

<b>FACILITIES MAINTENANCE AND ENGINEERING PROCEDURE</b>		
<b>Subject:</b>  <b>DESIGN REVIEW</b>	FMEP-P-0325	Rev. No. 2
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1.0 PURPOSE

To define the requirements for performance and documentation of the design review process to assure that the components, systems, and structures are adequately designed and that the designs are properly integrated.

2.0 GENERAL

The design review process is performed on design documents prior to release for bid and/or construction. Design documents include, as appropriate, Drawings, Project Specifications and supporting Calculations.

3.0 PROCEDURE

The Lead Engineer will schedule the design review and determine the appropriate method to be used.

The design review shall be performed when the detailed design has been substantially completed. The design review shall also be performed whenever a significant change (as determined by the Lead Engineer) is made to a previously reviewed design.

3.1 Design Reviews

The design review shall be accomplished by one of the following methods (1) individual critical design review, or (2) Central Design Review Board. The method selected shall be planned and scheduled by the Lead Engineer and shall address the Design Review Elements (Exhibit A) that are applicable to the design.

Engineering quality controls consists of two distinct stages: Checking and Design Review. Checking consists of reviewing an individual drawing for consistency, quality, accuracy, form, spelling and adherence to FME and discipline standards. This peer reviewed independent check of the document must be performed in accordance with the appropriate FME procedure (e.g., FMEP-P-0300, Engineering Drawings; FMEP-P-0330, Design Calculations; FMEP-P-0300A, Modification Drawings; and FMEP-P-0400, Specifications) prior to Design Review.

Design Review consists of a review of the entire design package for consistency, quality, safety, conflict avoidance, and constructability.

3.1.1 Individual Critical Design Review

If selected, this design review method may be satisfied by the independent check of the document, performed in accordance with the appropriate FME procedure (e.g., FMEP-P-0300, Engineering Drawings; FMEP-P-0330, Design Calculations; FMEP-P-0300A, Modification Drawings; and FMEP-P-0400, Specifications). It must be confirmed, however, that all the requirements of an Individual Critical Design Review are satisfied, i.e., that the independent checking:

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- a) includes all applicable elements of Exhibit A
- b) is performed by an individual who has adequate qualifications to have originated the document

This method should only be used for small, single discipline projects.

### 3.1.2 Central Design Review Board

FME has established a Central Design Review Board (CDRB) comprised of a senior member of each engineering discipline and the Engineering Manager. An alternate is also named for each discipline, in the event the primary member cannot participate for any reason, including having performed the design in that discipline. The CDRB members and alternates are appointed by the Engineering Manager.

The CDRB meets weekly at the same day and time. The Lead Engineer is responsible for delivering the design review package, comprised of the key design documents used to represent the design and the design input requirements, to CDRB members at least one day prior to the scheduled meeting. The CDRB members will review the documents prior to the meeting. This individual discipline review can satisfy the Checking requirement of the appropriate procedure. The Lead Engineer or Discipline Engineer may also elect to have the drawings checked prior to review by the CDRB.

The CDRB will perform the Design Review at its regularly scheduled meeting. The Lead Engineer and discipline engineers should be present at the CDRB meeting to answer questions and obtain CDRB feedback. For projects to be constructed by a contractor, the COTR on the project shall also review the design and attend the CDRB meeting.

FME Shop, Building Manager and Client and any other outside reviews follow the CDRB. The Lead Engineer shall coordinate all corrections to the documents noted by the CDRB prior to issuance for outside review. Outside review may be done in parallel with estimating after review by the CDRB. If estimating is done in parallel with outside review, the Lead Engineer is responsible to clearly document any design changes arising from the outside review prior to completion of the estimate.

### 3.2 Documentation

If Design Review is accomplished by the Central Design Review Board, results shall be documented on the Design Review Report (Exhibit B). Documentation of the design review by individual critical design review may be satisfied by signature/initials of the checker and date affixed on the design document.

Documentation of the design review shall be retained in the files in accordance with the applicable procedures.

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#### FMEP-P-0325 Exhibits

Exhibit A - Design Review Elements (1 pages)

Exhibit B - Design Review Report (1 page)