

I-DEAS CAD Improvements

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CAD Improvements

- **Drafting defaults**
Drafting software defaults have been configured to comply with ASME Y14 series drafting standards.
- **Icon panel additions**
 - Contain time-saving macros for repetitive tasks such as:
 - Flagging out-of-date dimensions
 - Inserting view titles, standard notes, finishes, etc...
 - Representing tapped holes (Future Enhancement)
- **Layers named and defined to control line weights, line fonts, & colors**
 - Creates a common look & feel for all drawings
 - Allows for better onscreen selection & filtering ability
 - Allows for better use of time-saving macros
 - Eliminates dependence on IPLOT configured plotters to generate line weights
 - Allows for WYSIWYG viewing and file creation (paper dwg or in an image file like TIF, JPEG, etc...)
- **SDI plotting implemented as eventual replacement for IPLOT**

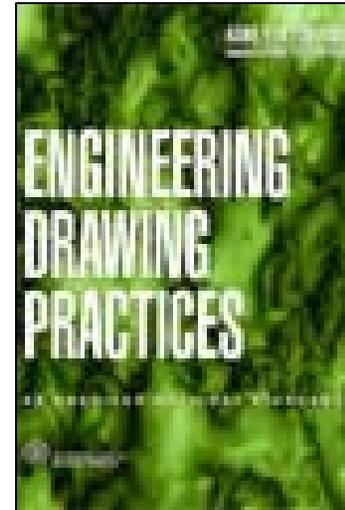
CAD Improvements

Drafting Defaults

According to a recent Fermilab survey:

Question: Should Fermilab create and manage their drawings according to ASME Y14?

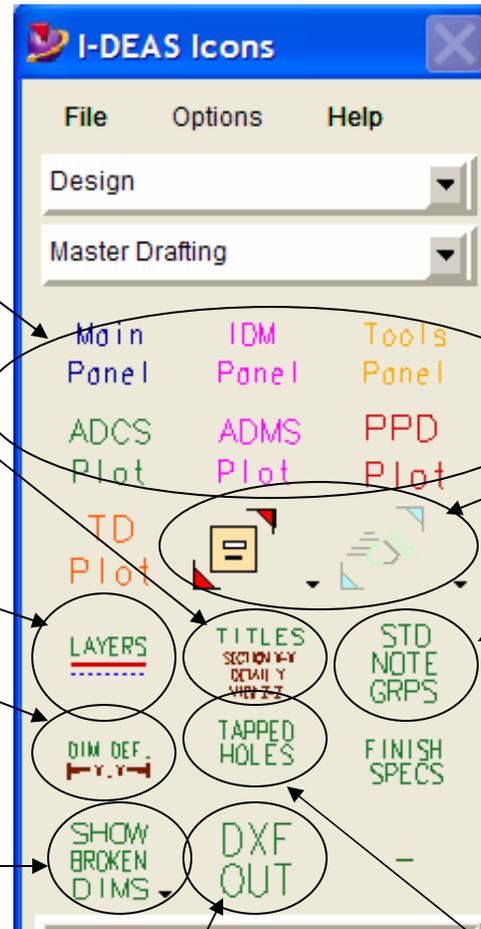
52 of 76 Engineers Responded		
41	YES	78.8%
3	NO	5.8%
8	No Pref.	15.4%



- The I-DEAS Drafting environment now conforms to ASME Y14 Standards.
- Each group has/will have their own set of standards issued to them.
- Requests for changing the defaults should be channeled through your CAD Tools Committee Representative.

CAD Improvements

Tools Icon Panel



Switch to other panels

Creates View Titles
VIEW A-A
SCALE 1/1

Layers (see later slide)

Reset Dimension Defaults
(masterdrafting.in/mm)

Show or Delete Out-of-Date
Dimensions

Exports DXF & IGES files (WIP)

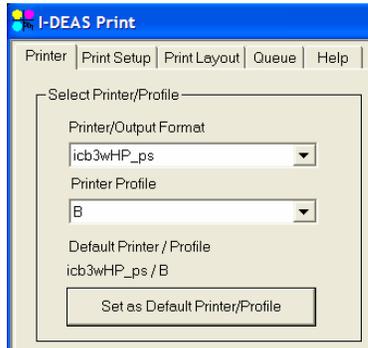
Manage Bins/Libraries

Places standard notes on
drawing based upon
fabrication process.
(Machined, Casting, Sheet
Metal, Weldment,
Assembly drawing, etc...)
(WIP)

