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CHAPTER 13

DESIGN FEEDBACK

13.1 GENERAL

This chapter provides policies, standards, practices, guidance, and references for identifying and documenting design feedback for continuous improvement of the project development and design process, during the review of designs, plans, specifications, and estimates (PS&E), and post design reviews.

The purpose of design feedback is to determine if the design process is accomplishing its intended objectives and to provide an input process for improving project development and design standards and practices. The process can be described as a means of obtaining feedback for the purpose of evaluating the effectiveness of the project development and design processes through the following:

- PS&E reviews,
- Analysis of construction changes,
- Post construction reviews,
- PS&E improvement meetings, and
- Periodic program reviews.

Although an effective and efficient design is sought for each project, the proposed design may not always be the ideal solution. The design and PS&E process may always be improved. Conducting reviews and analyzing feedback data are methods that will be useful in substantiating that current processes are adequate and assist in determining if changes are necessary. The feedback systems may range from informal communications to formal review and reporting procedures.

■ Refer to [EFLHD – CFLHD – [WFLHD](#)] Division Supplements for more information.

13.2 GUIDANCE AND REFERENCES

Most of the available guidance is concerned with reviews to be undertaken and the types of reporting formats. The following sections provide brief descriptions of manuals that are available in each Division Office and are to be reviewed for specific guidance.

13.2.1 FEDERAL-AID POLICY GUIDE (FAPG)

Although developed mainly for the Federal-aid Program, the *FAPG* contains many regulatory and non -regulatory applications to the FLH Program.

1. Order 1311.1B *FHWA Order 1311.1B, [Value Engineering](#)*. This section discusses policy relating to value engineering in design and construction and the review of designs and standards.
2. FAPG 23 CFR 630B *Federal-Aid Policy Guide 23 CFR 630B, [Plans, Specifications and Estimates](#)*. Paragraph 5C in the non-regulatory attachment, NS 23 CFR 630B, discusses the transformation of developmental specifications to Standard Specifications after gaining adequate and satisfactory experience from active contracts.
3. FAPG G6042.4 *Federal-Aid Policy Guide G6042.4, [Construction Projects Incorporating Experimental Features](#)*. This section provides guidelines relating to inspection, reporting and evaluating experimental features included in construction projects.

13.2.2 FEDERAL LANDS HIGHWAY MANUAL (FLHM)

The *FLHM* contains the policies and procedures applicable to the FLH Program.

1. FLHM 1-C-2 *Federal Lands Highway Manual 1-C-2, Work Method Improvements-Alternate Work Methods*. This section establishes policy for the Divisions to continuously search for methods to improve the effectiveness of performing the work by analyzing and scrutinizing existing methods, policies and procedures.
2. FLHM 3-C-2 *Federal Lands Highway Manual 3-C-2, Exceptions to Minimum Engineering Standards - Risk Factors*. This section sets forth policy for adequate review, evaluation and documentation of engineering standards and exceptions to standards.

3. FLHM 4-A-3 *Federal Lands Highway Manual 4-A-3, Construction Claims and Disputes*. This section sets forth policy aimed at reducing claims by requiring a routine analysis of claims as they are settled. It also provides emphasis and direction toward improving operational procedures that deal with construction claims.

13.2.3 FLH CONSTRUCTION MANUAL

The [*FLH Construction Manual*](#) includes procedures for processing plan and specification changes and the requirements for final construction reports and as-constructed plans. These reports and plans are important sources of design feedback information.

13.3 OBTAINING AND EVALUATING FEEDBACK

This section provides general guidance and suggested practices for obtaining and evaluating design feedback, which can identify systematic improvements of the project development, design and PS&E processes. In addition to some of the more formalized procedures, a great deal of information is gained through documenting informal contacts and communications. This is true both within FHWA and with the client and cooperating agencies. Principal sources for this information are PS&E reviews and data obtained from tracking construction projects.

13.3.1 PS&E REVIEW AND IMPROVEMENT PROCESSES

FLH policy requires that methods be established to continuously improve existing work methods, policies and procedures. The following activities should be conducted to continuously improve the design and PS&E process:

1. **PS&E Improvement Meetings.** These should be held periodically to evaluate design and PS&E practices, features, policies, specifications or other items relating to design and PS&E development. Evaluate design feedback obtained from all available sources. Document the evaluations and designate applicable items for systematic process improvement.
2. **Project PS&E Reviews.** These may involve both written comments and meetings held to resolve comments received in the project PS&E review process. Refer to [Section 9.6.4](#) for the typical project reviews. Obtain feedback on the design and PS&E during project PS&E reviews. Items pertinent to the general design and PS&E processes, or applicable to other projects should also be documented separately from the project-specific comments, and compiled for systematic evaluation and process improvement.

