

WFLHD SUPPLEMENT 9.6.6.2-1

9.6.6.2 Design Documentation

The purpose of this supplement is to provide general guidance for organizing the project design files into the Design Book.

9.6.6.2.1 Design Book Assembly

Add the following:

Organize the design files for each project into a Design Book. The Design Book consists of one or more notebooks containing the project design history and documentation. The book is organized into several sections according to the [Design Book Index](#). Each section title in the index mimics the titles on the preprinted Design Book Tabs. Each index section contains several subheadings with a brief description of the types of items included in that subheading and who is generally responsible for that item. Designers may add or subtract subheadings as they see fit; however, subheadings for major items such as "Engineers Estimate", "Quantities Calculation", or "Design Narrative" are expected for every WFLHD project. If a subheading item is required or available for the project, include it in the Design Book.

The Design Book Index definitions below describe in more detail the type of information generally included under a particular heading or subheading and provides general guidance of where to find the data and how to develop the data.

1. Design Documentation

Project Agreement — Obtain Project Agreement (PA) from Project Manager. Project schedules are often part of the PA and these schedules should be inserted as well.

WFLHD-3, Highway Design Standards — See [Supplement 9.1.3.4-1](#) for guidance. The WFLHD-3 form is the primary tool to document exceptions to highway design standards. Follow a thorough, interdisciplinary approach involving the Highway Design Standards Engineer, Highway Safety Engineer, HDM, PM and CFT to determine any exceptions. Develop the WFLHD-3 early in the design stage to avoid schedule changes because of reworking of the design.

CADD and Geopak Tracking Document(s) — The tracking document is essential when the primary designer is changed at any stage of the development, when work begins again on a dormant project, and when the project moves into the construction phase. While actual document and drawing tracking may be improved with naming conventions and ProjectWise, the need to identify individual Geopak element files such as gpk files, chains, runs, and input files is still of great importance.

WFLHD-2, PS&E Assembly and Review — The designer is responsible for assembling much of the requested data. The Project Manager is primarily responsible for obtaining the WFLHD-2 signatures.

[Design Narrative](#) — The Design Narrative can be an integral step transitioning a project from Highway Design to Construction or between designers. The narrative provides some history and addresses key issues that may arise before or during construction. It may act as a primer for the design book and describe where to find information. See [Supplement 9.6.6.6-1](#) for more information.

2. **Project Cost Estimate and Schedule**

Engineers Estimate — Print out of Engineers Estimated from current WFLHD approved software. Produced at 30%, 50%, 70%, and Final

PRMS Schedule — Latest version of PRMS schedule from HDM and PM.

Construction Schedule — Use Microsoft project with input from CFT member(s), to develop the CPM schedule based on the production rates of the major items. The schedule should be updated at all review stages and is required to accurately determine the number of contract days and is part Final PS&E final submittal. Include all data and documentation used to develop the CPM schedule. Provide the final CPM schedule to the COEs for use in determining the CE costs for the project.

3. **Quality Control**

QA/QC Checklist — Include QA/QC checklist from final review. This review is typically performed by the designer or lead designer and evaluates the completeness of the documentation, forms and PS&E package before submittal to Acquisitions. Include any additional documentation of issues addressed by the QA/QC review and the related resolutions. Note, review comments and responses to client/partner agencies and consultants utilized in the development and review of project are located under section 18. Comments/Responses.

4. **Meetings Minutes**

Cross Functional Team minutes — Include team meeting minutes, preferable with action items and due dates. CFT meetings are the primary responsibility of the Project Manager.

Field Review — Field review minutes, preferable with action items and due dates. Field reviews are the primary responsibility of the Project Manager. Also include [Trip Reports](#) when applicable.

Public Meeting Minutes/Synopsis — Primary responsibility of the Project Manager

Social, Economic, & Environmental Team, Tri-Agency, and Others — Primary responsibility of the Project Manager

5. **Correspondence**

All Correspondence — As much as possible all hard copied correspondence and relevant email should reside in one location. All correspondence to be filed in the design book must be prioritized for relevance and be sub-tabbed by subject if necessary. Some correspondence may reference multiple subjects and may require multiple copies or additional referencing. Additionally correspondence should be filed by date with most recent on top. Email correspondence has become widespread. The use of a filing system with Microsoft Outlook is preferable to manage large quantities of email. Email can be easily archived and transportable via the use of .pst files.

Contact lists — Contact lists may be part of another official file.

Memos, Internal/External — Filed under subject sub-tabs and by date

Letters, External — Filed under subject sub-tabs and by date

Media Articles — Filed under subject sub-tabs and by date

6. **Scoping Data**

Project proposal — Data used to develop Project Agreement, preliminary and programming estimates, drawings, and plans.