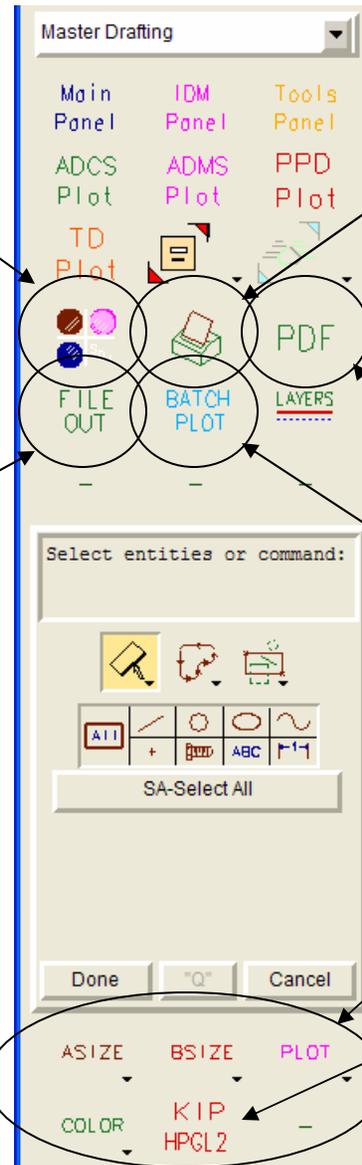
Converts solid model entities
into tapped holes
representations (WIP)

CAD Improvements

SDI Plotting Icon Panel



SDI GUI



Quick Print (also available on Main Panel)



Image output (JPG, TIF, PNG, EMF, CGM)

PDF output
Batch Plotting

Preconfigured printer icons

Pen Mapped Plotter (emulates IPLOT behavior for compatibility with legacy drawings)

CAD Improvements

Layers

Drawing templates have pre-defined layers describing default layer properties: color, weight, and font.

Advantages to using layers:

- No pen plotter issues (You may use any colors you like)
- Standardizes look & feel for drawings
- Allows for easier entity selection & filtering
- Partners well with time-saving macros

Layer Name →

Layer Number →

Weight →

Font →

Color →

I-DEAS Icons

File Options Help

Design

Master Drafting

OBJECT

Define Layer.
Enter name and number:

1	S	GENERAL
204	S	* OBJECT
227	S	TANGENT
205	S	HIDDEN
6	S	HATCH

N OBJECT

PL ↑ XL ↓

L 204

Thick

Solid

Color:

SH-Show

DS-Set Display

DF-Set 2D Defaults

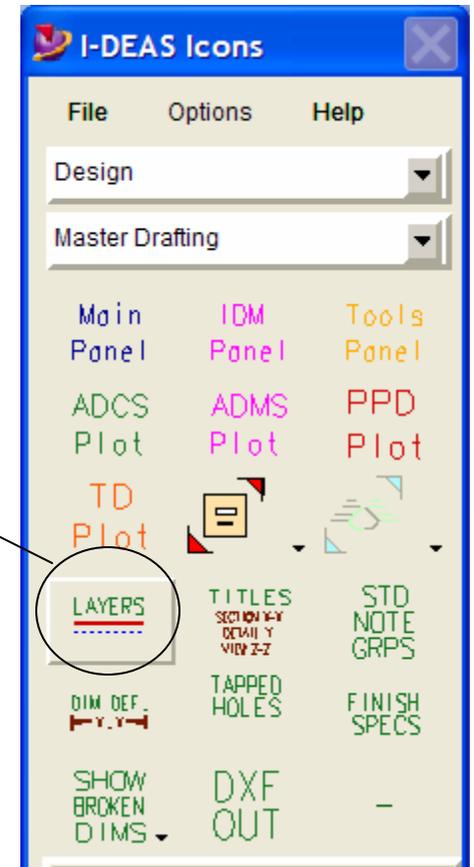
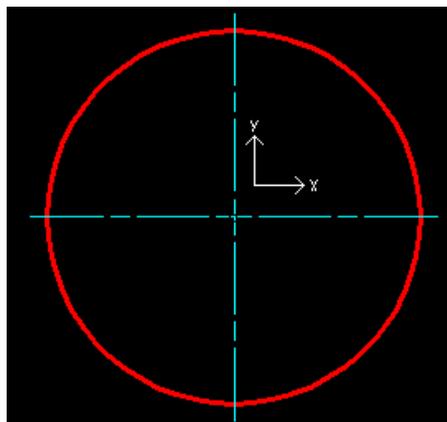
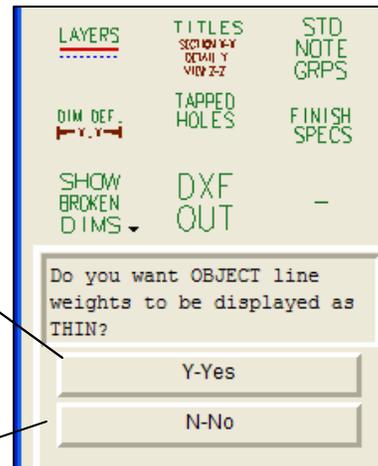
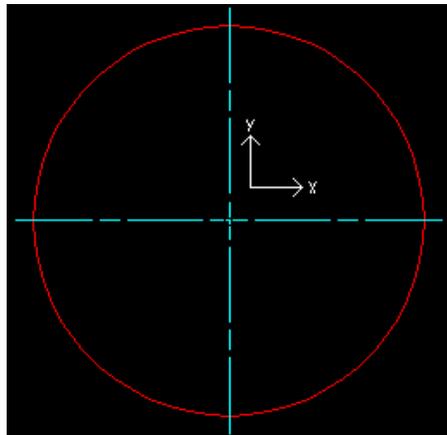
SM-Set Model Default

