

**STATE OF OHIO  
INDUSTRIALIZED UNIT WEB BASED  
ELECTRONIC (e) DOCUMENT  
SUBMITTAL PROCESS INSTRUCTIONS**

In order for the industrialized unit manufacturing industry to improve the economics of construction document creation, review and transmission, while at the same time eliminating the environmental impact and delivery time of hard copies, the Ohio Board of Building Standard's Industrialized Unit (OBBS IU) Group receives, reviews, approves, returns, and archives plans and specifications electronically. Our construction document system is paperless. This is part of the fulfillment of Ohio's "Green" and efficiency objectives.

The OBBS IU Group established electronic (e) document standards that are commonly used by other building departments across the country. These standards provide e documents that are navigated efficiently by end users such as building officials, contractors, fabricators, and, especially, building owners. Without these standards e documents would be more cumbersome to read and navigate than hard copies.

PDF is the selected e format based upon it being universally accepted and readily available, and having clarity, measuring and commenting tools, and free viewer/reader software. Most important to building departments is its automation at applying approval seals, dates and CPA numbers to every page in a file simultaneously in a single step operation.

There are several PDF plotting products on the market, and we urge manufacturers and their designers to experiment with the free trial copies available on the internet in order to find one that makes the smallest and fastest file from their CAD software.

Please follow the e document standards below:

1. Consolidate all pages making up the construction documents into a single PDF file, because the web based application system can only allow one file per application. Using your CAD publisher's batch PDF plotting tool will save time and make a smaller and faster file;
2. Do not submit files with each page as a separate attachment, since this method prevents the use of an index of bookmarks, and produces a document that is more cumbersome to navigate, seal and secure;
3. Plot legibly per OBC 106.1.1 with a resolution setting of 300 dpi. Anything less will likely be illegible, and any value greater will produce "fat" and slow files;
4. Plot without blocks, CAD layers and other "bells and whistles" carried from the CAD system. We only want legible and flat graphic images and text;
5. Plot to a measurable scale (1/8", 3/16", 1/4" etc.) and maintain the original CAD sheet size. Plotting to fit, sheet downsizing, "NTS", and bar scales will not permit the use of on-screen measuring by the PDF measuring tools;
6. Only one model/design can be in each PDF document file and only one model can be submitted per application;
7. Per OBC 106.1.1(1) and RCO 106.1.1(1) the PDF file shall have a digital index made of "bookmarks". Each bookmark shall have both a sheet title and page number, mirroring the document's standard hard copy index. See the PDF software Help menu for instructions. The latest versions of PDF plotters make bookmarks automatically;

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8. Rotate each sheet within the PDF file to its upright orientation, so that it is correctly viewed on a monitor, by using the Document/Rotate Pages tool;
9. For other than one to three family projects, most documents must contain a signed seal of a design professional registered in the State of Ohio, per OBC 106.3.4.1. PDF software has tools within the program to accomplish this. Our department requires the seal only on the cover/index sheet;
10. Submit the documents unsecured so we can insert the Ohio approval seal, CPA number and approval date onto each page of the document. A secured PDF file will prevent the OBBS IU Group from using it, thus rendering the e document process useless. If the manufacturer's design professional is concerned about the security of their documents and seal, please provide the designer with the user name and password in order to allow the designer to upload the e file to the Ohio IU web site. After the file is uploaded it is inaccessible, since it resides only in our drive.

The OBBS IU Group will apply PDF security to the documents and will possess the password, thus inhibiting the approved and sealed documents from being modified.

The OBBS IU web based application instructions are as follows:

1. There is no need to insert an application form into the file. The applicant's project information provided in the fields of the OBBS IU web site for each model produces the official application;
2. Click on "Online Plan Submission Program" in the Industrialized Unit web page, located at the bottom of the page;
3. In the boxes under "USER AUTHENTICATION" enter the company user ID and password and press enter or click on "Log In";
4. Next to the "Submit Plans" button is "**Submit a NEW plan: PDF Creation Instructions for Plan Uploads.**" Click on this blue verbiage to open the instructions on how to make an efficient PDF file. Please read these instructions. When creating PDF's from 3D modeling programs such as REVIT, Softplan, Microstation, ArchiCAD, Vectorworks, etc., contact the sales or tech rep of the program who can inform you how to reduce the file size, as these programs can make huge and slow PDF files. Some CAD software companies have their own PDF plotter software with better default settings. Experiment with other software publishers, such as CADzation, to see what product works best with your CAD software in reducing PDF file sizes. All PDF publishers offer free trial downloads. Ohio does not require any specific product, but we reference OBC 106.1.1 and RCO106.1.1 regarding legibility requirements as our basis to require efficient PDF documents. If the file is so "fat" that it prevents or severely inhibits navigation, this will be a correction item based upon these sections of the code;
5. After reading and understanding the PDF plotting instructions click on the "back" button in the web browser tool bar to get back to the Ohio IU document upload page;
6. Click on the "SUBMIT PLANS" button, which takes you to the document information entry form for the particular model being submitted. Make the payment per method selected and click on "NEXT";
7. At "File to Upload" click on the "Select" button and enter the file of your PDF document and press "Upload File";