Project plan — Include the project plan and all changes to the project plan as they occur.

Project Identification Checklist — Program specific document

Route Log — Route log developed with field visits, obtained from partner agency, or developed using VisiData database.

Traffic Data — Traffic data used for project development purposes and any traffic studies.

Accident Data — Accident data used for project development purposes and any traffic studies.

7. **Survey/Mapping**

Survey Requests — Include initial and all additional survey requests including those generated by Project Manager. These are generally circulated thru email.

Control & Datum Info — Include all control and datum information used by Survey to produce the initial survey files (.plm - planimetrics/topo, .dsl - survey points including descriptions and elevations, & .con - contour files). This information is obtained from Survey division. This section will contain a table created either by the designer or the Survey division that includes all control points set by surveying for the project. This information can be found in the .plm file on the levels E_SUR_Control & E_SUR_Control_Text. The table will include for each point:

point #	Elevation
Northing	Description
Easting	GPS data, if available

Note: Jump Hubs (JH) are not included in the table.

Alignment List — This section will contain all final horizontal and vertical alignments as provided for construction staking. This information is listed as chains and profiles in the Coordinate Geometry module in GeoPAK. The individual chains and profiles should be listed using the Print/Describe Element button (which can also be found on the Tools pulldown). Once the information is displayed in the Coordinate Geometry window, it can be copied to Word, formatted, and printed.

Other Stakeout data — This section will contain any additional survey information used for construction stake out not indicated above, including, but not limited to, red tops, blue tops, slope staking, and clearing limits notes.

8. Utilities/Right-of-Way

Utility/Right-of-Way Agreements — Include all agreements with, including but not limited to, individual property owners, utilities, and local jurisdictions. These agreements would be obtained from the Right-of-Way division.

R/W Certification — Include all documents pertaining to R/W Certification. These agreements would be obtained from the Right-of-Way division.

9. Hydraulics

If data is calculated by both the designer and Hydraulics (tech services), divide data into 2 primary sections:

- *Designer Calculations* — For culverts less than or equal to 48" diameter.
- *Calculations from Hydraulics (Technical Services)* — For culverts greater than 48" diameter.

Each section should contain the following information:

- *Quad Map with Drainage Area Identified* — May be created from Topo mapping program or obtain from Hydraulics division.
- *Runoff Curve* — This section will contain all information used to calculate any drainage areas and establish runoff information established by Hydraulics division.

- *Minor Drainage Summary* — Include any supporting information utilized in the development of the drainage Tabulation of Data Quantities plan sheet. Designer is responsible for data to support pipes less than 48" diameter.

In addition, the following information should be included in the Hydraulics (tech services) section:

- *Hydraulic Recommendations* — Include any memo or report that contains design decisions or recommendations obtained from Hydraulics division.
- *Hydraulic Technical Reports* — Include any reports from Hydraulics division.
- *Fish Passage* — Include any memo or report that contains information obtained from Hydraulics division. Also include information obtained from local agencies or environmental section on fish passage recommendations or restrictions.
- *Flood Plains* — Include any memo or report that contains information obtained from Hydraulics division.
- *Water Sample Test Results* — Include any memo or report that contains information obtained from Hydraulics division, if available.
- *Historical information* — Include any historical information obtained from other sources including client agency or maintenance records, if available.

10. **Structures**

Recommendations — Include any memo or report that contains design decisions or recommendations obtained from Structures division.

Structures Technical Reports — Include any reports from Structures division.

Cost Information — Include any memo or report that contains information obtained from Structures division.

Specifications — Include any memo or report that contains information obtained from Structures division.

Historical information — Include any historical information obtained from other sources including client agency or maintenance records, if available.

11. **Geotechnical**

Recommendations — Include any memo or report that contains design decisions or recommendations obtained from Geotechnical division. Also include any mapping or plan data provided to the Geotechnical division that supports design decisions or recommendations.

Geotechnical Technical Reports — Include any reports from Geotechnical division.

12. Materials

Recommendations — Include any memo or report that contains design decisions or recommendations obtained from Materials division.

Pavement Section Team Report — Include pavement selection memorandum from Materials division. The designer generally provides typical sections and ADT information at the Pavement Selection Team meeting. This information is used by the Materials division to generate the memo.

13. VE Study

Value Engineering Report — Include report obtained through Project Manager.

14. Environment

Environmental Commitment Summary (ECS) — This document lists all of the mitigation measures and stipulations that are called for in the permits and NEPA document and signed by the Environmental Specialist of Record (SOR). The items listed in the ECS have to be addressed in the plans and SCRs. The ECS stipulations note the page number in the plans or SCRs where the stipulation can be found.

