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## USING THE POWER OF COMPUTER-AIDED DESIGN AND DRAFTING

Preparation of working drawings, like just about every other aspect of our professional lives, has been profoundly altered by the digital revolution. Computer-aided design and drafting (CADD) offers tools to the architect/designer that permit many of the tedious and repetitious tasks involved in documenting a design to be accomplished with relative ease. The same is true for making minor and major changes to drawings.

Most importantly, CADD offers us a chance to have the drawings become graphic representations of nongraphic construction information. This information can be accessed and used to generate valuable reports about the project using computer applications other than CADD. Whether used for quantity take-offs, strategic facilities planning, or facilities management, the electronic project data can transcend being merely digital replication of manually produced drawings. On the other hand, it is also important to keep in mind that the power of CADD can be abused as well. The ease with which one can create and copy graphics may lead to repetition for repetition's sake: excessive rendering of materials designations being the most egregious example.

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### Graphic Standards

There are strategies and instructions for dealing with specific types of drawings, from planning to execution, but certain general principles and attitudes are universally applicable:

- *As much as possible, standard project prototype files should be used to set up all aspects of a project, including working drawings.*
- *As much as possible, proven detail standards should be used as sources of graphics components and assemblies.*
- *While CADD facilitates fairly painless process of revisions, that should not become an excuse to forego properly planning out a set of working drawings.*

- *As much as possible, an effort should be made to create a single graphic database for the project. This should be done to avoid several versions of a specific design to coexist on the drawings. For example:*
  - *Whenever possible and appropriate, plan details should be created using the main plans as “background.” When such details are created separately, and without direct reference to the overall plan, they are less likely to be updated when revisions are instituted on main plans.*
  - *Whenever possible and appropriate, vertical section details should be created using corresponding wall sections as “background.” In fact, an approach that relies on assembling wall sections from a series of section details may result in wall sections, which always reflect the design solutions at the “brass tacks” level.*
  - *Room names and numbers should be placed on appropriate layers and positioned on sheets so that they can be used for floor plans and any other plans for that level, such as reflected ceiling plans, interior finish plans, etc.*

Keeping some of the above general principles in mind will allow project team members to keep a focus on what needs to be achieved by working drawings.

#### **LINE-WORK AND LINE-STYLES**

To obtain clarity of line-work the principles of CADD drafting still rely on the foundations of hand drafting. The blackest, most opaque lines are still produced by ink. Plotters try to match this process and continually improve on obtaining an equivalent level of contrast between the ink and toner placed on the blank media. With CADD the simplest way to obtain contrast is by varying the line thickness. With so many different types of printers and plotters in our offices it is no longer suggested that one only rely on hardware/software-defined pen density settings to achieve contrast. With CADD one can define over 5,000 different line-styles, each with its own