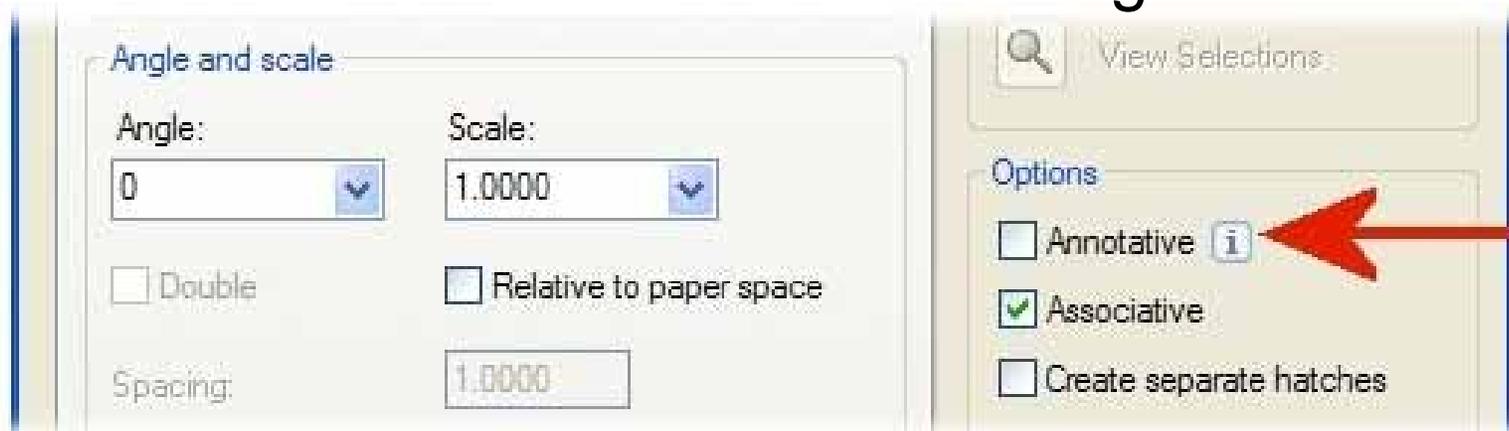
Annotative Objects

- Text, Mtext, Dimensions (incl. Leaders & Tolerances), Multileaders, Hatches, Blocks, Attributes
- Annotative Object Property (Yes/No)
- Properties palette
- Text Formatting ribbon bar



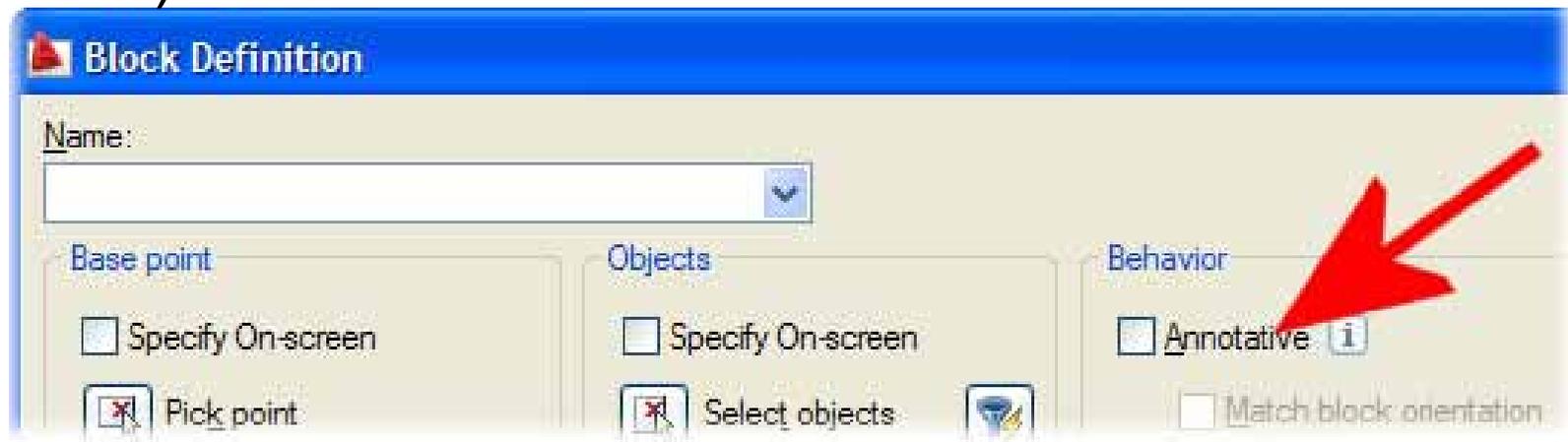
Annotative Objects

- Text, Mtext, Dimensions (incl. Leaders & Tolerances), Multileaders, Hatches, Blocks, Attributes
- Annotative Object Property (Yes/No)
- Properties palette
- Text Formatting ribbon bar
- Hatch and Gradient & Hatch Edit Dialog Boxes