VL-Preview Layer

CAD Improvements

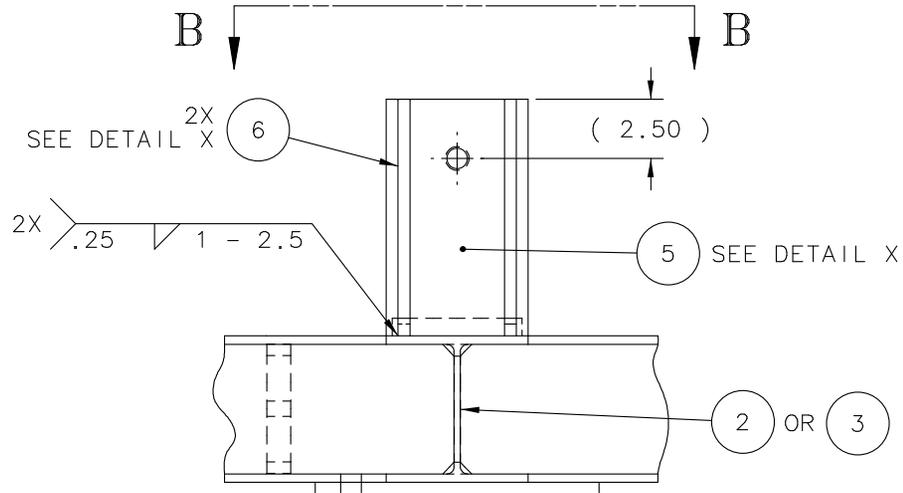
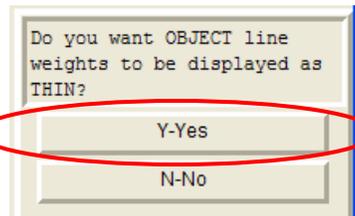
Layers Icon Button

Defines & applies layer definitions to current drawing. Allows choice of line weight for OBJECT lines. Useful for large assembly drawings that display better with thin weights throughout.

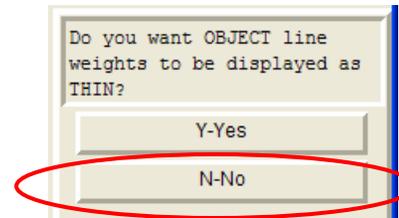


CAD Improvements

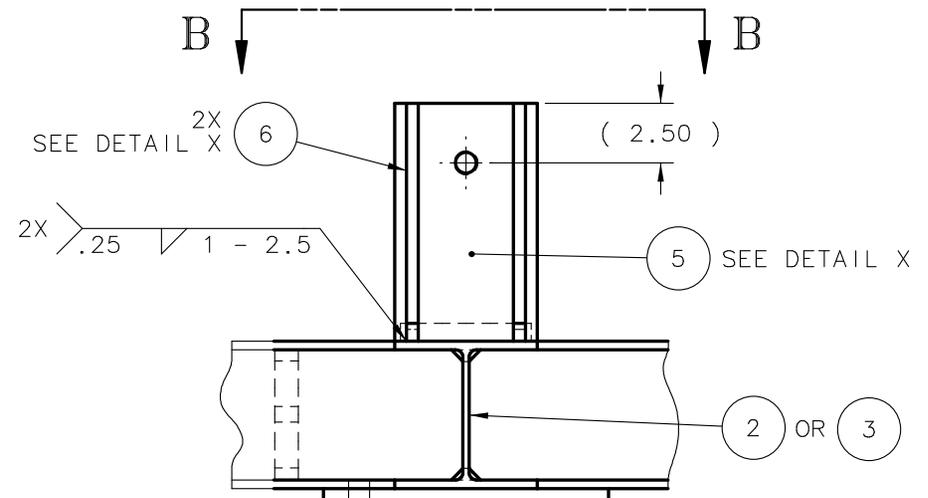
Layers Program Options



Thin Weight OBJECT lines



Thick Weight OBJECT lines



CAD Improvements

Layer Definitions

Layer Name	Line Weight	Line Font	Line Color	Description
GENERAL	None	None	None	General purpose use (default drafting layer)
OBJECT	Thick	Solid	None	Defining geometry
TANGENT	Thin	Phantom	None	Tangent edges (radii)
HIDDEN	Thin	Hidden	None	Hidden entities
HATCH	Thin	Solid	None	Crosshatching
CENTER	Thin	Centerline	None	Centerlines
DIMENSION	Thin	Solid	None	Dimensions
NOTES	Thin	Solid	None	Notes
NONASSOC	Thin	Solid	White	Non-associative dimensions

Line weights:

Thin

Medium

Thick

.009 in

.018 in

.027 in

.23 mm

.46 mm

.68 mm

CAD Improvements

Display Draw Options

You can change the onscreen display of line weights via the “Draw Options” command. This is only for onscreen appearance. This does not affect plotting.