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8. After the plans examiner completes the document review, and there are corrections needed, the document will be labeled in the web site as “Corrections Required”, which will then allow a corrected and complete document file to be uploaded. After clicking on the “Resubmissions” button, upload the corrected document in a single PDF file. The IU web page status will stay at “Corrections Required”, even after uploading the corrected file, and will stay at this status until the documents are approved;
9. Do not email the document or the cover/explanation letter;
10. The revised document shall have corrected items highlighted in red by the PDF comment tool, with each numbered per the correction letter itemization. If the highlights are from scanned files there must be a cover letter, inserted into the PDF file, listing the corrected items, which states the location of the corrections;
11. Resubmit a complete document, not just the corrected sheets;
12. When the OBBS IU department determines that the documents are in general compliance with the OBC or RCO, it will insert the State’s approval seal, IU number, and date onto each page of the PDF file, and the file will be secured to allow only viewing and printing;
13. If additional hours have been added to the review time, documents can not be downloaded from the IU web site until the balance of fees is paid and the file is posted as “Approved Paid”. Until then the file will be posted as “Plans Approved Unpaid Review Fee”;
14. To pay review fees click on the “Submit Payment” button and pay using a credit card, or mail a check. Paying by credit card results in immediate access to the approved documents;
15. To check on the status of a review click on the “Check Plan Status” button.

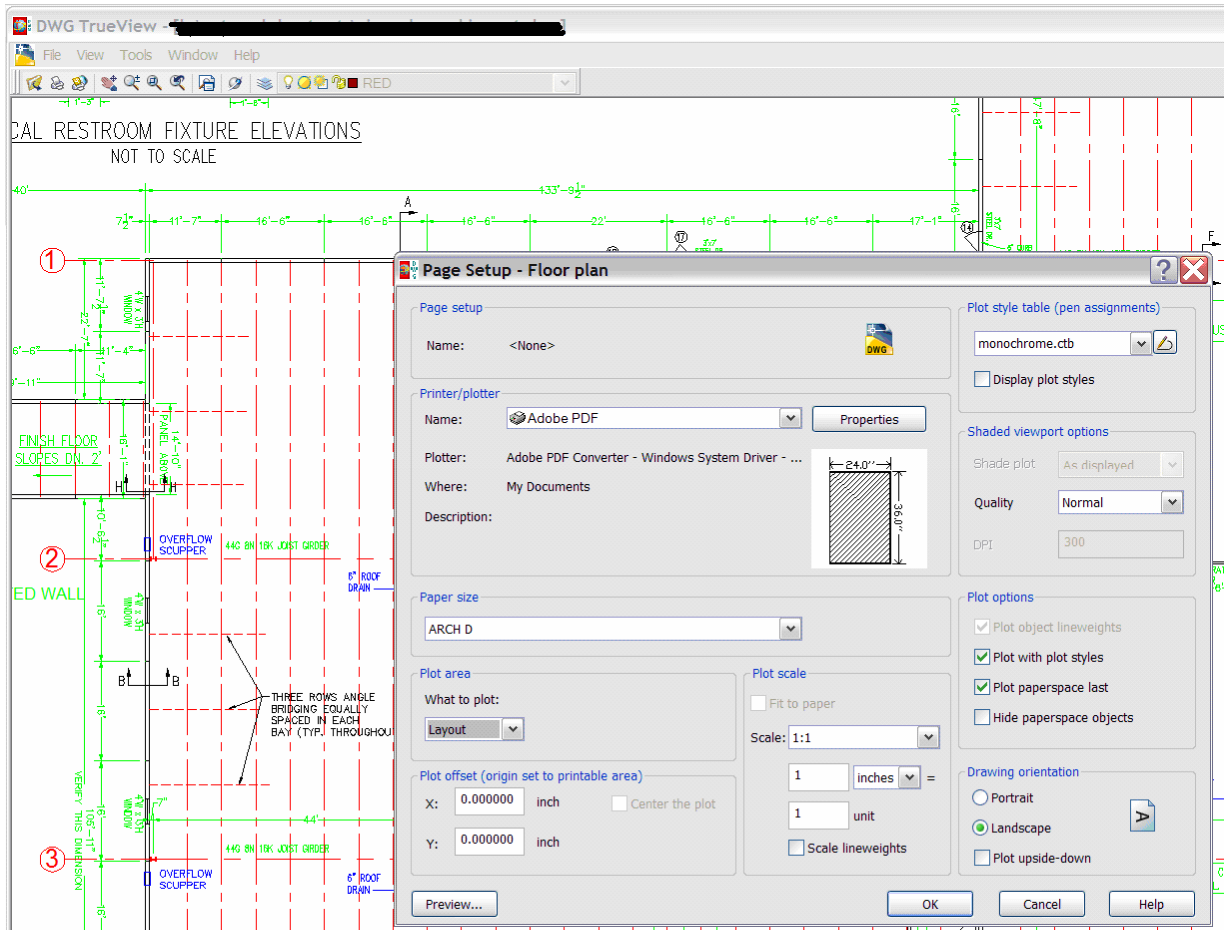
THE PAGES THAT FOLLOW CONTAIN A MANUAL FOR PDF  
PRODUCTION & FILE SIZE REDUCTION METHODS

# PDF PRODUCTION & FILE SIZE REDUCTION METHODS

The two major benefits in having reduced PDF file sizes are less turnaround time and review fees. **SAVE time and \$\$\$**. To accomplish this file properties must have a resolution of 300 dots per inch, no security or signature protection, a single PDF file, no color, monochrome plot setting, and layer and block information and 3D gimmicks must be disabled.