Annotative Objects

- Text, Mtext, Dimensions (incl. Leaders & Tolerances), Multileaders, Hatches, Blocks, Attributes
- Annotative Object Property (Yes/No)
- Properties palette
- Text Formatting ribbon bar
- Hatch and Gradient & Hatch Edit Dialog Boxes
- Block Definition Dialog Box & Block Editor (Properties Window)



Annotative Objects

- Text, Mtext, Dimensions (incl. Leaders & Tolerances), Multileaders, Hatches, Blocks, Attributes
- Annotative Object Property (Yes/No)
- Properties palette
- Text Formatting ribbon bar
- Hatch and Gradient & Hatch Edit Dialog Boxes
- Block Definition Dialog Box & Block Editor (Properties Window)
- Attribute Definition Dialog Box, Block Attribute Manager & Enhanced Attributed Editor



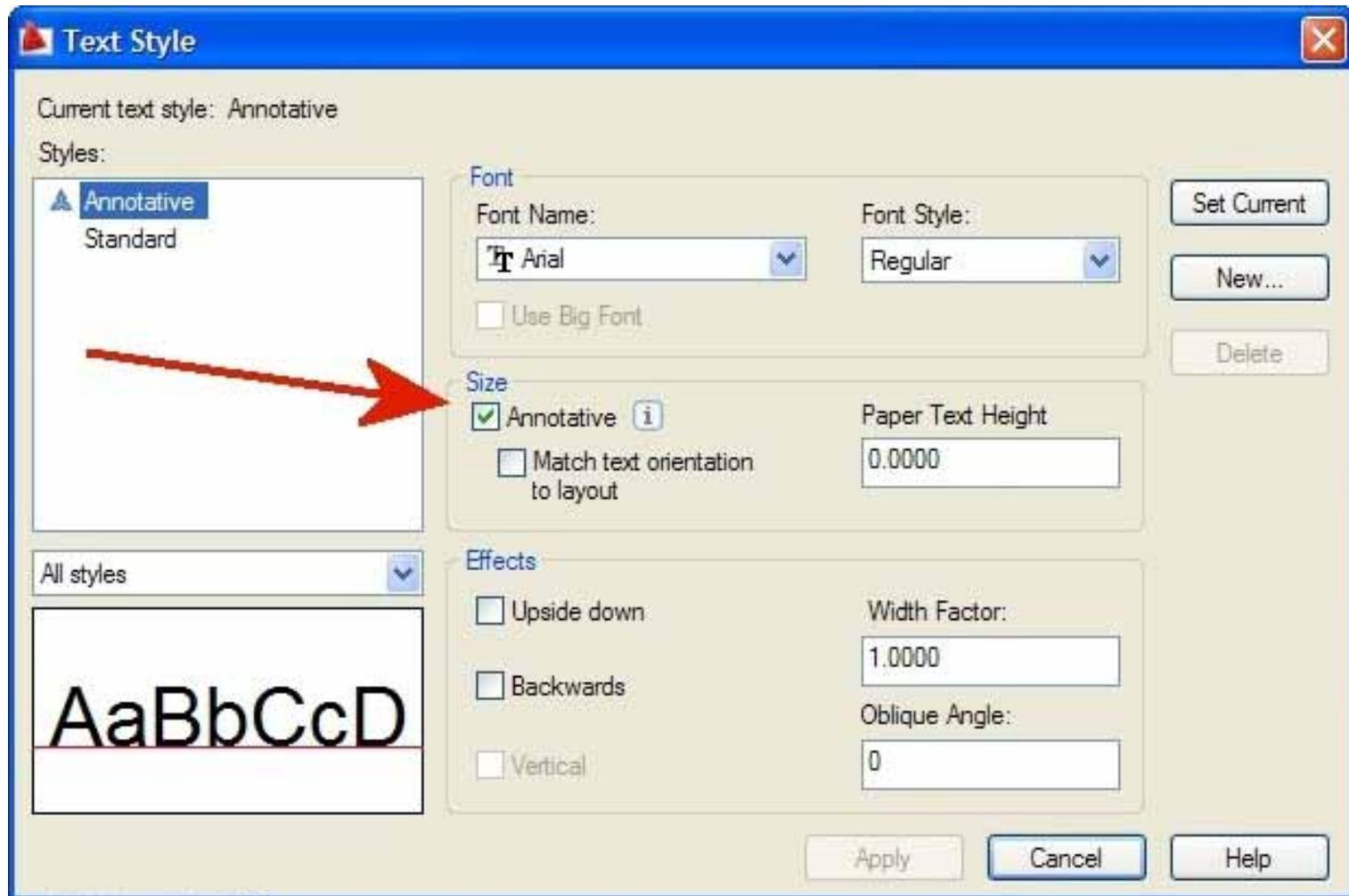
Annotative Objects

- Text, Mtext, Dimensions (incl. Leaders & Tolerances), Multileaders, Hatches, Blocks, Attributes
- Annotative Object Property (Yes/No)
- Properties palette
- Text Formatting ribbon bar
- Hatch and Gradient & Hatch Edit Dialog Boxes
- Block Definition Dialog Box & Block Editor (Properties Window)
- Attribute Definition Dialog Box, Block Attribute Manager & Enhanced Attributed Editor
- Annotative Object Icon