Pixel Weight is the default:

1 pixel = thin

2 pixel = medium

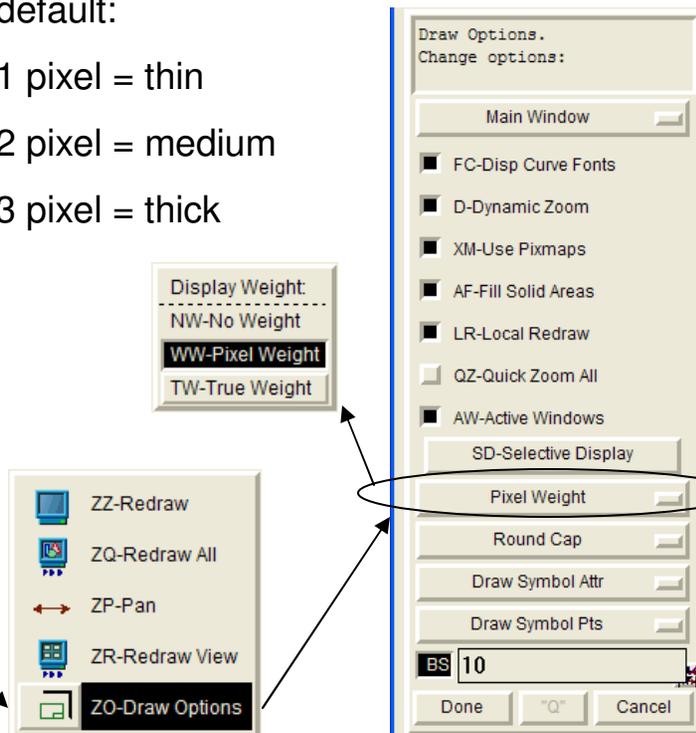
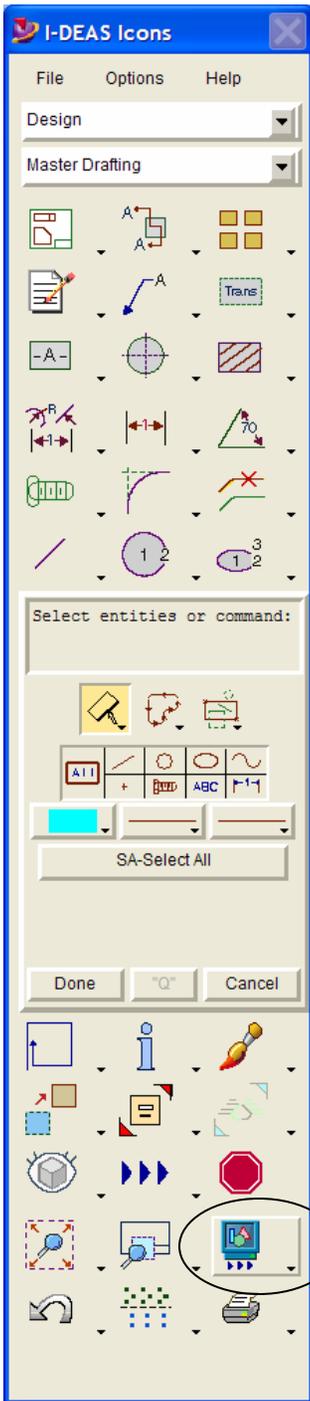
3 pixel = thick

No Weight displays everything at 1 pixel.

True Weight displays everything at it's actual SDI plot width:

.009/.018/.027 in thick

I recommend getting used to the Pixel Weight display. Without any standard color conventions or line weights displayed, you do not readily know what each entity's line width is without querying for it.



CAD Improvements Examples

Filtering Using Layers

You can use layers to filter for entities. For example, you can selection all OBJECT lines and change their properties.

The image illustrates a workflow for filtering and changing the color of object lines in a CAD application:

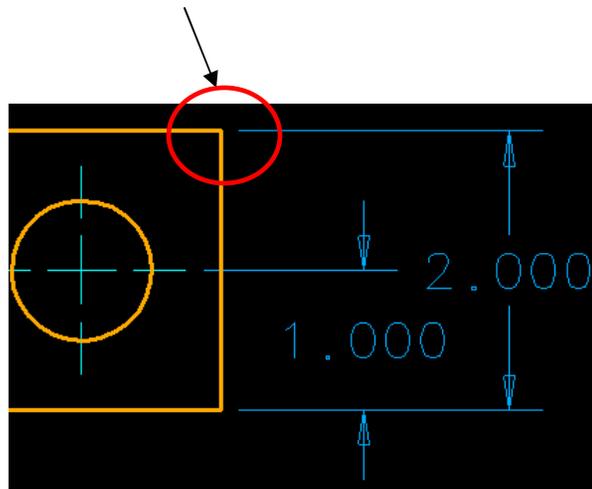
- Initial State:** A CAD drawing shows a technical sketch of a part with dimensions: 6.00, .75, .50, 10.00, 5, and a 6° angle. The sketch is drawn in blue.
- Layer Selection:** The user opens the 'EG-Edit Graphic Attr' dialog. In the 'Set Filter' dialog, the 'OBJECT' layer is selected from a list. The 'Filter9' and '204' options are also visible.
- Entity Selection:** The 'Edit Graphic Attr' dialog shows 'SG-All in Drawing' selected under 'Select entities:'. The 'Dk Green' color is selected under 'Select entity or change options:'.
- Final State:** The same CAD drawing is shown, but the object lines are now colored dark green, while the dimension lines remain blue.