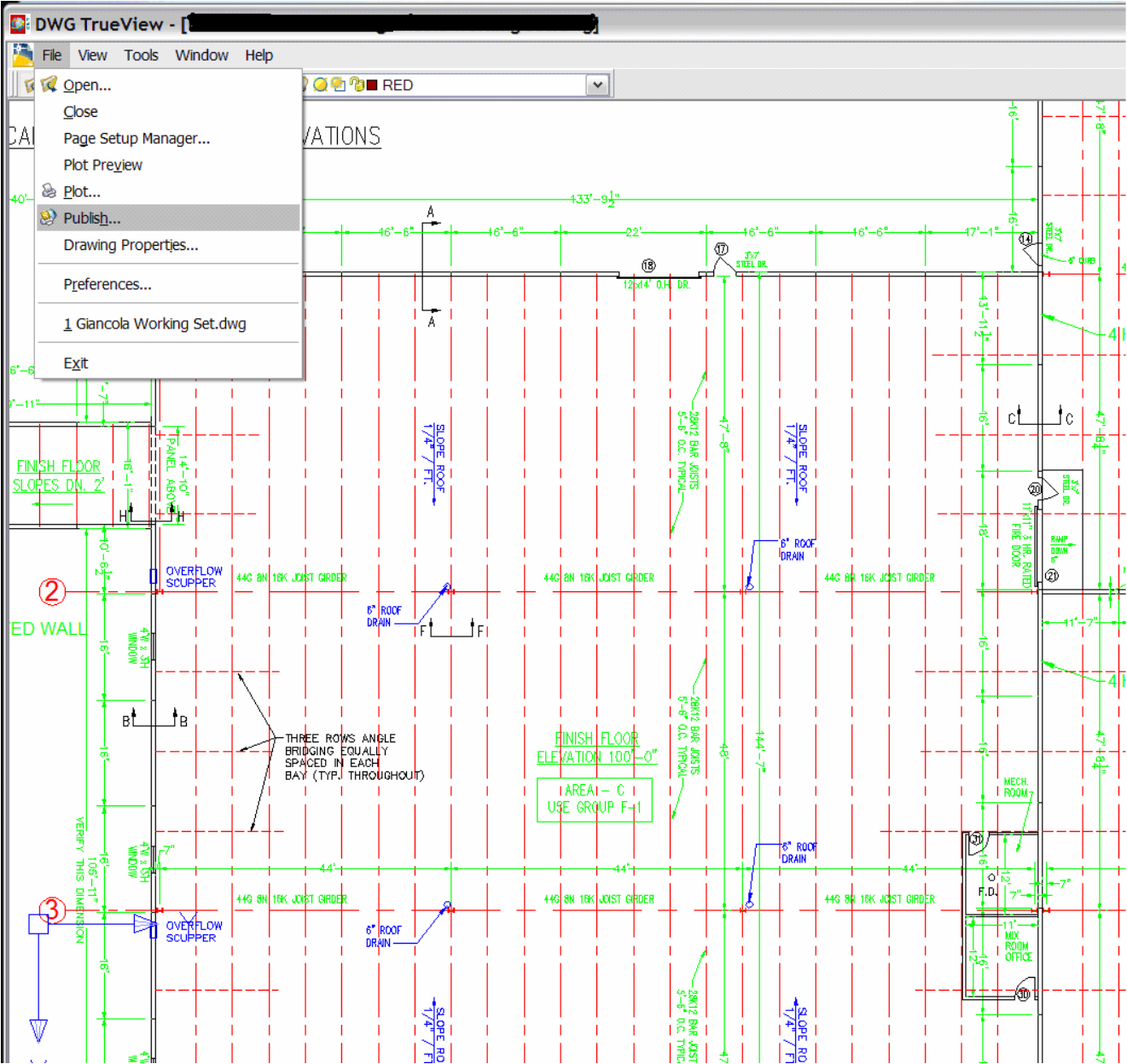
To start with, the sheets must be in order per the index, be in the correct orientation, and PDF file contents must be legible and scalable on screen as well as in eventual hard copy. But, the finesse for file size reduction is mostly accomplished in the plot and print command/tool windows.

We have provided instructions on how to produce an electronic document with a smaller file size. The following images are from Autodesk DWG Trueview and Composer and Adobe Acrobat Professional. The instructions are based upon Autodesk and Adobe products, but other products can be used. These basics should apply to other programs.



1. When working in DWG, set “Plot Style” to monochrome (upper right corner of above image), and set Quality for “Shaded viewport options” to “Normal” or **300 dots per inch**. You can plot directly to PDF if you want, via the “Printer/plotter” setting (upper left).