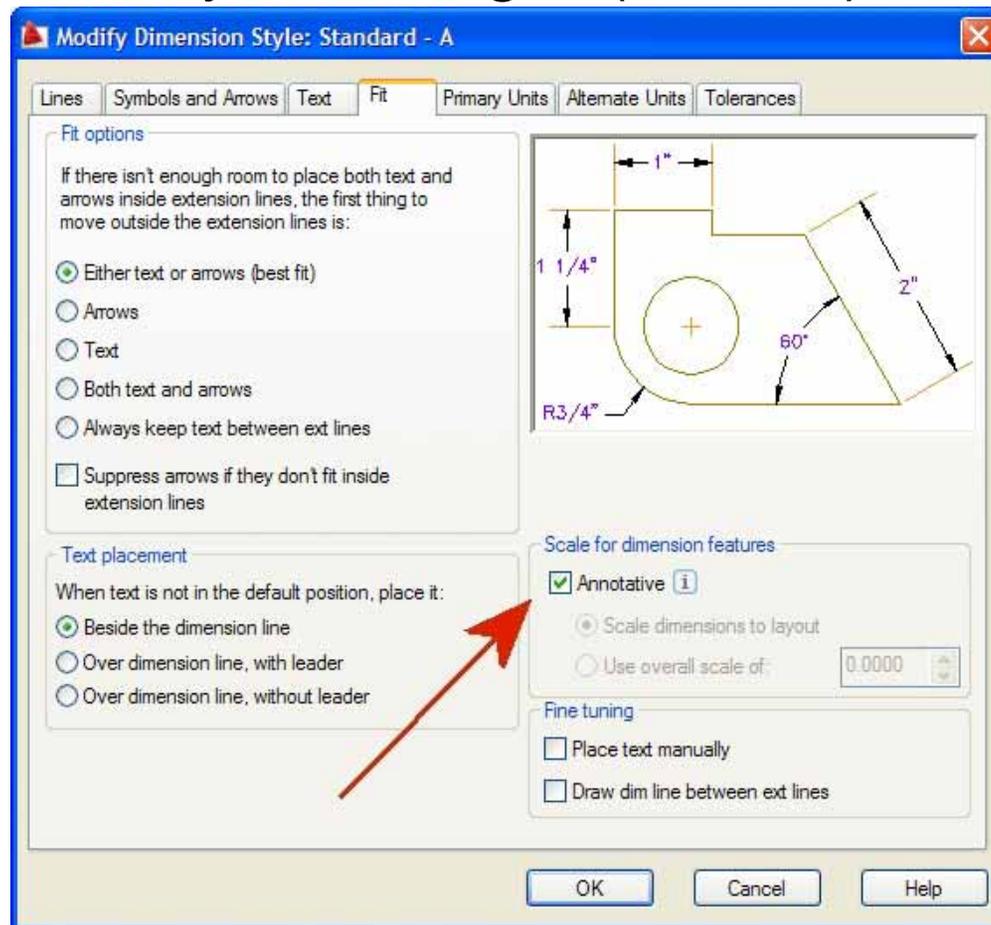
Annotative Styles

- No need for multiple styles based on different sizes
- Text Style Dialog Box



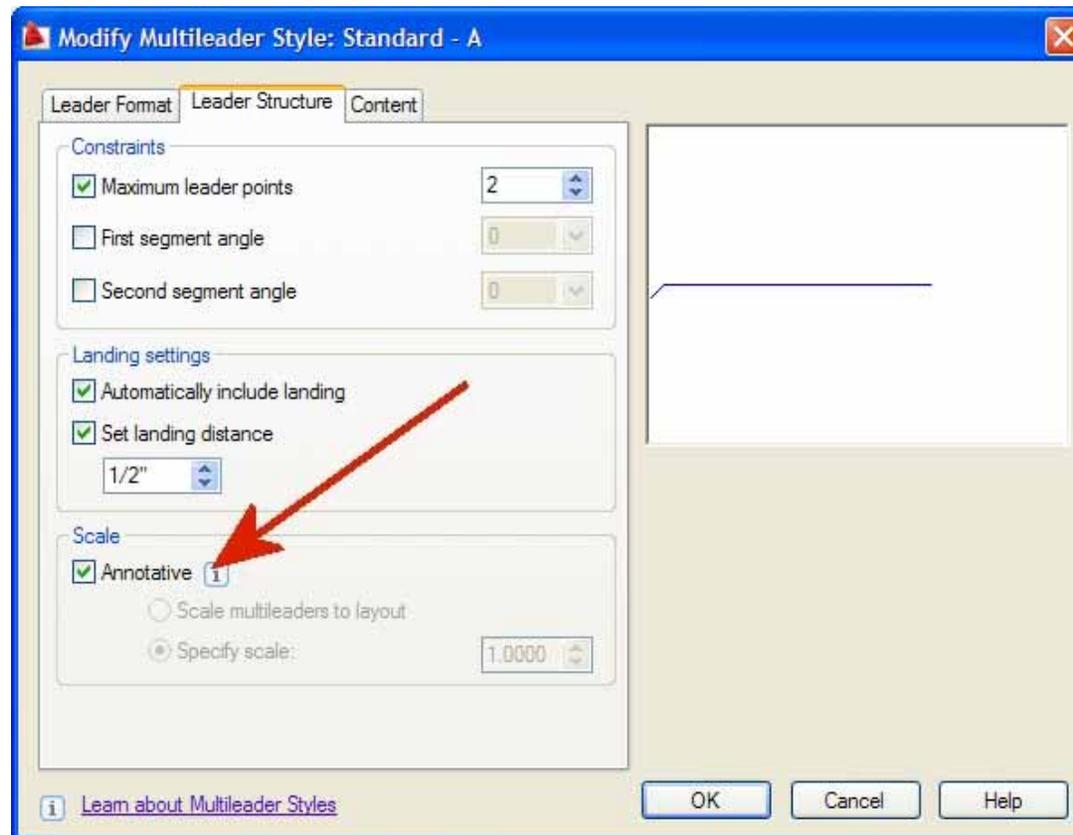
Annotative Styles

- No need for multiple styles based on different sizes
- Text Style Dialog Box
- Dimension Style Manager (Fit Tab)



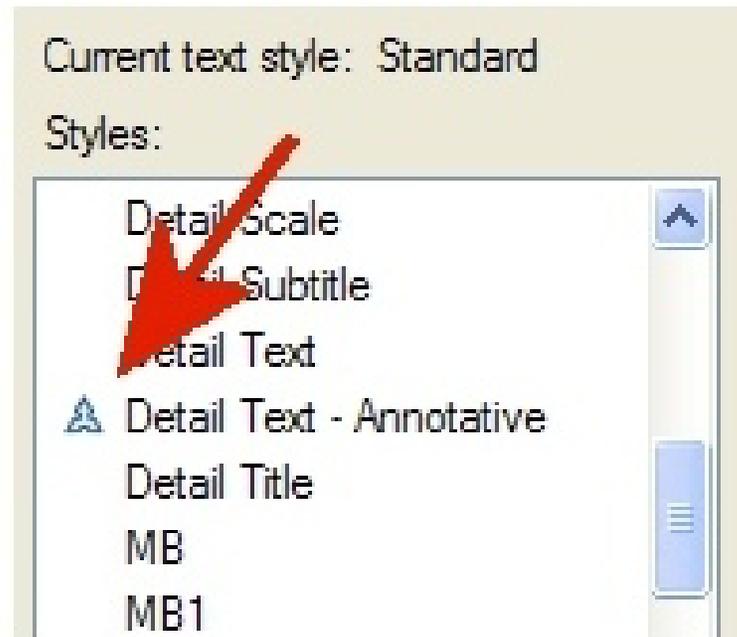
Annotative Styles

- No need for multiple styles based on different sizes
- Text Style Dialog Box
- Dimension Style Manager (Fit Tab)
- Multileader Style Manager (Leader Structure Tab)



Annotative Styles

- No need for multiple styles based on different sizes
- Text Style Dialog Box
- Dimension Style Manager (Fit Tab)
- Multileader Style Manager (Leader Structure Tab)
- Annotative Style Icon



Annotative Styles

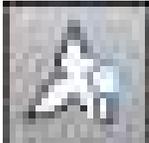
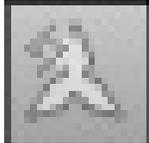
- No need for multiple styles based on different sizes
- Text Style Dialog Box
- Dimension Style Manager (Fit Tab)
- Multileader Style Manager (Leader Structure Tab)
- Annotative Style Icon
- ANNOUPDATE
 - Updates the Annotative property of selected objects to match the Annotative property of the object's style

An object is either annotative or it's not...

...it doesn't matter how it got there!