Selected all Object lines and changed their color to Dark Green

CAD Improvement Examples

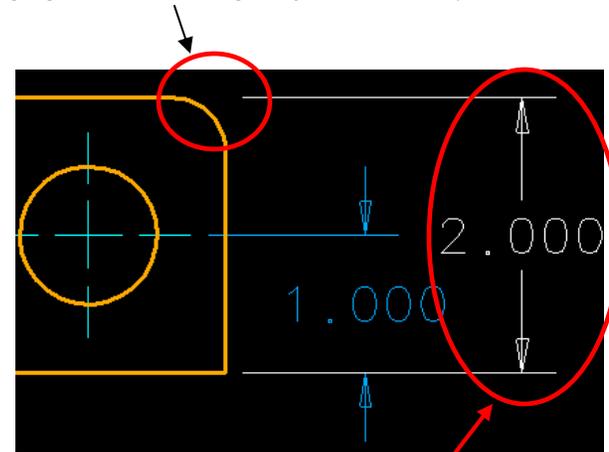
Flagging Out-of-Date Dims

Sharp Corner – Dimension attached to Vertex (V) instead of Face (F)



Before

Added Fillet to Corner – Dimension loses associativity creating the potential for the drawing to be incorrect if the part changes and the drawing doesn't reflect the change. Scrap parts and project delays could result.



After

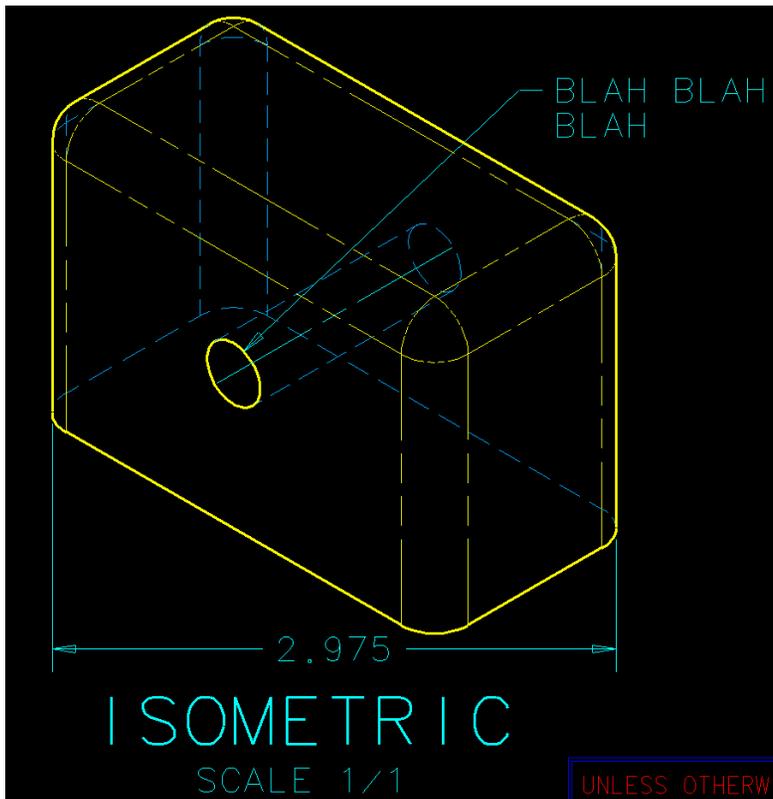
Now, out-of-date dimensions become flagged by turning them to white and moving them to layer NONASSOC (256) so that they stand out and are easily recognized alerting the detailer of the problem.

Please see *Best Practice for Dimensioning 3D Models in Drafting* for more information.

