Project Design Guidelines.

Prepare all documents (i.e., Plans, Quantity Tables, Summary of Quantities, Specifications, Cost Estimate, and Construction Schedule) in US Customary units. Use the following design standards:

- An Ecological Approach to Providing Passage for Aquatic Organisms at Road-Stream Crossings
- (USDA Forest Service 2008) as well as Water Crossing Design Guidelines (Washington Department of Fish and Wildlife 2026).
- The information and guidance contained in the Federal Lands Highway (FLH) Project Development and Design Manual (PDDM).

Plans.

Conform to Federal Lands Highway (FLH) plan preparation standards. Ensure plans are prepared in accordance with FLH Standard Format for Plans (https://highways.dot.gov/federal-lands/design/plan-prep). These standards specify text size and element color, weight, level, and line code. Adjust plotting software, pen tables, and resource files to make plan sheets appear like the FLH sample plans.

Refer to https://highways.dot.gov/federal-lands/design/plan-prep/wfl and any example plans provided for guidance in developing final plan sheets for a complete contract package.

Verify inclusion of the most current version of FLH standard and detail drawings. The most current file versions are available on the FLH and WFLHD websites; Standard Drawings and Detail Drawings are found at:

https://highways.dot.gov/federal-lands/std-drawings; and

https://highways.dot.gov/federal-lands/std-drawings/wfl-details.

Complete and submit all CADD files as MicroStation Connect dgn files. Perform design using OpenRoads Designer (ORD). WFLHD-specific MicroStation seed files, cell libraries, and standard drawings and forms are on the Highway Design Resources web site in the WFL column: https://highways.dot.gov/federal-lands/design.

WFLHD CADD Support web site (https://highways.dot.gov/federal-lands/cadd-support/wfl) provides useful guidance to run FLH Roadway Design software. This site also provides WFLHD specific files, input files, and a report printing program.

Quantity Tables.

Provide tables of design quantities for each section of the plans. The location and quantity of design quantities for every pay item must be shown in a table. Refer to sample Plans, Specifications and Estimate (PS&E) for guidance of needed tables:

- https://highways.dot.gov/federal-lands/design/plan-prep
- https://highways.dot.gov/federal-lands/design/plan-prep/samples
- https://highways.dot.gov/federal-lands/design/plan-prep/wfl/samples

Tables are to be located in Section B (https://highways.dot.gov/federal-lands/design/plan-prep/flh-plan-sheet-order).

Summary of Quantities.

Summarize the individual design quantities into a Summary of Quantities Table plan sheet(s). Information included in the Summary of Quantities is a) Pay Item Number, b) total item quantity, c) plan section where item is shown (may include multiple sections), d) bid schedule quantity, and e) designate if the pay item is a contract quantity. See https://highways.dot.gov/federal-lands/design/plan-prep/samples/quantity-tables for more information.

Quantities.

Provide documentation for the design quantities. Provide sketches and dimensions to illustrate quantity calculations. Provide printout of CAD generated quantities. Apply the appropriate allowance to each quantity in the Summary of Quantities. Show calculations adjusting from plan quantity to bid quantity.

Quantity calculations and associated support data, separately for each pay item. Also include in each pay item calculations the quantity calculations for work incidental to the pay item. Label the top of each sheet with the pay item name and number.

Specifications.

Provide special contract requirements (SCRs) which describe in detail the project work required when read in conjunction with the FP-24. Provide special contract requirements in an approved electronic format.

Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-24 (FP-24), Federal Highway Administration found at https://highways.dot.gov/federal-lands/specs.

The Library of (Supplemental) Specifications (LOS): https://highways.dot.gov/federal-lands/specs/wfl-los/fp-24-library

Specification Writer's Guide for Federal Lands Highway, found at https://highways.dot.gov/federal-lands/specs/writers-guide, mandates the proper formatting and language used in writing FHWA-WFL Specifications and Special Contract Requirements (SCRs).

Follow the FLH Specification Writer's Guide to develop the SCRs. Supplement and edit the specifications found in the WFLHD Library of Specifications (LOS) to develop the SCRs needed. Follow the LOS format and method of adding, deleting, and supplementing the FP-24. Use the latest version of the specification from the LOS at https://highways.dot.gov/federal-lands/specs/wfl-los/fp-24-library for each review submittal.

Cost Estimate.

Provide the Engineer's Estimate. Pay item listing is available at https://highways.dot.gov/federal-lands/estimates.

Itemize Cost Estimate according to the FP-24 and the Engineer's Estimate item list.

Construction Schedule.

Use Microsoft Project software to prepare a Critical Path Method (CPM) Schedule for construction. Show limitations of operations, production estimates, and quantities. Calculate critical path of construction activities to determine construction time. Provide critical path printout using Gantt chart type graphics.

Prepare a written narrative that adequately defines the type of work, quantity, assumptions made, and location of each activity. Indicate the resources (equipment and workforce) and production rates for each activity.

In the CPM schedule, depict the order and interdependence of major activities, and include work restrictions and closure periods.

Guidance on CPM preparation is available at https://highways.dot.gov/federal-lands/design/tools/wfl.

References

Washington Department of Fish and Wildlife. 2026. Water Crossings Design Guidelines. Revised 2026. 298 pages. Olympia, Washington. https://wdfw.wa.gov/sites/default/files/publications/02734/wdfw02734.pdf

Forest Service Stream-Simulation Working Group. 2008. Stream Simulation: An Ecological Approach to Providing Passage for Aquatic Organisms and Road-Stream Crossings. San Dimas, California. https://www.fs.usda.gov/biology/nsaec/fishxing/publications/PDFs/AOP_PDFs/08771801.pdf

Federal Lands Highway Project Development and Design Manual. 2008. Revised 2025. https://highways.dot.gov/sites/fhwa.dot.gov/files/pddm.zip