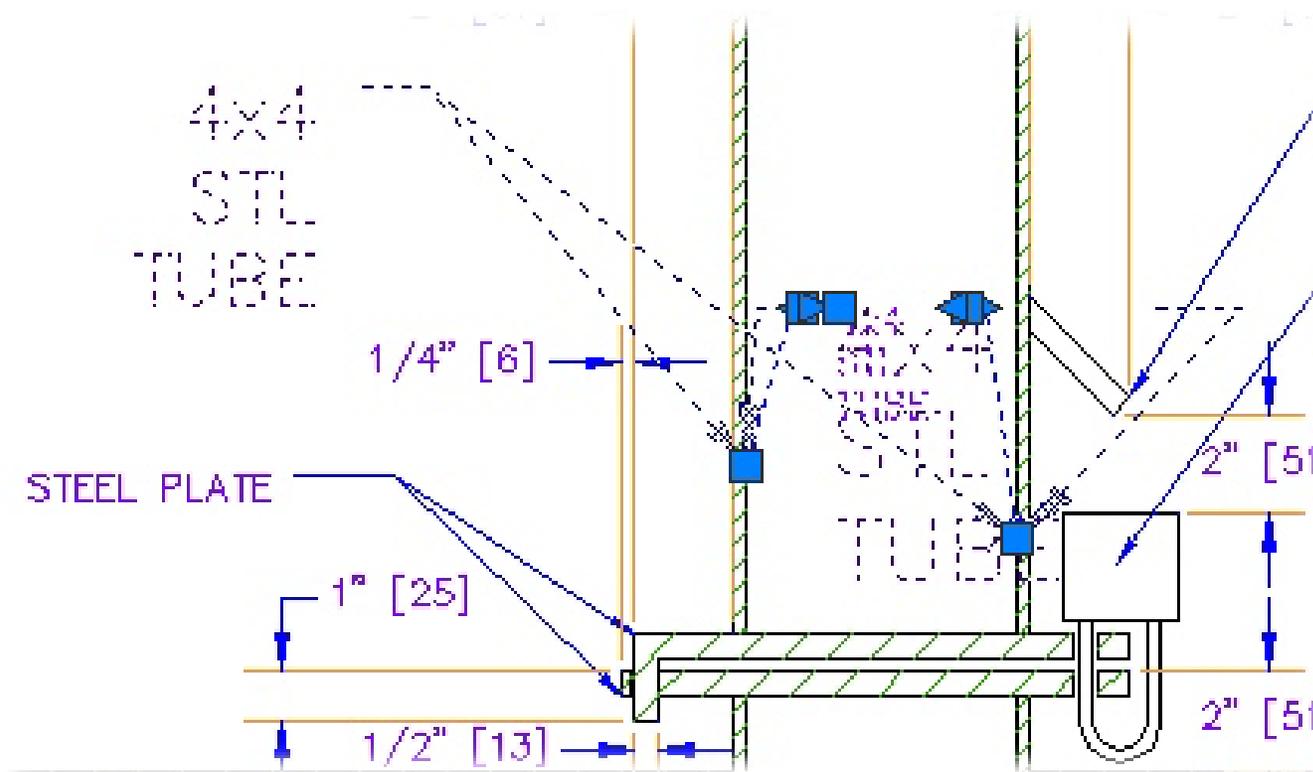
More Annotation Scaling Tools



- Annotation Visibility (Light Bulb)  
 - ANNOALLVISIBLE system variable
 - Show all annotative objects regardless of current Annotation Scale
 - Only turn on when needed
- Automatically Add Scales to Annotative Objects when the Annotation Scale Changes (Lightning Bolt)  
 - ANNOAUTOSCALE system variable
 - Only turn on when needed if working on Model tab
 - Consider leaving on if working through viewports on Layout tabs

More Annotation Scaling Tools (con't)

- Viewing/Editing Scale Representations
 - SELECTIONANNODISPLAY
 - Location of individual scale representations
 - Change value to 0 to avoid highlighting multiple scale representations



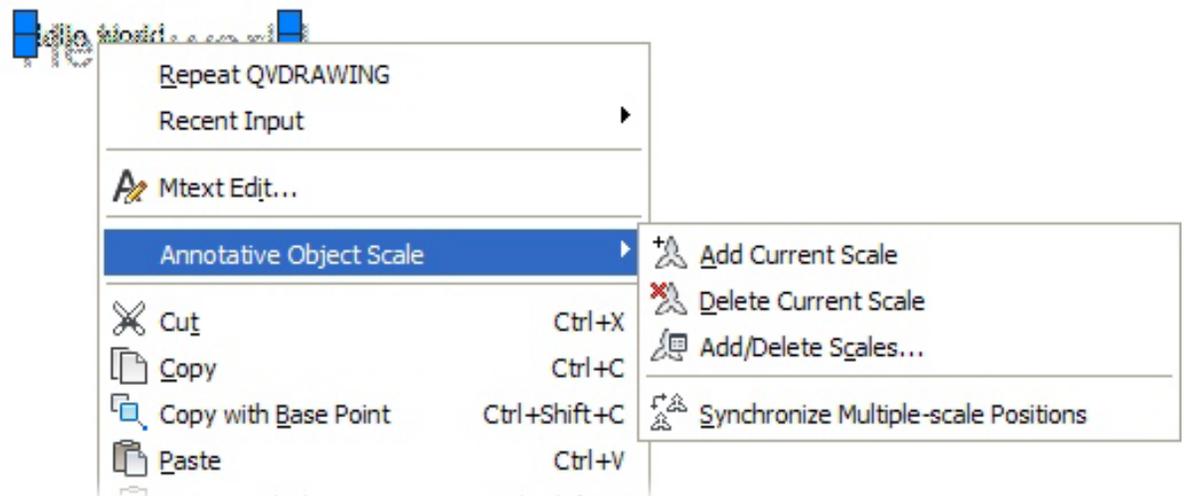
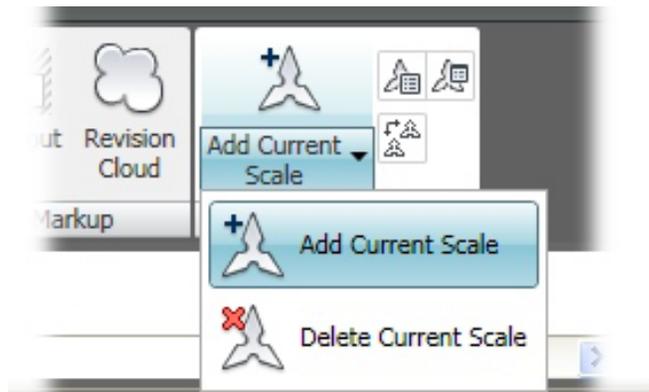
More Annotation Scaling Tools (con't)

