

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 1 of 8	

1.0 PURPOSE

(a) To define the requirements for the preparation, review, approval and control of modification drawings prepared by the Facilities Maintenance and Engineering (FME) organization.

(b) To define the requirements for the review of modification drawings prepared by a contracted Architect Engineer (A&E).

2.0 GENERAL

2.1 Control of Modification Drawings Using Document Logs

Modification drawings received by FME for review and modification drawings issued by FME for use are to be controlled in accordance with Section 3.4 of the FME procedure, FMEP-A-0010, Processing of Design and Miscellaneous Documents.

2.2 Definition

A modification drawing:

(a) Is a drawing that is based on an existing drawing.

(b) Identifies the changes to the existing drawing by the use of a suitable method.

(c) Is identified in the title block of the drawing by the Work Order Number in parenthesis followed by the number on the existing drawing.

Example: Existing drawing is identified as ABCD. The modification drawing is identified as (WORK ORDER NUMBER) ABCD.

(d) is a drawing that defines the proposed description, scope, location, arrangement, and details of material, equipment, parts, processes, components, systems, and structures. After completion/construction of the proposed information depicted on the modification drawing, the information is transferred to an as built drawing (See FME procedure number FMEP-P-0300B, As-Built Drawings). The purpose of using a modification drawing is to be able to depict design information for a project, with the intent of revising existing drawings rather than continually creating new drawings that have to be worked with existing drawings to fully depict the configuration of a facility. The modification drawing will be used and controlled during project design and execution and retained in the files. Upon completion, the change depicted on the modification drawing will be incorporated into the appropriate existing (parent) drawing. Over time, the existing drawings will more accurately depict the facility as-built condition.

2.3 Type of Modification Drawings

The drawing categories addressed by this procedure are preliminary modification design drawings and modification design drawings. These drawing categories are described below:

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FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 2 of 8	

(a) Preliminary modification design drawings

Modification design drawings not ready to be issued for construction or procurement may be issued as preliminary design drawings for purposes such as:

Internal coordination

Client Review

Preliminary modification design drawings shall be identified with alpha revision designators (i.e., A, B, C, etc.)

(b) Modification design drawings

Modification design drawings are drawings that are issued for purposes such as:

Procurement

Construction

Fabrication

Supplier or Subcontractor bid

Modification design drawings shall be identified with numeric revision designators (i.e., 0, 1, 2, etc.)

2.4 Signature and Date Requirements

(a) All signature and dates are to be made using black ink or a grade of lead pencil that allows the signature and date to be reproducible.

(b) "Initials" may be used in lieu of "signature" requirements in this procedure.

2.5 SAIC Review Signature

The SAIC review signature on modification drawings created by a contracted Architect Engineer DOES NOT CONSTITUTE ACCEPTANCE OR APPROVAL OF DESIGN DETAILS OR MATERIAL SELECTION IDENTIFIED ON THE DOCUMENT AND DOES NOT RELIEVE THE CREATOR OF THE DOCUMENT FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.

2.6 A&E Drawing Review

Refer to the FME procedure number FMEP-P-0340, Review of Architect Engineering Documents, for drawing review considerations.

3.0 PROCEDURE

3.1 Drawing Numbering

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 3 of 8	

Both FME and an A&E modification design drawing shall be numbered as identified below.

(a) When the drawing depicts a proposed change, and there is no existing drawing from which the modification drawing was based upon, the modification drawing will not be designated with the prefix (WORK ORDER NUMBER) and will be numbered in accordance with the Facilities Maintenance and Engineering procedure FMEP-P-0240, Document Numbering.

(b) When the drawing depicts a proposed change, and there is an existing drawing from which the modification drawing was based upon, the modification drawing will be identified in accordance with Section 2.2 of this procedure.

3.2 Multisheet Drawings

Each sheet of a multi-sheet design drawing shall meet the signature requirements of this procedure. However, if the drawing has a cover page that identifies all the attached sheets and the revision level of each sheet, only the cover page needs to meet the signature requirement of this procedure.

Note: All sheets of a multi-sheet design drawing have the same drawing number.

