

## SECTION 1-7: AS BUILT DRAWINGS

1-7-00	Policy
10	Procedures
20	Guidance and Information
30	(Reserved)

### 1-7-00 POLICY

OPDIVs shall maintain a set of as-built drawings for each building or structure in their inventory. “As-built drawings” or “record drawings” are understood to be drawings that show final as-built conditions of the project for all disciplines including architectural, mechanical, electrical, plumbing, controls, FF&E, civil, and landscaping information at a minimum.

### 1-7-10 PROCEDURES

Facilities personnel must be made aware of the importance of obtaining accurate red-line drawings (as-builts) or electronic building records after completion of facility maintenance/ repair/ construction projects. This applies to projects of any size that alter as-built facility conditions. It applies whether the work is performed by contract or in-house forces.

Updating and maintaining good as-built construction documents or electronic building records requires clear processes, well defined responsibilities, commitment of resources, and discipline. It is an on-going operational requirement to have accurate and accessible facility records for safe and efficient facility operations. Contractors are normally required to maintain “red-lines” at the job site by marking up design drawings with changes detailed clearly in red as construction progresses. At contract completion, an important closeout item is the submission of final as-builts. The as-built process is completed when original design drawings or electronic building records have been modified to permanently reflect the redlined changes.

### 1-7-20 GUIDANCE AND INFORMATION

Organizations will be most successful in obtaining accurate and timely as-builts when processes are employed which require and verify regular updates instead of waiting until the end of a project.

The following are recommended practices:

1. Recognize benefit in keeping red-lines current at all times during a construction project. Require contractors to update red-lines on a regular (at least monthly) basis. Perform monthly review of red-lines with contractors (in some cases weekly) and implement invoice retention if they are not up-to-date and accurate.
2. Specify that the construction contractor will prepare the final as-built drawings, both working red-lines and final in CADD or GIS. Recommend strict contract language and firm enforcement. Use of language available in Unified Facilities Guide Specification (UFGS) 01780A is suggested.
3. Software compatibility issues from one CADD system to another create an impediment to efficient and accurate creation of as-builts. To the maximum extent possible, facilities departments should specify that all documents be delivered to them (beginning with design) in a

format fully compatible with the software system they use in their daily operation. The following contract language approach may be useful:

“The target platform is a(n) (insert description) Work Station with a(n) (insert description) operating system and (insert description) type CADD system. The contractor shall ensure that all digital files and data (*e.g.*, base files, reference files, cell libraries) are compatible with the target CADD system (*i.e.*, basic and advanced CADD software, platform, database software), and adhere to other standards and requirements specified herein. The term “compatible” means that data can be accessed directly by the target CADD system without translation, preprocessing, or post-processing of the electronic digital data files. It is the responsibility of the designer and contractor to ensure this level of compatibility.”

4. Specify use of the most current National CADD Standard to obtain the benefits of consistent, industry-wide drawing conventions; however, CADD Standards go only so far. Each OPDIV is required to develop additional requirements for line weights, colors etc.
5. Approved red-line changes should be incorporated into the original electronic design files and become designated as As-built Construction documents.
6. The ideal situation is to have an up-to-date master set of primary reference drawings for each facility. Develop and maintain up-to-date master drawings of each facility that integrate changes from multiple projects into one primary reference set. (Various terms are used to mean the same thing: record set, reference drawings, facility configuration drawings, baseline drawings). This practice should produce benefits not only in safety, but in efficiency and accuracy of operations, maintenance, and repairs; future designs; facility studies; and space management
7. There should be clear written guidance outlining responsibilities and procedures for the As-built process.
  - One of the most insidious problems for facility managers is undocumented modifications to electrical panels. This area warrants particular attention and special control procedures.
  - Include guidance for designating drawings as ‘Retired’, ‘Archived’, ‘Superseded’, ‘Obsolete’, etc.; instead of letting the active files grow to unmanageable levels.