- Viewing/Editing Scale Representations
 - SELECTIONANNODISPLAY

- ANNORESET command/system variable
 - Returns multiple scale representations to original definition location

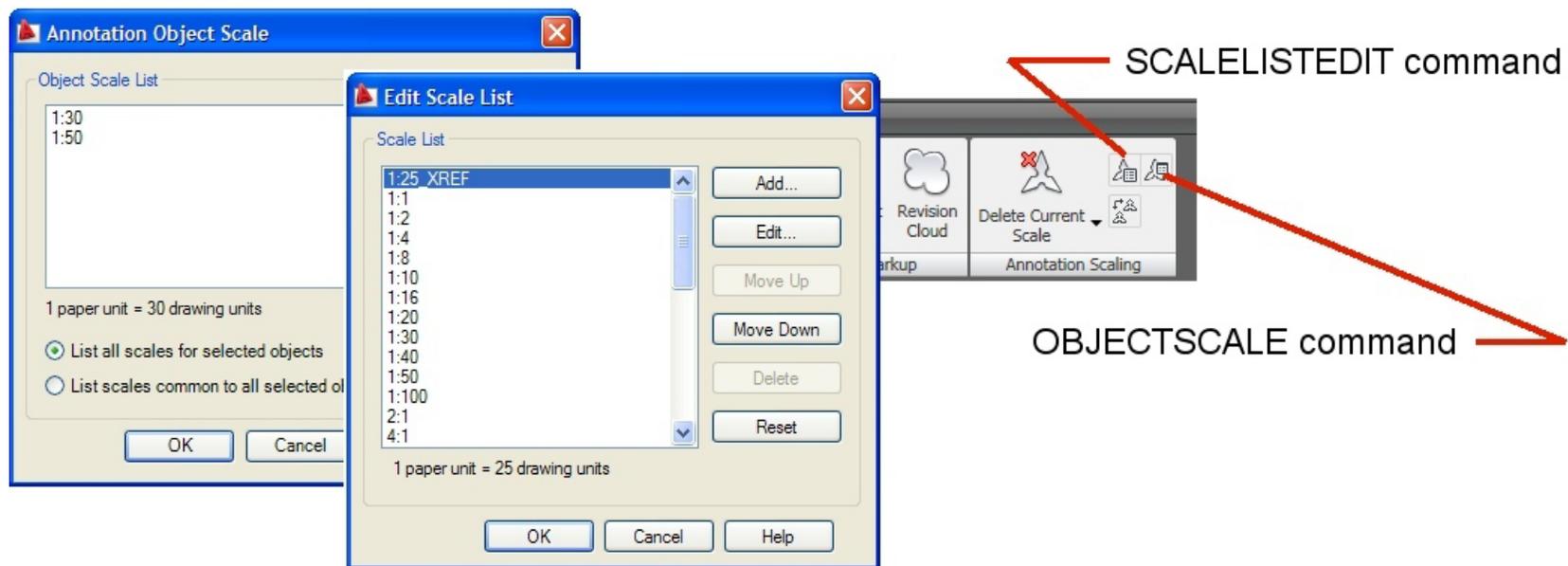
More Annotation Scaling Tools (con't)

- Viewing/Editing Scale Representations
 - SELECTIONANNODISPLAY
- ANNORESET command/system variable
- Add/Remove Current Scale and Add/Delete Annotative Scales
 - Properties window
 - Right-click menu
 - Annotation Scaling panel of Annotate ribbon bar
 - OBJECTSCALE command



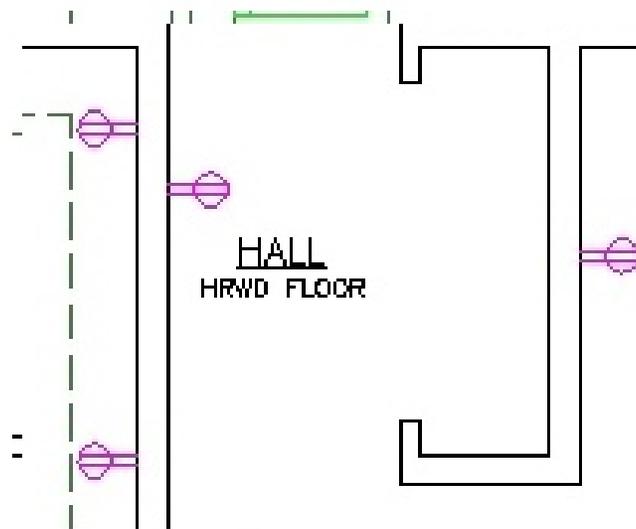
More Annotation Scaling Tools (con't)

- Viewing/Editing Scale Representations
 - SELECTIONANNODISPLAY
 - ANNORESET command/system variable
- Add/Remove Current Scale and Add/Delete Annotative Scales
- Edit the Scale List



Blocks

- Annotative blocks let you insert block references that are consistently sized regardless of the viewport scale.
- Useful for tags and symbols
- Not for objects drawn at their actual size (ie. Chair)