13.3.2 ACTIVE CONSTRUCTION PROJECTS

As practical, obtain feedback on the design and PS&E during construction. There are a number of methods used to provide feedback information during construction. These involve a great deal of informal communications as well as specific reviews and reports. The following list identifies some of the more common sources of this information:

- Partnering meetings;
- Contract modifications;
- Value Engineering proposals;
- Trip reports from construction staff reviews;
- Field reviews of proposed design changes for problems (e.g., slides, drainage, materials sources);

- Environmental compliance reviews (see [Chapter 3](#));
- Formal program management reviews; these may be general in nature or cover specific emphasis areas (e.g., hydraulics, safety);
- Informal contacts or field reviews with project personnel; designers should be encouraged to visit the site of active construction projects when they are in the vicinity;
- Construction feedback report (see [Exhibit 13.3-A](#) for sample report format);
- Videotapes, photographs, etc.;
- Contacts with owner/maintaining agencies;
- Final inspections;
- Contractor interviews; and
- Work-zone traffic control reviews.

The design feedback information obtained from the above sources may consist of project-specific information, as well as items pertinent to the general design and PS&E process or applicable to other projects. Document any process-related findings and recommendations identified during the above activities separately from the project-specific comments, and compile for systematic evaluation and process improvement.

Refer to *[EFLHD – CFLHD – [WFLHD](#)]* Division supplements for more information.

13.3.3 POST CONSTRUCTION

As practical, obtain feedback on the design and PS&E after completion of construction. The following are some of the sources of information available for after the completion of construction projects that will be of value in evaluating the effectiveness and adequacy of design features:

- Evaluation of contractor claims;
- Feedback from owner/maintaining agency; this information may be gained from informal contacts or specific reviews of problems or deficiencies;
- Formal post-construction reviews; these reviews provide an excellent means for evaluating the effectiveness of various design features; reviews should encompass maintenance, traffic operations, safety, drainage, erosion control and roadway performance;
- Skid testing;
- As-constructed plans;
- Final construction reports;
- Closeout meetings with the construction project engineer; these meetings can be an excellent means for obtaining suggestions and recommendations for improvement of future designs; and
- Bridge Inspection Reports and Roadway Inventory Reports.

FEEDBACK REPORT

Date: _____

1. One problem per report.
2. May be completed in pencil or ink.
3. Forward original and 1 copy to Division office.
4. Retain a copy for your records.

Type of Contract: _____
(Grading, Base, Paving, Bridge, etc.)

Problem: _____

(attach additional pages if more space is needed)

Corrective Action Taken and Improvements Recommended for Future Projects: _____

Division Staff Comments: _____

Action Recommended and by Whom: _____

The design feedback information obtained from the above sources may consist of project-specific information, as well as items pertinent to the general design and PS&E process or applicable to other projects. Document any process-related findings and recommendations identified during the above activities separately from the project-specific comments, and compile for systematic evaluation and process improvement.

13.4 MONITORING

Each FLH Division Office must have procedures to monitor their project development processes, including integrated feedback systems. The purposes of this monitoring are to:

- Assure management that the processes being used are in compliance with applicable regulations;
- Identify areas for needed improvements (i.e., technical and procedural); and
- Sustain efficient, safe and cost-effective designs.

Monitoring will provide appropriate and timely input for revisions and/or modifications to the following:

- Federal Lands Highway Manual,
- Project Development and Design Manual,
- Division Supplements,
- Standard Specifications,
- Division Library of Supplemental Specifications,
- Standard Plans,
- Division Details, and
- Division Standard Operating Procedures.

FLHO is responsible for modifying or revising the FLH-wide items. Refer to [Section 1.1.4.1](#) for revising and updating the PDDM. Although accountable to FLHO, each Division Office is responsible for monitoring its own Division-specific items and standard operating procedures. As part of the project development and design process, each practitioner should also monitor application of the above items in developing their products and services, and contribute feedback for input to process improvement activities. Significant items identified through design feedback will be considered for nationwide use.