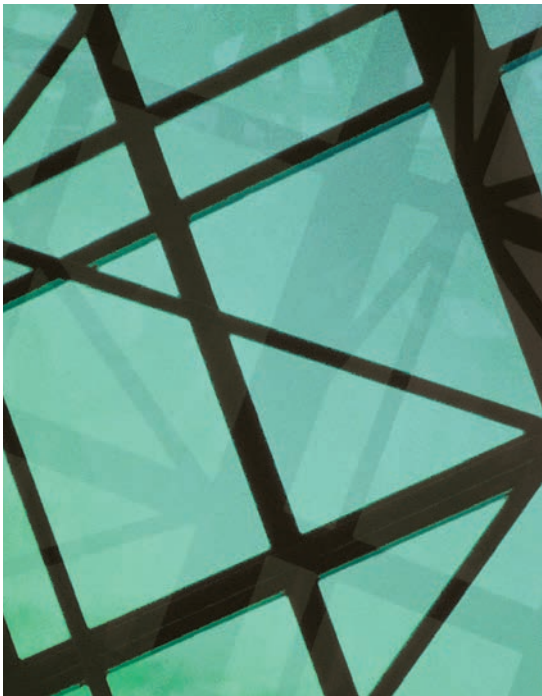


## United States National CAD Standard®



The architectural, engineering and construction industry has undergone major technological changes in the last 30 years. Prior to the 1980s, most architects drafted building plans by hand. Architects and engineers employed multiple draftsmen to prepare the huge numbers of drawings required for large buildings. Computers revolutionized the industry and brought the advent of computer-aided design (CAD). With CAD, design teams no longer had to draw floor plans manually. By entering dimensions into a CAD program, designers could develop detailed drawings and make modifications much more quickly and accurately.

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## United States National CAD Standard®

As more CAD products came on the market, several industry associations worked to develop format guidelines to standardize how manual and electronic building design data are delivered. The *United States National CAD Standard®* (NCS), developed by the National Institute of Building Sciences buildingSMART alliance®, consolidated those guidelines into one standard.

First published in 1999, *NCS Version 1.0* was based on several constituent documents: the American Institute of Architects *CAD Layer Guidelines* second edition, the Construction Specifications Institute *Uniform Drawing System (UDS)*, components of the *A/E/C CADD Standard* (from what is now known as the U.S. Department of Defense CAD/BIM Technology Center) and the U.S. Coast Guard *Plotting Guidelines*.

Nearly 20 years later, the NCS is now the U.S. building industry's only comprehensive graphical data standard. In September 2014, the buildingSMART alliance released *NCS Version 6.0*. The *NCS Version 6.0* includes amended and updated NCS constituent documents that have been balloted and approved by consensus vote of the NCS Project Committee.

There is a continuing effort to maintain a common language for design and documentation throughout the industry and to promote voluntary national adoption of CAD standards for design, construction and facility management.

An informal study indicates the NCS has already impacted hundreds of thousands of U.S. construction documents. Recognizing a need to stay relevant as long as the industry uses paper documents, the NCS Steering Committee took

the lead to define printed output for building information modeling (BIM), and established close ties to the National BIM Standard (NBIMS) Committees.

The NCS two-dimensional graphical data standard plays an important role in the transition to the three-dimensional, object-based environment used in the *National BIM Standard-United States®* (NBIMS-US™). The extensive changes made during the recent revision cycle positions the NCS to continue to meet the needs of the industry.

The NCS Version 6.0 includes:

- New “BIM Implementation” guidelines on successful implementation of NCS for BIM use, addressing relevant topics within the NCS that can be incorporated within BIM workflow.
- Renamed, enhanced, revised and improved all 1300+ Symbols library and added 72 new symbols. Added two new sections on how to create new symbols and use colors in symbols.
- New “Survey/Mapping” Discipline Designators
- New Major and Minor Groups definitions added for “Airports and Plumbing”.
- Revised “Module 1 – File Naming section to better address Model Files and Sheet Files.
- Revised “Module 4 – Drafting Conventions, 4.2 Drawing Standards” list of common scales to add Site/Civil scale descriptions.
- Revised “Module 4 – Drafting Conventions, 4.3 Sheet Types” section to include new “Floor Numbering” format.
- New and revised “Communications” Terms and Abbreviations.
- Revised “Module 7 – Notations, 7.4 User’s Guide” text format for notes.
- Revised “Plotting Guidelines” Introduction.

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