

FACILITIES MAINTENANCE AND ENGINEERING
GENERAL SPECIFICATON FOR
DESIGN AND AS-BUILT DRAWING REQUIREMENTS FOR A&E FIRMS

NATIONAL CANCER INSTITUTE AT FREDERICK
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FORT DETRICK,
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Revision	Date	Reason for Revision	By	Checked	Approved
0		Initial Issue			

A&E DESIGN REQUIREMENTS

The A&E shall design all projects in AutoCAD Release 14 or 2000i DWG" format. For General Design Guidelines see guidelines below. File conversions such as intergraph to AutoCAD will not be accepted unless above guidelines are followed and approved by SAIC. SAIC reserves the right to reject any converted files.

Layering shall conform to the guidelines defined by the [American Institutes of Architects (AIA) Standard document, "CAD Layer Guidelines" copyright 1990] See examples on Pages 3 & 4. An explanatory list of all layers used in drawings shall be provided with final submission of disks.

GENERAL GUIDELINES FOR AUTOCAD DRAWINGS

1. There will be no numerical layer names. All layers will be in an abbreviated format; example: utilities = util, text = txt.
2. All blocks will be created on layer **O**
3. All text shall be in Simplex font.
4. All X-Ref's shall be binded to the drawing.
5. All drawings (i.e. sheets) shall have a standard title block to be supplied by SAIC. All title blocks shall be inserted to fit a 28" x 40" sheet of paper. All information on title block shall be completed (i.e. drawing number (as issued by SAIC) drawing title, plot scale, etc.).
6. Drawing numbers shall be as identified below.
 - (a) All sheets shall have a drawing number in the area provided in lower right hand corner of the title block.
 - (b) The Science Applications International Corporation Facilities Maintenance and Engineering Procedure FMEP-P-0240, Document Numbering, explains the process for determining drawing numbers.
7. For the AutoCAD file names use the following criteria:

All sheets shall have the AutoCAD file name in the area provided in the upper right of the title block. No file name shall exceed 8 characters. The file names should resemble the drawing number as much as possible. If drawing number is too long, remove the dashes.
8. All entity colors and linetypes shall be defined by layer.
9. The Contractor shall provide all projects in DWG file format in AutoCAD Release 14 or 2000i on 3 1/2" floppy disks or CD ROM.
10. The Contractor shall provide a typed copy of layer names, limits, Lt scale, pen configurations, etc., and contents submitted as part of the electronic drawing print review and prior to the final submittal of the disks.
11. All information shall be drawn at full scale. (1:1)
12. Drawings shall be in English units with metric units in parenthesis.
13. Use the following colors to determine line widths for plotting purposes.

<u>Color</u>	<u>Width</u>	<u>Color</u>	<u>Width</u>
Red	.5mm	Magenta	.5mm
Green	.35mm	Cyan	.25mm
Yellow	.25mm	Blue	.25mm
Gray	.18mm	White	.18mm

RECOMMENDED LAYER TITLES

Proposed Layers for a CIVIL/SITE Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, SITEPLAN, FTPRINT, SOILBOR, CONTOURS, GRADING, LANDSCP, LAWNSPR, PAVING, WATER, SEWER, STDRAIN, ELECT, COMM, PHONE, NATGAS, SECTIONS, DETAILS, DEMOL, NEW, DIMS, TXT, MISC, NOTES

Proposed Layers for a FOUNDATION Drawing:

Layer List: **O** (Not Used), BORDER, DEMOL, EXISTING, NEW, DIMS, TXT, MISC, KEYMAP, FDPLAN, SECTIONS, DETAILS, MISC, NOTES

Proposed Layers for an ARCHITECTURAL Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, FLPLAN, DOORS (SWINGS), WDWS, DIMS, TXT, DEMOL, NEW, SECT, DETAILS, SCHED, INTELV, MISC, NOTES

Proposed Layers for a STRUCTURAL Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, FLPLAN, DEMOL, NEW, BLDGSECT, STRDET, DIMS, TXT, MISC, NOTES

Proposed Layers for a ROOF Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, FLPLAN, ROOFPLAN, ROOFFRMG, DEMOL, NEW, DIMS, TXT, MISC, NOTES

Proposed Layers for a EXTERIOR ELEVATIONS Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, NELEV, SELEV, EELEV, WELEV, DIMS, TXT, MISC, NOTES