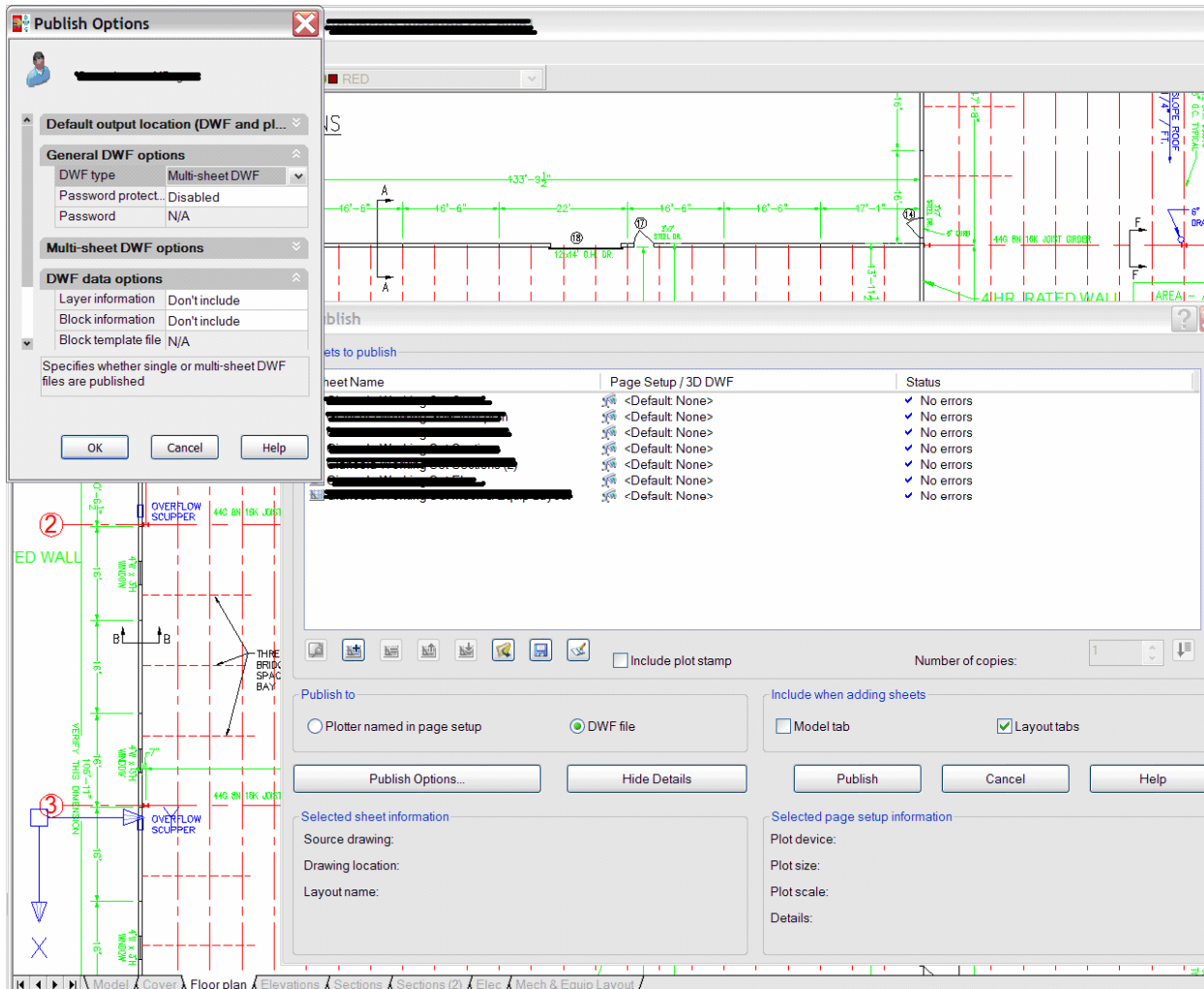
# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