3.3 Drawing Holds

When details of a pending drawing change have not been finalized, but issue of the drawing is required for other purposes, the area of the drawing not finalized shall be clearly identified as "HOLD".

3.4 Checking

All FME created modification drawings shall receive an independent check by an individual who has adequate qualifications to have originated the drawing. Preliminary modification design drawings, which are to be reviewed internally by FME (not issued external by FME), may be excluded from the checking process. The Manager of Engineering is responsible for the assignment of checkers.

A complete set of modification drawings to be checked with the supporting data necessary to check the modification drawings shall be provided to the checker. Each drawing shall be marked "CHECKPRINT". While in the process of being checked, no changes shall be made on the drawing without coordination with the checker. The checker shall follow the checking practices described in Exhibit A.

Modification drawings shall also be checked for:

- Correctness, completeness, and freedom from interference
- Conformance to design criteria
- Compliance with applicable codes
- Constructibility, operability, and maintainability, as applicable
- Incorporation of all outstanding approved changes (see FME procedure FMEP-P-0320)

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 4 of 8	

The checker, when satisfied that the modification drawings are correct, shall sign in the appropriate title block location. After drawing review and signoff by the Project Manager, the check prints may be discarded.

3.5 Coordination

The Project Manager shall determine the necessity for the review of the modification design drawings. Individuals reviewing the modification design drawings are responsible for evaluating and reviewing the items pertinent to his/her area of technical responsibility, initialing, and returning the comments to the originating engineer. Exhibit F is to be used to implement and track the completion of this process.

3.6 Signature Requirements

The signature requirements for FME/A&E produced preliminary modification design drawing and modification design drawings are identified in Exhibits B, C, D, & E.

3.7 Signature Responsibilities

The responsibilities of those signing for the FME created modification design drawings are identified below:

<u>Title</u>	<u>Responsibility</u>
Drafter	Signoff indicates drawing is complete, satisfying drafting requirements, and complies with requirements provided by the responsible engineer.
Design Originator	Signoff indicates the drawing reflects the intended design and the applicable design criteria.
Design Checker	Signoff indicates the drawing is complete, meets the applicable design criteria, and is in compliance with this procedure.
Approver	See Manager of Engineering.
Verification Quality Assurance	Signoff indicates that the drawing reflects the intended scope of work.
Architectural Engineer	Signature indicates the drawing reflects the intended design and the applicable design criteria for their area of responsibility.
Civil Engineer	Signature indicates the drawing reflects the intended design and the applicable design criteria for their area of responsibility.
Mechanical Engineer	Signature indicates the drawing reflects the intended design and the applicable design criteria for their area of responsibility.
Electrical Engineer	Signature indicates the drawing reflects the intended design and the applicable design criteria for their area of responsibility.

SAIC-Frederick, Inc.

A Division of Science Applications International Corporation

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 5 of 8	

Instrumentation Engineer	Signature indicates the drawing reflects the intended design and the applicable design criteria for their area of responsibility.
Drafting	Signoff indicates the drawing satisfies the drafting requirements.
Project Manager	Signoff indicates: (a) Drawing coordination has taken place and comments have been resolved. (b) Compliance with contract requirements
Contracting Officers Technical Representative	Signoff indicates constructiveness review of the drawing.
Safety	Signoff indicates the drawing has considered all safety requirements.
Requestor	Signoff indicates the drawing reflects the intended scope of work.
Manager of Engineering	Signoff indicates: (a) All signoffs have been completed (b) Conformance to procedural requirements (c) Release of drawing
FME Shops	
Carpenter	Initials indicate that the drawing reflects the intended design.
Pipe	Initials indicate that the drawing reflects the intended design.
Refrigeration	Initials indicate that the drawing reflects the intended design.
Electric	Initials indicate that the drawing reflects the intended design.
Sheet Metal	Initials indicate that the drawing reflects the intended design.
Instrument	Initials indicate that the drawing reflects the intended design.
Sheet Metal	Initials indicate that the drawing reflects the intended design.
Millwright	Initials indicate that the drawing reflects the intended design.
Telephone	Initials indicate drawing coordination.