Proposed Layers for a MECHANICAL Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, FLPLAN, DIMS, TXT, WATER, SEWER, HVAC, SPRINKLER, SCHED, MISC, NOTES

Proposed Layers for a HVAC Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, FLPLAN, DIMS, TXT, HVAC, CONTROLS, SCHED, MISC, NOTES

Proposed Layers for a ELECTRICAL Drawing:

Layer List: **O** (Not Used), BORDER, KEYMAP, FLPLAN, ELEDT, DIMS, DIAG/SCHEM (DIAGRAMS/SCHEMATICS), SCHED, MISC, NOTES

DELIVERABLES

Final construction package shall be submitted in both electronic file format and original mylar hard copy. Construction set will be on 28" x 40" 4 mil double mat mylar sheets. All support files required to display or plot the files(s) in the same manner as they were developed shall be delivered along with the files. These files include but are not limited to font files, menu files, etc. All electronic files shall be submitted on 3 1/2 inch 1.44 MB micro-floppy disks or CD ROM. One complete set of disks shall be submitted along with one complete set of prints taken from the disks. Each disk shall be clearly marked with typewritten self-adhesive disk labels which shall contain the following information: Contractor's firm name, project name and location, submittal type, the name of each file

contained within the disk or archive file, the format and version/release number of each file, a disk number indicating the numeric sequence of the disk in the submittal along with the total number of disks in the submittal, and date the disk was made. Each submittal shall be accompanied by a hard copy transmittal sheet that contains the above information along with a description of each file provided in the submittal.

DRAWING REQUIREMENTS

All drawings are to be revision controlled by letter or number. Drawings which are not issued for bid are to be revision controlled via a letter starting with Revision A, and continuing with B, C, etc. Drawing which are issued for bid will be revision controlled via a number starting with 0 and continuing with 1, 2, etc. The revision letter or number information is to be placed in "revision" block on the drawing.

Changes to the drawing from a letter or number revision are to be identified. Circle the changes made to the drawing in the revision being issued.

The Science Applications International Corporation Facilities Maintenance and Engineering Procedure FMEP-P-0300, Engineering Drawings , explains the process for the drawing requirements.

SIGNATURE/DATE REQUIREMENTS

The original mylar hard copy "drawn by", "design originator", "checker", and "approver" blocks are to be signed in pencil or black ink by the appropriate A&E personnel for all lettered and numbered revisions of the drawing. After completion of the signature requirements, the date that the drawing was approved is to be placed in the "date" block on the drawing.

STAMPING REQUIREMENTS

The original mylar hard copy is to be stamped by a registered professional engineer. The registrant's actual signature in pencil or black ink, with "PE" designation and date, shall be placed on or close to the stamp. The final lettered revision of the drawing ,which will be used for bid solicitation, and all numbered revisions of the drawing are to be stamped.

A&E AS-BUILT REQUIREMENTS

If the option for as-built drawings is utilized, the A&E will also be responsible to provide SAIC with a set of "**AS-BUILT**" drawings in AutoCAD format at the completion of the construction project. The A&E will be given a set of red lined, marked-up bluelines as provided to SAIC by the General Contractor or as provided directly by the General Contractor. These changes shall be incorporated into the construction drawings.

The quality of the as-built drawings shall be equal to that of the originals. Line work, line weights, and lettering, and use of symbols shall be the same as the original line work, line weights, and lettering, and symbols. Signature, revision/date, and stamping requirements are to be performed in accordance with the requirements for the original drawing. If additional drawings are required , they shall be prepared in an electronic file format under the same guidance when the final revisions were completed. All drawings shall be identified with the words "**AS-BUILT**" in the "revision description" block on the drawing.

The final as-built record drawings shall be completed, plotted and returned together with the marked-up as-built drawings to the Contracting Officer's technical representative within 30 calendar days of receipt of red lined drawings. The Contracting Officer's technical representative will review all final as-built record drawings for accuracy and conformance to the drafting standards and other requirements. The drawings shall be returned to the A&E if corrections are necessary. The A&E shall make all corrections and shall return the drawings to the Contracting Officer's technical representative within 7 calendar days of receipt. Once approved by SAIC, the A&E shall provide one set of original mylar's and one set in electronic file format [AutoCAD].

All costs incurred by the A&E in the preparation and furnishing of as-built drawings in [AutoCAD] electronic file format shall be included in the contract price. Approval and acceptance of the final as-built record drawings shall be accomplished before final payment is made to the General Contractor.