document

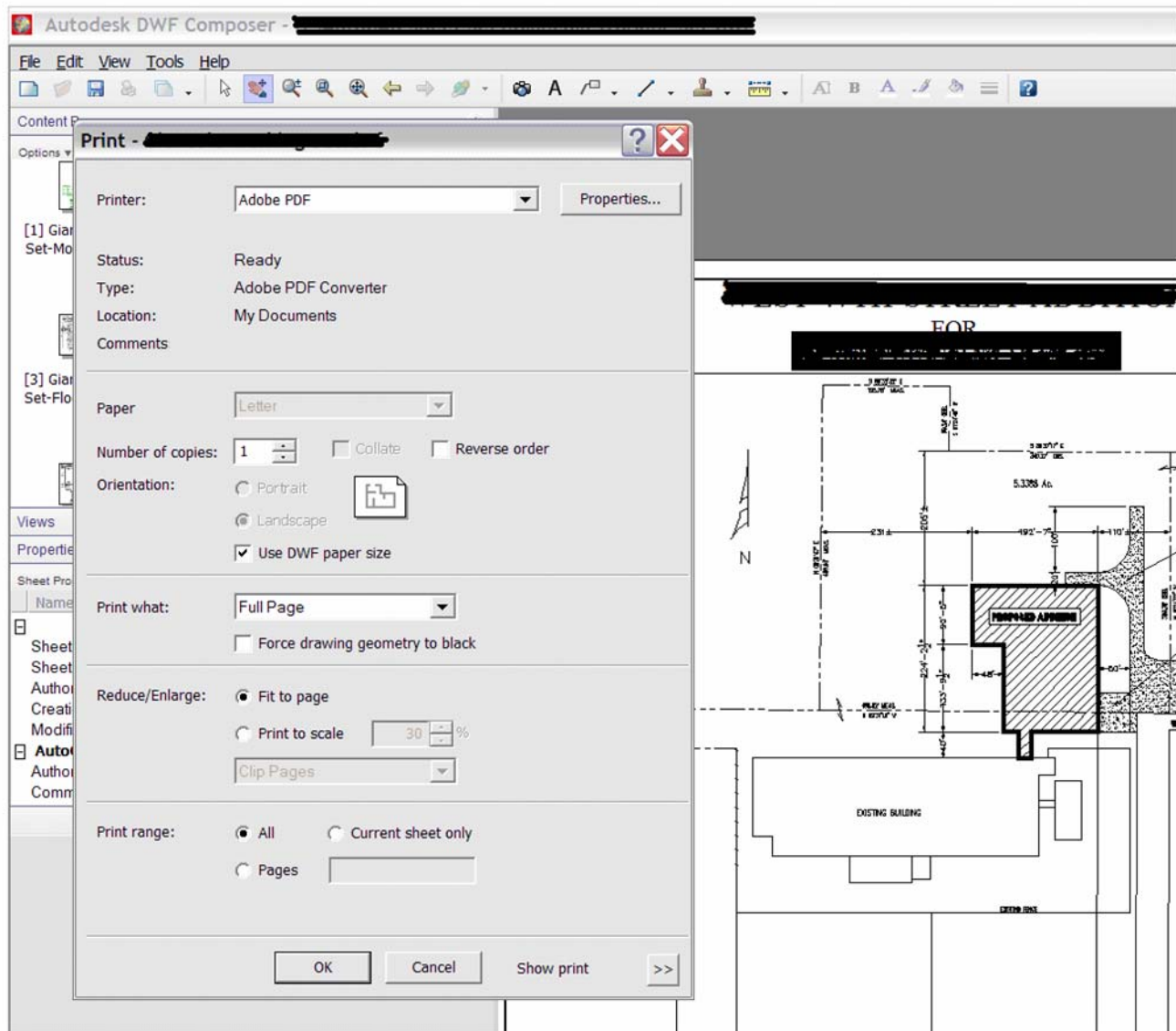
2. In lieu of plotting from DWG to PDF, an entire sheet set can be plotted simultaneously to DWF using the “Publish” tool (upper left corner) within “File”

# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



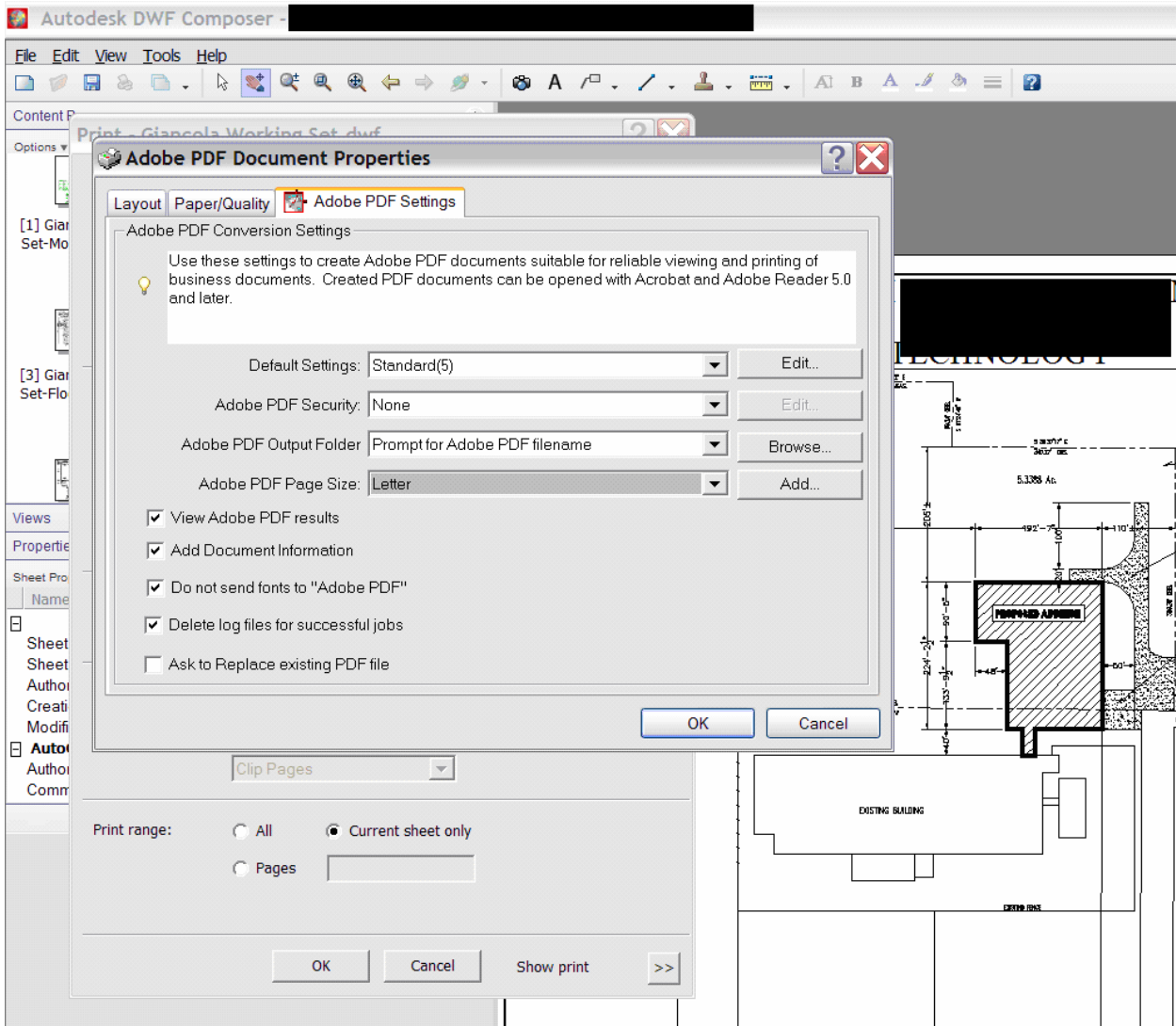
3. During this operation (or when this selection appears in other programs) disable layer and block information and password protection. Click OK and then click “Publish” to make the multi-sheet DWF file. The file can be printed to the PDF printer selected in page setup or in DWF.

# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



4. Check the “Use DWF paper size” box, which will maintain the drawing scale. When printing to PDF click “Properties (upper right corner of the Print window);

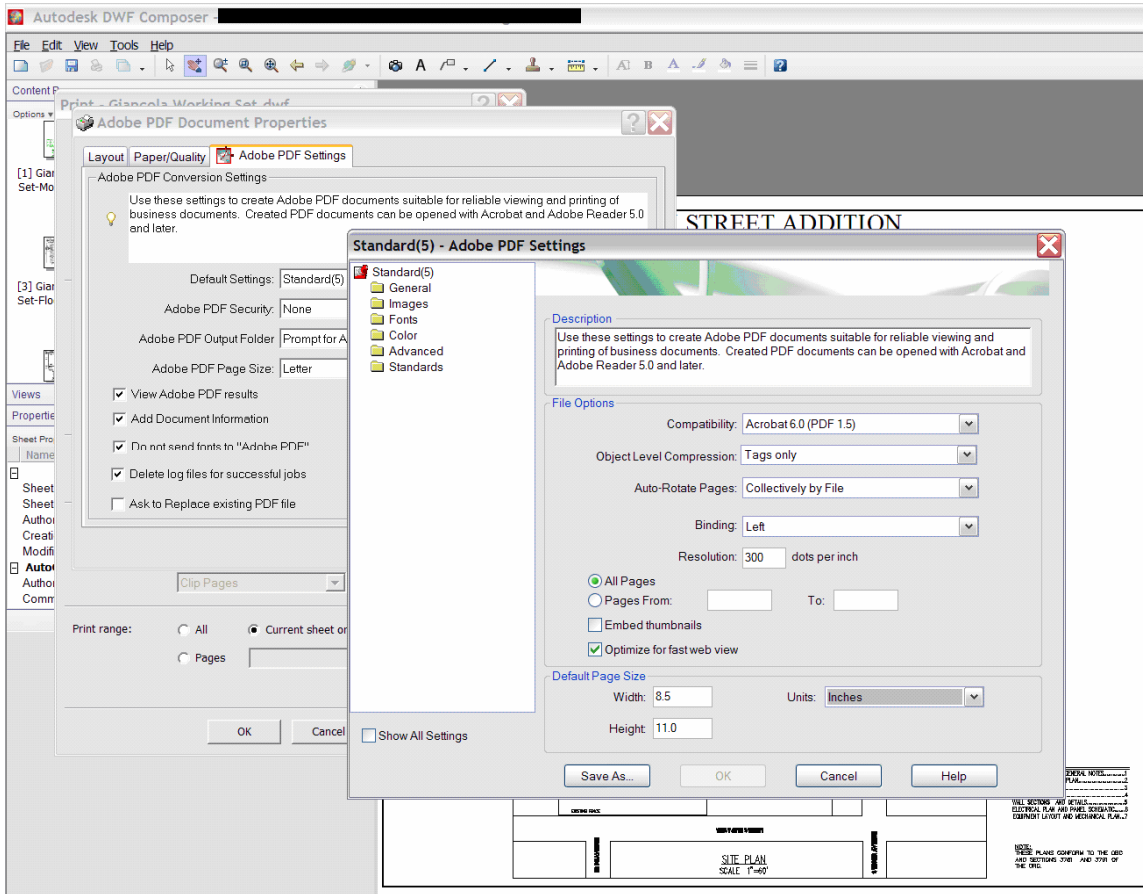
# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



5. “PDF Document Properties” appears. We have already created (BBS internal use) a setting for our PDF’s, Standard(5). This was made by clicking on “Edit” to the right.