Signed NEPA clearance document (CE, FONSI, ROD) — This document is generally completed by the 30-50% stage of design.

Public Involvement Documentation — This may include newspaper articles, any presentation material used at a public meeting, public comments received, mailing lists, and any flyers sent out.

Resource Studies (BE, BA, BRR, etc.)(Obtain from SOR) — depending on the complexity of the project, one or all of these studies may be included. Typically the ECS will produce these studies. They are required prior to completion of the NEPA document. Also include data used in the development of any compliance and NEPA documents.

Effect Calls (NLAA etc. accompanies resource study) — WFL personnel will typically determine the effects call based on the data contained in the resource reports.

Wetland Mitigation Plan — If the impacts to the wetlands is over the threshold (see ECS for threshold), a mitigation plan is required. This will be developed with the ECS and generally the cooperating agencies.

Other Environmental Documentation — Also include any other environmental related documentation including NEPA Class of Action documentation (EIS, EA, 4(f) Determination).

15. Permits

Approved Permits (404, 401, NPDES, Special Use, etc) — The type of permits needed varies from project to project depending on the complexity of the project and the impacts to the resources.

16. Erosion Control Revegetation

SWPPP – Include completed Storm Water Pollution Prevention Plan as provided by Environmental services team.

Landscaping and Revegetation – Include any information leading to decisions made for landscaping and revegetation schedules and plans. This information may be provided by the Environmental team or by client Landscape Architect or other official responsible for these functions within the client agency. Include recommendations for seed mixes, special grading requirements, slope treatments, landscaping, salvage of vegetation, planting layout, irrigation, and other permanent landscaping features.

17. Design Support Data

Quantity Calculations — Include detailed calculations by item number showing where quantities were obtained, conversion calculations, and calculations shown for final contract quantities. These calculations may simply document that the number came from Geopak in a specific file and layer, generated by spreadsheet (include printouts), or may be hand calculations. This is critical when the project is handed over for construction, as the CE often refers to the quantities.

Unit Price Support (UPA's, etc) — Include all information used to obtain contract price data. This may entail using UPAs from the Engineers estimate program, previous projects (adjusted for time and location), or data from other state, federal or local agencies. It may also contain price quotes received from local contractors or vendors that have been obtained.

General Calculations (Locations, flows etc) — Place any additional calculations that were used in decision making. This may include calculations on why a certain alternative or practice was not used.

Support data (Decision Memos, direction documentation) — This section may contain documents, notes etc on why certain features were used or why they were omitted. Decisions are made on a regular basis and this section will contain documentation of these decisions.

18. Comments/Responses

Review Comment Spreadsheets — Review spreadsheets containing CFT comments and designer comments for every stage of review conducted.

Include any comments and responses to client/partner agencies and consultants utilized in the development and review of project. Include Intermediate Design comments (50% review), Plan in Hand comments (70%), and Final design comment (95%). Note, internal review comments and responses are located under section 3. Quality Control.

19. A&E task Orders

Statement of work and cost (Signed by consultant) — The statement of work is developed by the COTR, provided to the contracting section, reviewed by the consultant and then approved. The statement of work varies depending on the type of contract that is desired. In many cases the individual disciplines will be the COTR of their own contracts and often the designer does not get copies of these SOWs etc.

Independent government estimate — Develop an estimate for the SOW generated, based on the hourly rates that contracts has for the consultant provided.

COTR appointment documentation — This is a document provided to the COTR by the contracting officer, which the COTR then signs and returns to the contracting officer. It basically states that you understand the responsibilities of the being a COTR.

PR for the contract amount — Completed as part of the paperwork for the TO. Verifies that the money was obligated for the contract.

Invoices received and authorized for payment — Keep track of the invoices to verify that the deliverables are delivered and that the contractor is staying within the budget.

20. Reimbursable Agreements

Statement of work and cost (Signed by consultant) — The statement of work is developed by the COTR, provided to the contracting section, reviewed by the governmental agency and then approved. The statement of work varies depending on the type of contract that is desired. In many cases the individual disciplines will be the COTR of their own contracts and often the designer does not get copies of these SOWs etc.

Independent government estimate — Develop an estimate for the SOW generated, based on the anticipated hourly rate for the agency completing the work.

COTR appointment documentation — This is a document provided to the COTR by the contracting officer, which the COTR then signs and returns to the contracting officer. It basically states that you understand the responsibilities of the being a COTR.

Invoices received and authorized for payment — The invoices vary from agency to agency. If another federal agency has the RA with us, typically the request for payment comes in electronically. If the RA is with a City, County or State, the invoice will come through the designer. Keep track of these to insure that the budget is being met.

PR for the contract amount — Completed as part of the paperwork for the RA. This verifies that money was obligated for the contract.