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 6 of 8	

The responsibilities of the SAIC personnel signing for the A&E created modification design drawings are identified below:

<u>Title</u>	<u>Responsibility</u>
Verification Quality Assurance	Signoff indicates that the drawing reflects the intended scope of work.
Architectural Engineer	Signature indicates that the drawing has been reviewed in accordance with the requirements of procedure number FMEP-P-0340, Review of Architect Engineering Documents, for their area of responsibility
Civil Engineer	Signature indicates that the drawing has been reviewed in accordance with the requirements of procedure number FMEP-P-0340, Review of Architect Engineering Documents, for their area of responsibility
Mechanical Engineer	Signature indicates that the drawing has been reviewed in accordance with the requirements of procedure number FMEP-P-0340, Review of Architect Engineering Documents, for their area of responsibility
Electrical Engineer	Signature indicates that the drawing has been reviewed in accordance with the requirements of procedure number FMEP-P-0340, Review of Architect Engineering Documents, for their area of responsibility
Instrumentation Engineer	Signature indicates that the drawing has been reviewed in accordance with the requirements of procedure number FMEP-P-0340, Review of Architect Engineering Documents, for their area of responsibility
Drafting	Signoff indicates the drawing satisfies the drafting requirements.
Project Manager	Signoff indicates: (a) Drawing coordination has taken place and comments have been resolved. (b) Compliance with contract requirements
Contracting Officers Technical Representative	Signoff indicates constructiveness review of the drawing.
Safety	Signoff indicates the drawing has considered all safety requirements.
Requestor	Signoff indicates the drawing reflects the intended scope of work.
Manager of Engineering	Signoff indicates: (a) All signoffs have been completed (b) Conformance to procedural requirements

SAIC-Frederick, Inc.

A Division of Science Applications International Corporation

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 7 of 8	

(c) Release of drawing

4.0 CONTROL

4.1 Revision Identification

Every issue of the modification drawing is to have a revision identification placed in the “*REVISION*” block on the modification drawing. The revision identification can be either an alphabetic or a numeric designator. See Exhibits B, C, D, and E.

4.2 Date

Every issue of the modification drawing is to have the date of origination placed in the “*DATE*” block on the modification drawing. See Exhibits B, C, D, and E.

4.3 Revision Description

Every issue of the modification drawing is to have a reason for issuance placed in the “*REVISION DESCRIPTION*” block on the modification drawing. Some typical reasons for the modification drawing issuance are identified below.

- Issued for review
- Revised to Incorporate Review Comments
- Revised to Incorporate Client Comments and Issued for 65% Review.
- Issued for construction

Note: The “*REVISION DESCRIPTION*” shall clearly state the reason for the modification drawing issuance.

4.4 Drawing Revisions

Revisions to modification drawings shall be checked, reviewed, and approved in the same manner as the originals. For the issuance of revision 0 modification drawings, reference to prior alphabetic revisions shall be removed from the modification drawing and from the “*REVISION DESCRIPTION*” block. Revised areas on modification drawings shall be clearly identified. Circle the changes made to the modification drawing in the revision being issued. Revision indications from previous modification drawing revisions should be removed.

4.5 Voided/Superseded Modification Drawings

Voided or superseded modification drawings shall be “Issued to Void or Supersede”, as applicable, with the next revision designator and shall be clearly marked VOIDED or SUPERSEDED BY DWG. _____ on the face of the modification drawing.

FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE		
Subject: MODIFICATION DRAWINGS	FMEP-P-0300A	Rev. No. 1
	Page 8 of 8	

5.0 DESIGN CHANGE NOTICE

A design change notice can be issued against a modification drawing in lieu of revising and reissuing the modification drawing. Refer to FME procedure number FMEP-P-0320.

FMEP-P-0300A Exhibits

- Exhibit A-Drawing Checking Practice (1page)
- Exhibit B-Requirements for Preliminary Modification Drawings Submitted by an A&E (1 page)
- Exhibit C-Requirements for Final Modification Drawings Submitted by an A&E (1page)
- Exhibit D-Requirements for Preliminary Modification Drawings Created by FME (2 pages)
- Exhibit E-Requirements for Final Modification Drawings Created by FME (2 pages)
- Exhibit F-Comment Memo and Comment Form (2 pages)