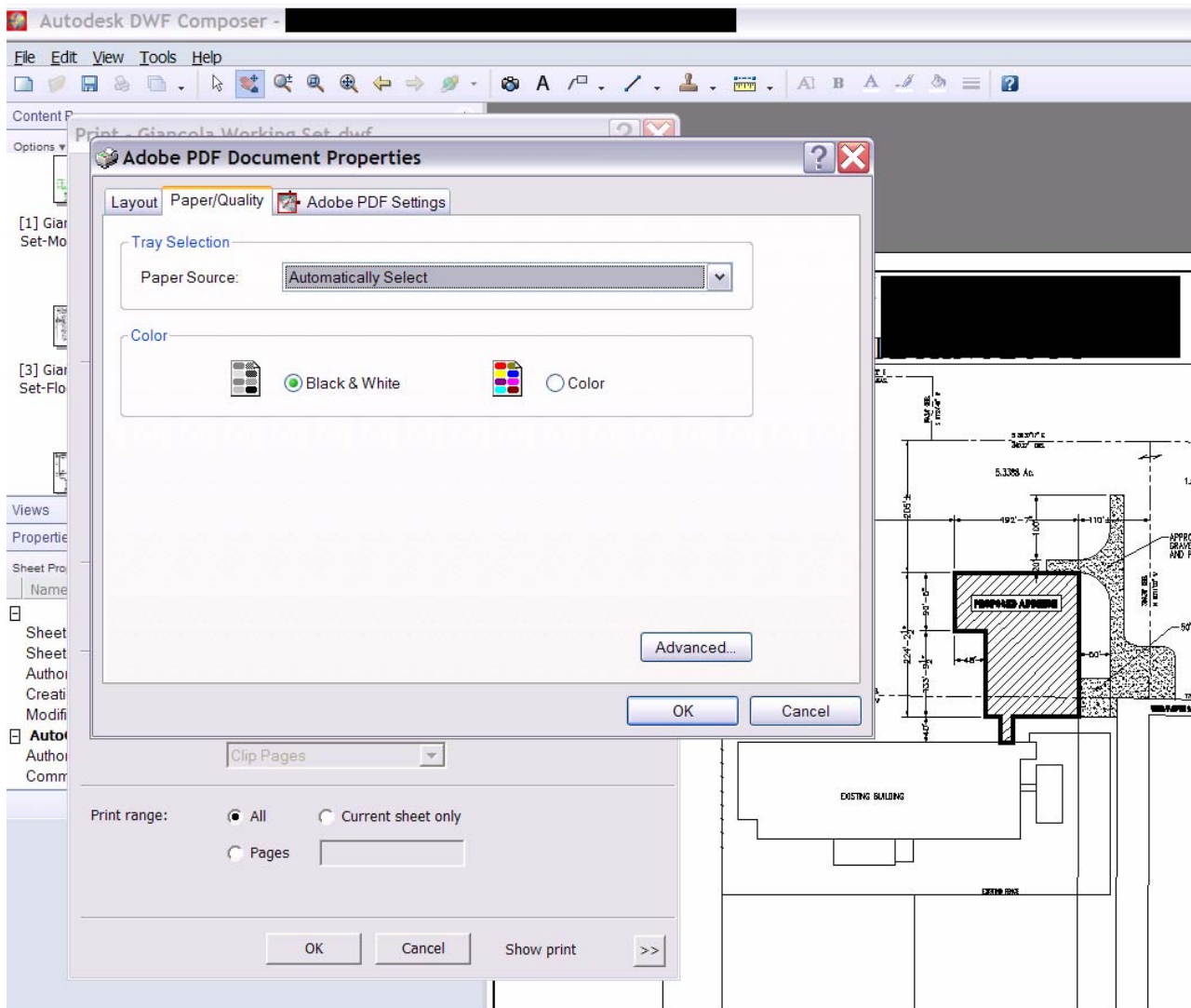


# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



6. In the above image for PDF “Edit” Compatibility is set to Acrobat 6.0, resolution is set to **300 dots per inch**, and “Optimize for fast web view” was checked. Page size was set to the original DWG or DWF plot size in a previous view for Step 4 showing the Composer print command in order to **maintain the original drawing scale**, therefore, do not adjust the default page size settings in this command window.

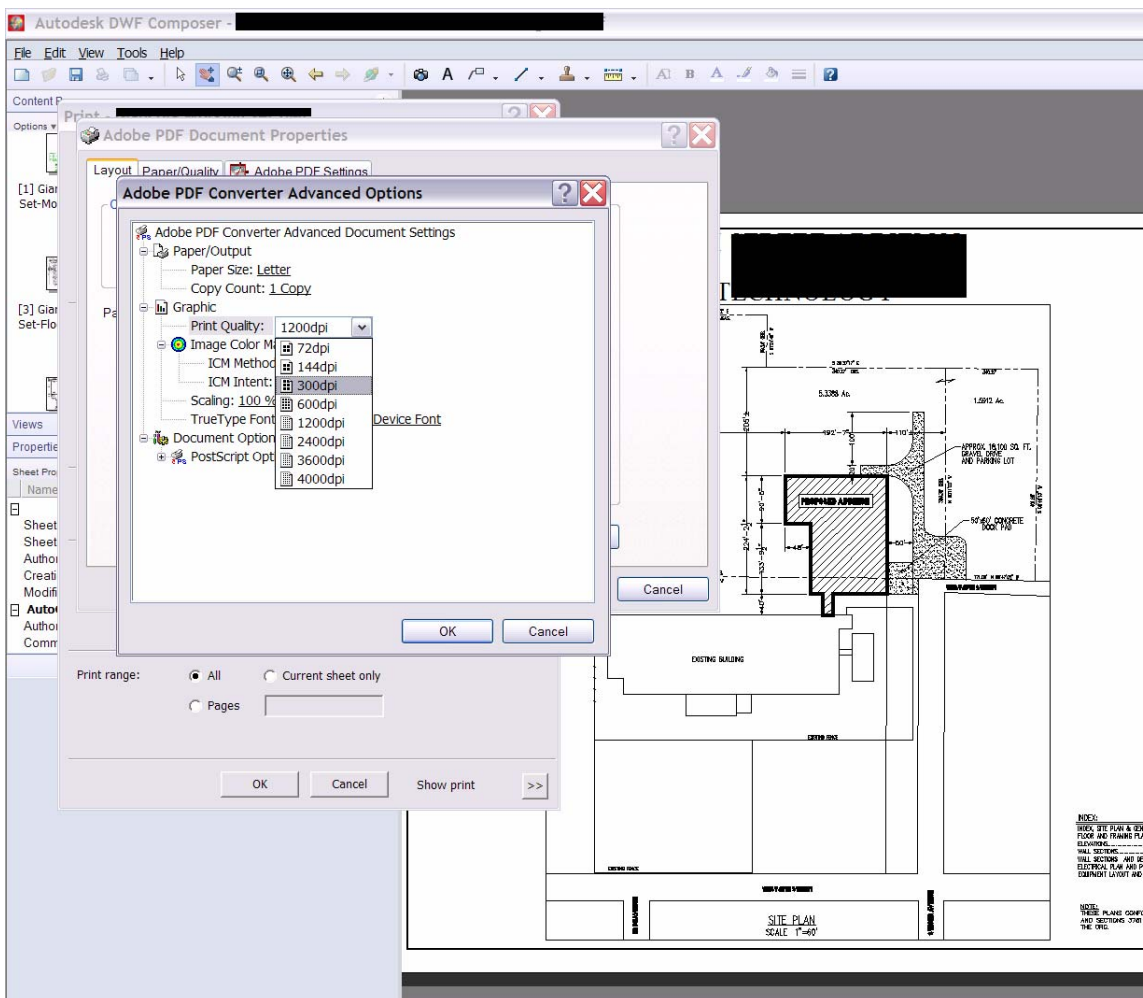
# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