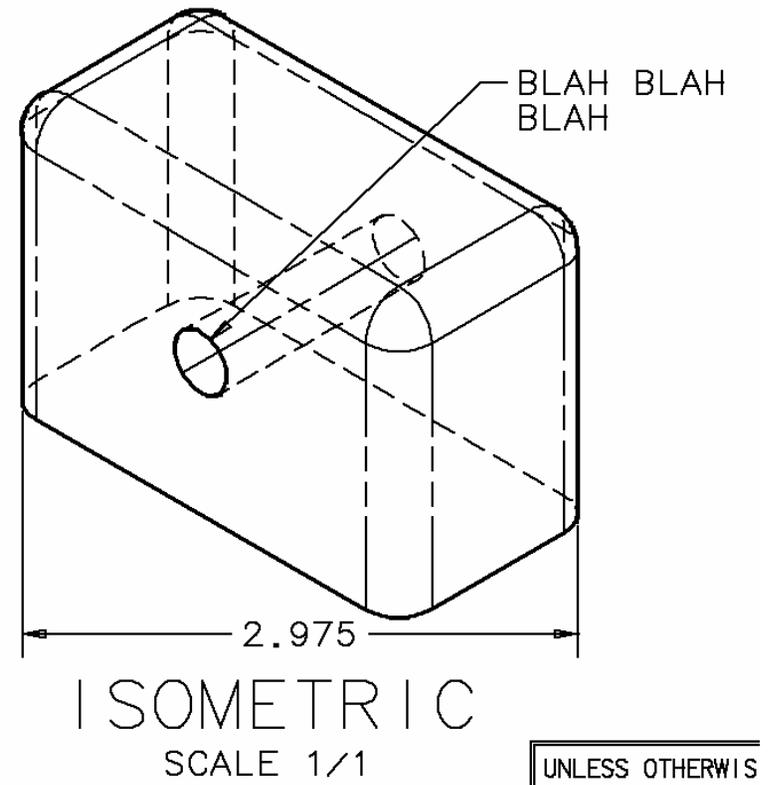
CAD Improvement Examples

Combining Layers with SDI Plotting

What You See Is What You Get (WYSIWYG) – Thin lines are thin. Thick lines are thick.



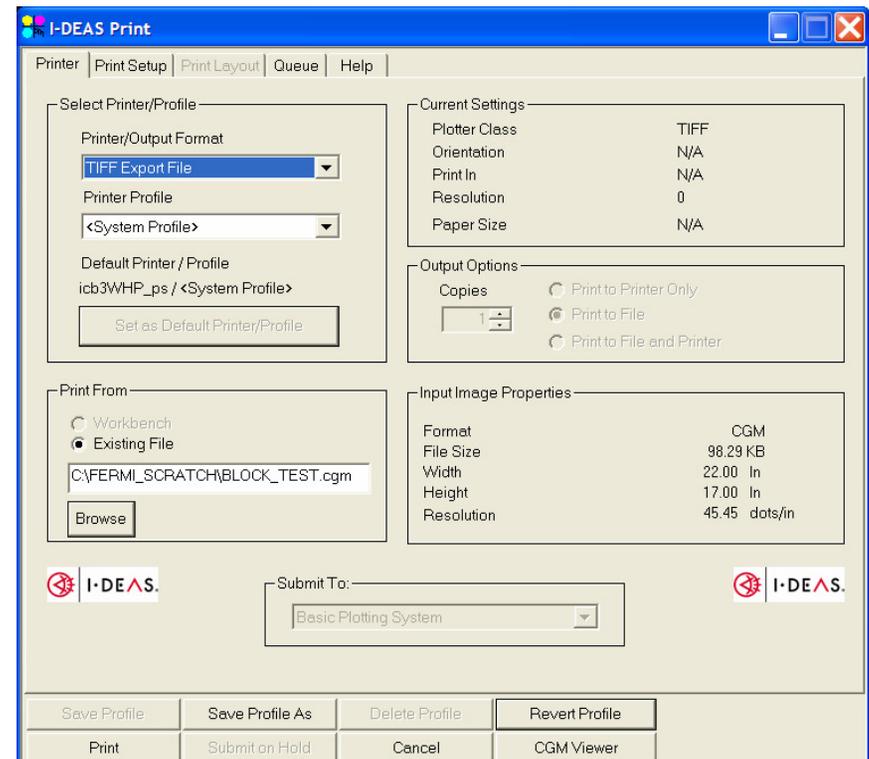
→
WYSIWYG



CAD Improvements

SDI Plotting

- SDI can do more than IPLOT
 - Image output (TIF, JPEG, EMF)
 - Allows “Quick Print” button to work
 - Allows personal preferences for plotting
- Same Interface for Modeling & Drafting
- IPLOT is unsupported and considered obsolete by UGS
- SDI is UG NX3+ plotting solution
- Allows for WYSIWYG viewing and file creation
- Will need to switch eventually
 - Switch now and avoid having to learn it AND UG NX at the same time.
- Can co-exist with IPLOT to allow smoother transition to SDI

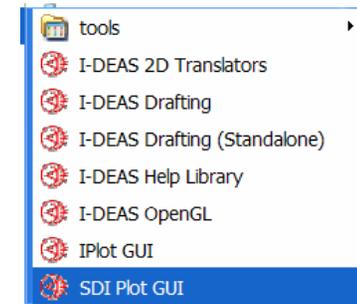
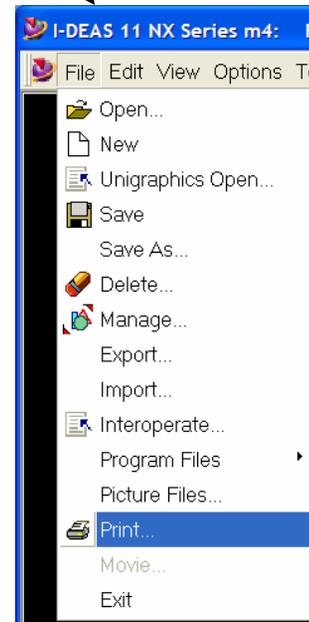
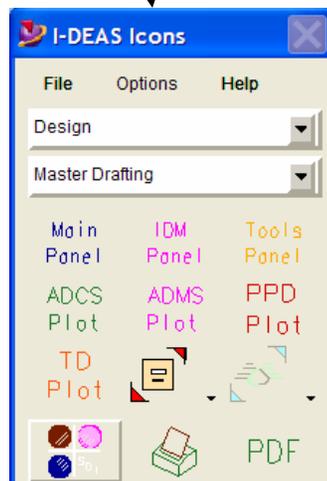