1/4"=1'-0"



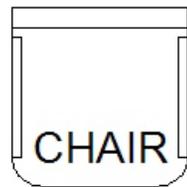
1/8"=1'-0"

Blocks

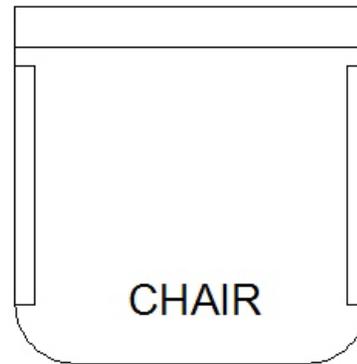
- Annotative blocks let you insert block references that are consistently sized regardless of the viewport scale.
 - Useful for tags and symbols
 - Not for objects drawn at their actual size (ie. Chair)
- Annotative blocks **CANNOT** include annotative objects
- A drawing can be saved for use as an annotative block by setting ANNOTATIVEDWG to 1
 - Can't change system variable if the drawing contains annotative objects

Attributes

- Annotative Blocks
 - Attribute is non-annotative
- Nonannotative blocks.
 - Geometry in block displays based on the scale of viewport
 - Attribute text displays at Paper Height defined for attribute



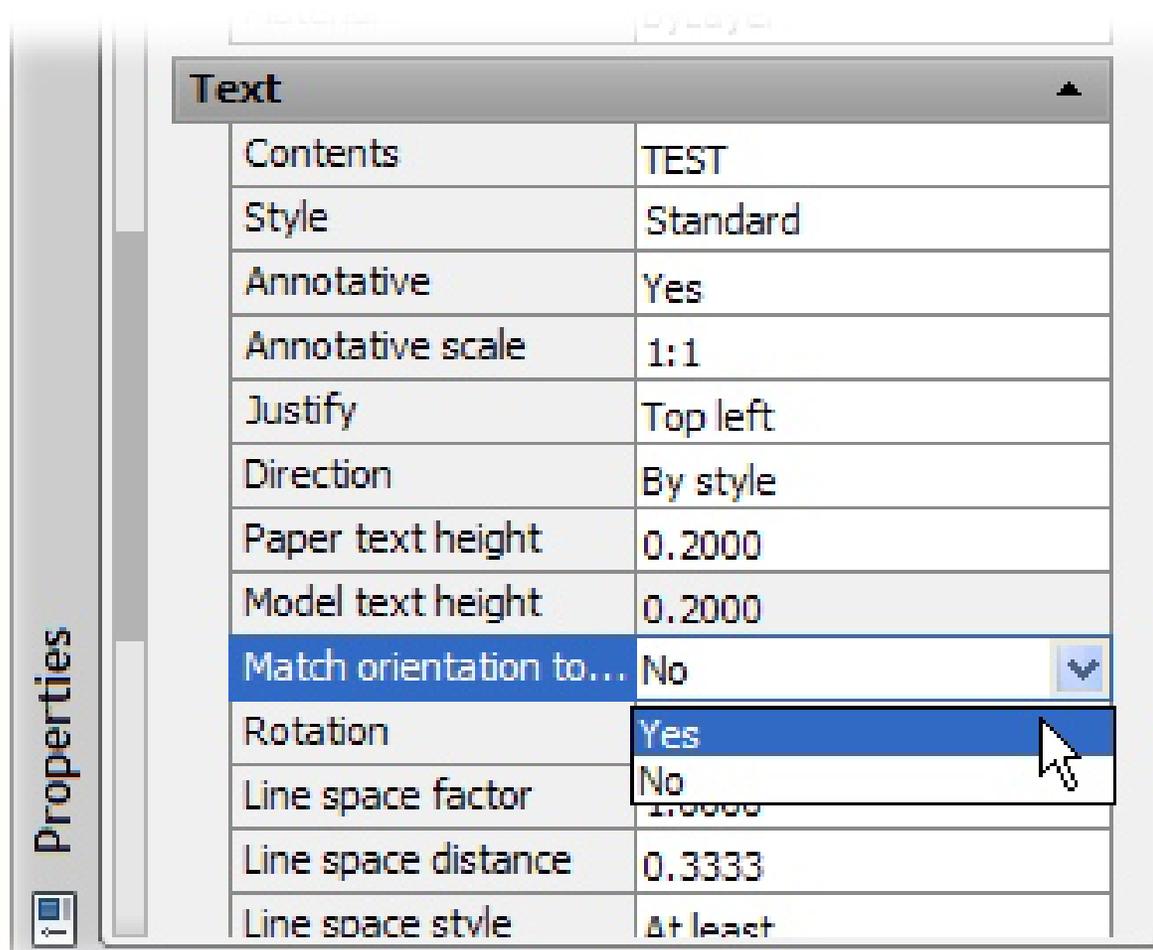
3/4"=1'



1 1/2"=1'

Annotative Orientation

- Annotative blocks and text can be set so that their orientation matches the orientation of the layout.



