



PBS CAD STANDARDS

1 Introduction The PBS CAD Standards set mandatory procedures for GSA contractors to follow for the creation and delivery of all AEC drawings, including space assignment drawings. Contractors must use the National Institute of Building Sciences (NIBS) United States National CAD Standard® (NCS) – Version 4.0. It is the contractor's responsibility to obtain a copy of the NCS. GSA regions may have further requirements.

2 PBS and NCS Conformance All CAD files submitted must open with no errors. Some examples of errors include font not found, xrefs not found, image xref resolution errors, and proxy object errors. Therefore, the contractor must include with each CAD deliverables submittal the following statements, signed on firm letterhead and in PDF format:

- **PBS conformance** “Regardless of the authoring software used, the CAD drawings for this submittal are provided in the current Autodesk® DWG™ file format and also in the current Adobe® PDF™ file format. The DWG files open with no errors in the appropriate version of AutoCAD. AutoCAD alone can view and manipulate all drawing entities and plot drawings identical to the paper drawings submitted.”
- **NCS conformance (NCS Appendix A)** “In accordance with NCS Administration Sections 5 and 7, the undersigned hereby states that, to the best of his/her knowledge and belief, the electronic CAD sheet files for the project described herein substantially conform to the requirements of the NCS, Version 4.0, except as specifically indicated below [on the NCS Appendix A form].”

At GSA's discretion, any CAD deliverable that does not conform to the PBS CAD Standards may be rejected and payment withheld.

3 Deliverables and Ownership In addition to the conformance statements, each CAD deliverables submittal must include the following items:

- A ReadMe.DOC or ReadMe.XLS that lists files and xref relationships.
- All project files (such as detail, model, sheet, xrefs, and plot style files) used to produce the drawing set.
- One set of DWGs with xrefs inserted, resulting in a self-contained file for each sheet. Bound layers must maintain NCS AIA layer names. If using AutoCAD, the appropriate command would be Bind using the Insert selection; do NOT explode result.
- One set of full size PDFs of the drawing sheets.

The drawings, files, and other materials delivered under GSA design and construction contracts become the property of the U.S. Government.

4 Security Contractors must comply with GSA Order PBS 3490.1A Document Security for Sensitive but Unclassified Building Information, dated June 1, 2009. A security imprint must be located on each sheet of the drawing set.

5 Layers Organization and naming of CAD layers must conform to the NCS American Institute of Architects (AIA) CAD Layer Guidelines, regardless of the authoring software used. GSA discourages the use of ANNO as a Minor Group field. Assign colors/lineweights to layers as appropriate. Assign to objects rarely and only where necessary, and document those situations in the ReadMe file.

6 Sheet Numbers Drawing set organization and sheet numbers must conform to NCS Uniform Drawing System (UDS) Module 1 – Drawing Set Organization. Number drawings sequentially and eliminate unused sheets.

7 File Names CAD file names must conform to NCS UDS Module 1 – Drawing Set Organization. In addition, use the model file type RO for roof plan.

8 Title Blocks Model files must include a model file information block with the GSA project title, building number, project number, and contract number at a minimum. The sheet file title block must contain the following information at a minimum:

- Contractor firm name
- GSA project title, project number, and contract number
- GSA building name, building number, and address
- Drawing title (type of drawing and content) and drawing number
- Drawing date and revision dates
- Drawing scale (plot scale of sheet file)
- Signatures and seals (DWGs do not need to display)
- North arrow and key plan (if applicable)
- Graphic scale (if applicable)
- Submittal stage and percent (for example, 100% CD submittal)

9 Fonts Drawing files must open in AutoCAD with no font character not found errors. Plotted text must not appear smaller than 1/8" height (1/16" on half size drawings).

10 Other Requirements

- Conform to the extent possible to the following NCS UDS modules to improve drawing quality: Sheet Organization, Schedules, Drafting Conventions, Terms and Abbreviations, Symbols, Notations, Code Conventions, and Plotting Guidelines.
- Draw models life size in architectural units. One drawing unit equals one millimeter for metric drawings and one drawing unit equals one inch for imperial drawings. Use sheet files to create views to scale of the model for plotting as a sheet. Multiple sheets within a single file may not be used. Contractors must use PBS PQ-260 Metric Design Guide for projects subject to the P-100 Facilities Standards for the Public Buildings Service.
- Accurately represent actual building dimensions within 1" of exterior and 1/2" of interior field measured conditions. Use precision input and object snaps. Ensure that line endpoints meet exactly, tangents intersect at a single point, and vertical lines are at exactly 90°.
- Create entities within blocks on Layer 0. Avoid use of nested blocks.
- Define objects, layers, and linetypes ByLayer.
- Put hatch patterns on their own layer. Use PATT to modify any Major or Minor Group in the Layer List. Do not explode. Contractors must deliver any user-defined hatch patterns, linetypes, and colors.
- Purge drawings of unreferenced blocks, layers, and linetypes. Delete objects outside drawing limits and zoom to drawing extents.

Contractors should direct questions to the CAD Manager in the GSA region where the project is located. For list, see www.gsa.gov/cad or www.gsa.gov/cifm. For BIM guidelines, see www.gsa.gov/bim. For spatial data management (SDM), see www.gsa.gov/sdm.