Save these selections and Adobe PDF Document Properties reappears;

7. Select the “Paper/Quality” tab (above screen print) and select “Black and White”. **No color** please;
8. Now click on the “Advanced” button. Here the Print Quality value is provided in the list of options, and the default setting is too high, 1200 dpi.

# PDF PRODUCTION & FILE SIZE REDUCTION METHODS



Click on the dpi adjustment arrow and change the setting to 300 dpi. Click OK and you return to the Document properties window and click OK, then click OK to print to PDF;

9. If the PDF is made from scanning a hard copy, be aware that most printer/scanners default to 600 to 1200 dots per inch resolution. This will make too large and slow of a document. Adjust the scanner to **300 dpi**. Scan from a first generation print;

10. Finally, with your new PDF file open in your PDF program, perform a “file save as” and copy over your PDF file, without changing the name of the file. Allow it to copy over itself. This will consolidate the various layers of information, and it sometimes reduces the file size by at least 30 to 50%.

In summary, regardless of the CAD or PDF publishing products you choose, make selections in plot/print that produce a **single** PDF file that is monochrome, has a resolution of **300 dots per inch**, is black and white (**no color**), contains no DWG bells and whistles such as layer and block

# PDF PRODUCTION & FILE SIZE REDUCTION METHODS

information or 3D gimmicks, and **no security** or protected signature settings (including secured signature design professional seals).

Regarding design professional seals, if the designer intends to use a seal made from scanning, please scan it no higher than **300 dots per inch** with **no color** signature. A high dpi seal with a blue ink signature on each page will create a “bloated” and slow file. It is better, easier and more secure to insert the seal via the Adobe background/watermark tool.

Before submitting your **single** PDF file (folders will not transfer):

1. Proof read for legibility, especially the small fonts in tables, and header sizes on window openings in floor plans. If the small fonts are illegible, larger fonts are needed, not a higher resolution. The eventual hard copy print used by the local building official or inspector in the field must also be legible;
2. Verify sheets are in order, per the index, and oriented correctly. Sheet order can be corrected by clicking on the “Pages” tab in the “Options” column to the left of the screen in Adobe Acrobat, then clicking on and dragging the offending sheet to the correct location. Of course it’s best to set this up correctly in the DWG to DWF or PDF Publishing program’s sheet list. Orientation can be corrected using the Document/Rotate pages tool. We reserve the right to reject e-files with sheets randomly 90 or 180 degrees out of correct orientation;
3. Verify image sizes have **maintained the original drawing scale** - scale bars do not count, nor will we allow them to excuse the use of a reduced copy size. Maintain the original DWG sheet size. We check dimensions and areas using the Adobe Acrobat measuring tools;
4. Perform a “file save as” to further reduce file size.

The two major benefits in having reduced PDF file sizes are less turnaround time and review fees. **SAVE time and \$\$\$.**

There are PDF publishing software programs other than Adobe Acrobat to choose from. Some publisher’s web sites offer free trial downloads. You only need to have a program that allows you to insert different sheets or documents from different programs into a single PDF file.

One important hint - do not submit inapplicable documents. The Ohio Building Code does not require the inclusion of structural calculations, quality control manuals or erection procedures. Structural calculations are required only for one to three family systems that are not within the prescriptive requirements of the Residential Code of Ohio. Several applicants double the size of the file by including these with the drawings.

Mike Regan, the I. U. plans examiner, is an architect with AutoCAD and PDF experience. If you have questions regarding how to produce electronic files, please call him at 614.644.2613.