CAD Improvements

SDI Plotting

You can access SDI several ways:

- 1) The *Quick Print* icon button within I-DEAS (any application). **You must assign a default printer/profile first.**
- 2) From the *Windows Start Menu*: I-DEAS11...SDI Plot GUI.
- 3) From *File...Print...* within any I-DEAS application except Drafting (IPLOT currently controls it instead).
- 4) From the SDI Plotting icon panel in Drafting.



CAD Improvements

SDI Printer Tab

The screenshot shows the I-DEAS Print dialog box with the following sections and annotations:

- Printer List:** Points to the 'Select Printer/Profile' section.
- Profiles for each Printer:** Points to the 'Printer/Output Format' dropdown menu.
- Default Printer/Profile for Quick Print:** Points to the 'Printer Profile' dropdown menu.
- Set currently selected printer/profile as default:** Points to the 'Set as Default Printer/Profile' button.
- Print existing CGM file:** Points to the 'Existing File' radio button and the file path 'C:\FERMI_SCRATCH\439968_S1.cgm'.
- Save existing options as a personal Profile:** Points to the 'Save Profile' button.
- Self-explanatory:** Points to the 'Output Options' section.
- CGM Viewer:** Points to the 'CGM Viewer' button at the bottom right.

Current Settings:

Plotter Class	Postscript
Orientation	Portrait
Print In	Monochrome
Resolution	300
Paper Size	B(Ledger) - 11.0 x 17.0

Output Options:

- Print to Printer Only
- Print to File
- Print to File and Printer

Input Image Properties:

Format	CGM
File Size	16.88 KB
Width	7.27 In
Height	4.34 In
Resolution	137.49 dots/in

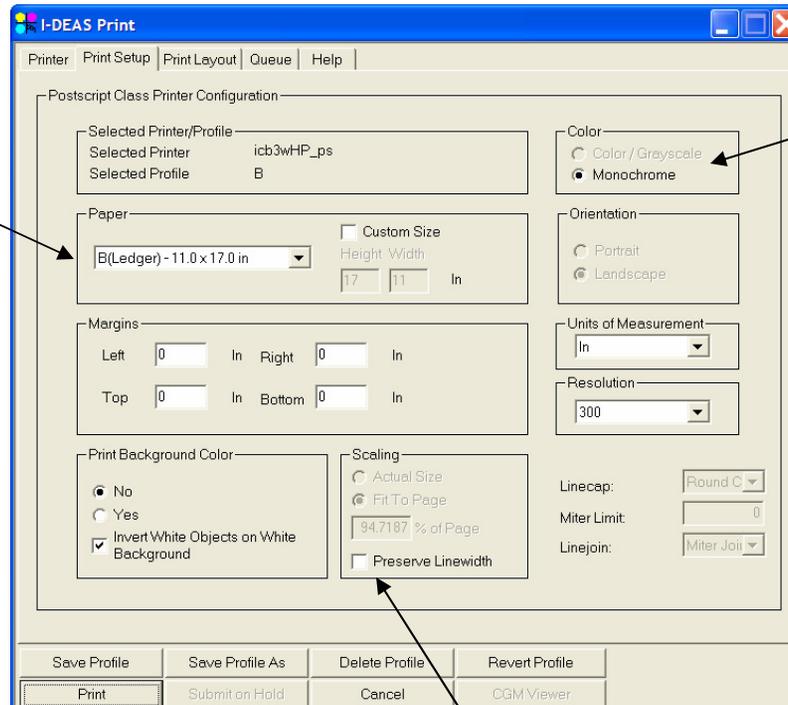
Buttons: Save Profile, Save Profile As, Delete Profile, Revert Profile, Print, Submit on Hold, Cancel, CGM Viewer.