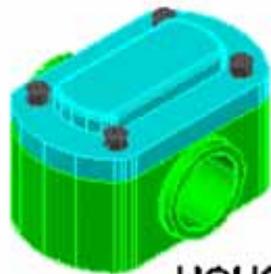
Annotative Orientation

- Annotative blocks and text can be set so that their orientation matches the orientation of the layout.
- Even if the view in the layout viewport is twisted or if the viewpoint is non-planar, the orientation of these objects in layout viewports will match the orientation of the layout.



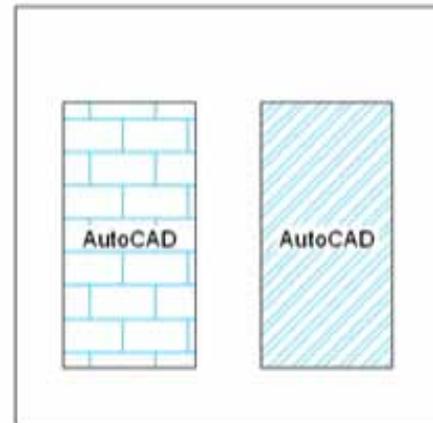
HOUSING

Plan view

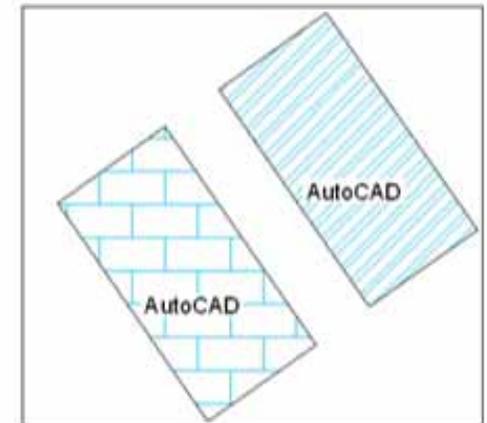


HOUSING

Isometric view



View twist = 0



View twist = 35

Using Visual Fidelity Control



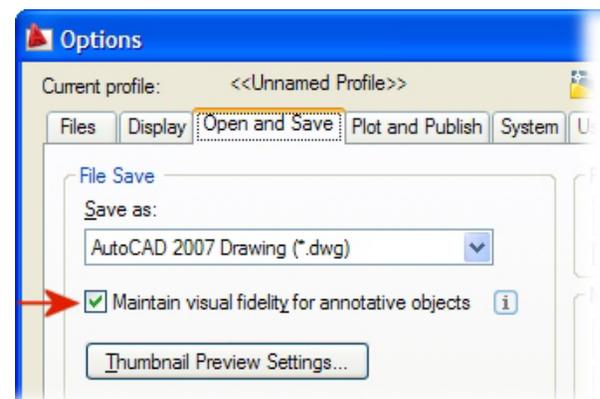
Critical if you're sharing drawings with others who are using versions of AutoCAD prior to 2008

- Adds a separate layer specific to each scale

S..	Name	On	Fre...	L...	Color	Line
	0				white	Cont
	Annotation				160	Cont
	Defpoints				white	Cont
	Geometry				96	Cont

Stat	Name	On	Freeze	Lock	Color	Line
	0				wh...	Conti
	Annotation				160	Conti
	Annotation @ 1				160	Conti
	Annotation @ 20				160	Conti
	Annotation @ 30				160	Conti
	Annotation @ 40				160	Conti
	Defpoints				wh...	Conti
	Geometry				96	Conti

- Controlled from Options dialog



Visual Fidelity Control Tips

- Turn off Visual Fidelity if you work primarily in model space
- Turn off Visual Fidelity until you need to save the drawing to send to someone using an earlier version of AutoCAD
- Explode dimensions to edit in an earlier version of AutoCAD that does not support annotation scaling
 - Creates a separate dimension for each scale representation
 - Can then delete unused dimensions
 - Remaining dimensions will still be treated as annotative when opened in a version of AutoCAD that supports annotative scaling

Conclusions

Annotation Scaling is easy to use:

- Easy to convert existing objects into annotative objects
- Easy to create new annotative objects
- Perhaps the single most significant feature added to AutoCAD in years

Evaluation Forms

Please remember to fill out your
evaluation form

(In Hall B or via an email you receive. Complete by 8pm to be eligible for prizes)

This is session **GD315-1P**

The Certification is Free. The Benefit is Invaluable.

Free Autodesk Certification during AU

- No exam fee (worth up to \$125)
- Get a free, internationally recognized credential
- The offer is valid for six months after AU at participating Authorized Autodesk Training Centers in Canada and the US

What to do

- When you arrived and registered at AU, you received a voucher that waives the exam fee
- Go to Zeno 4710, present the voucher, take the exam.
But don't delay. Exam space is limited at AU—it's first come, first served

Certification exams are available for:

AutoCAD, AutoCAD Architecture, AutoCAD Civil 3D,
Autodesk Inventor and Revit Architecture

Get Certified. Get Ahead.



Questions & Answers

To contact me:

David S. Cohn
711 Chuckanut Drive North
Bellingham, WA 98229-6921

360-733-0711

<mailto:david@dscohn.com>

www.dscohn.com (incl. handout online)

www.cadman-do.blogspot.com



This concludes the American Institute of Architects
Continuing Education Systems Program