CAD Improvements

SDI Print Setup Tab

Select Paper Size

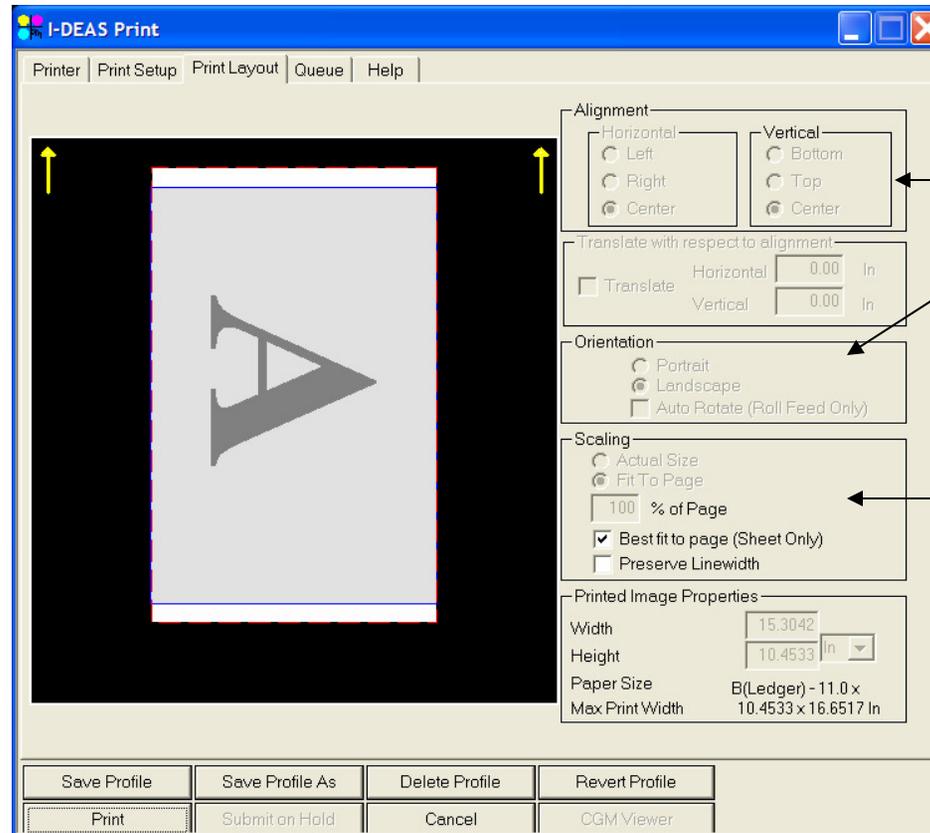
Color Options



Preserve Linewidth: Useful for printing a zoomed in 'Plot Portion'. Prevents zoomed line widths from becoming out of hand.

CAD Improvements

SDI Print Layout Tab



Orientation & Alignment

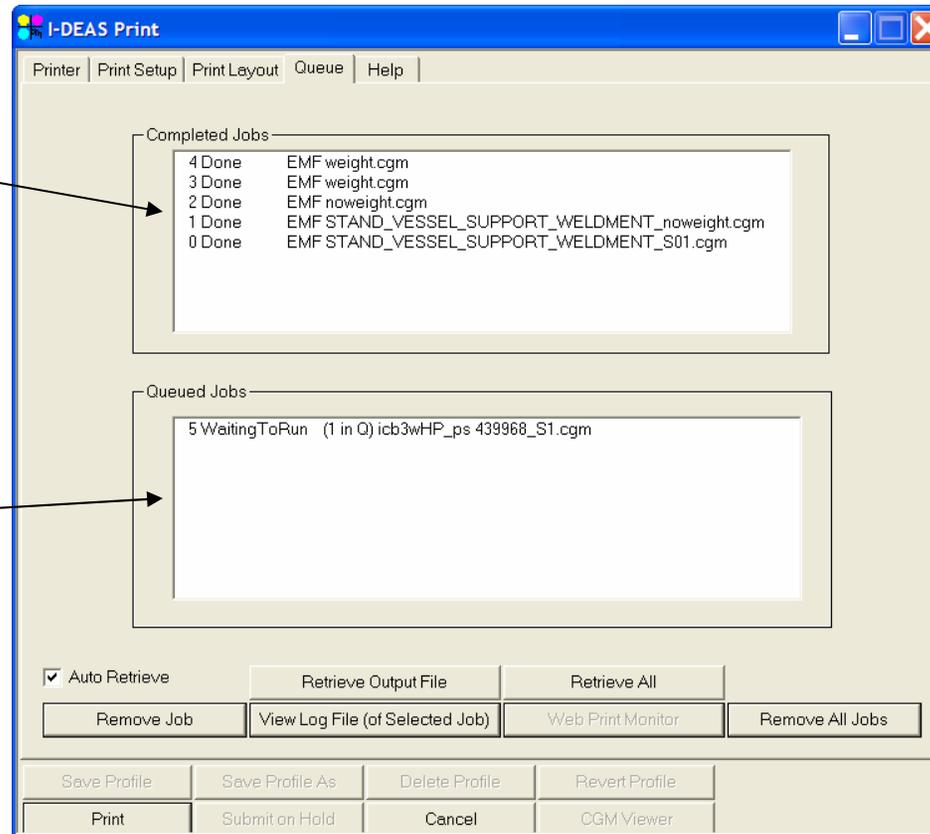
Scaling

CAD Improvements

SDI Print Queue Tab

Completed Jobs List

Queued Jobs List



CAD Improvements

SDI Plotting Help

You can read more about SDI via the *I-DEAS Help Library* in the *I-DEAS Print User's Guide*.

