

# Table of Contents

<b>SECTION B</b>		<b>NON-CERTIFIED AGENCY 2</b>
<b>Chapter 10</b>	<b>Design Approval.....</b>	<b>2</b>
<b>A. OVERVIEW .....</b>		<b>2</b>
<b>B. DESIGN ACCEPTANCE PACKAGE (30 PERCENT) .....</b>		<b>2</b>
1. Traffic Data.....		3
2. Right of Way.....		3
3. Horizontal- Verticle Alignment .....		3
4. Roadway Seciton .....		3
5. Cost Estimate .....		3
6. Environmental Considerations.....		3
7. Permits .....		3
<b>C. PRELIMINARY PLANS.....</b>		<b>4</b>
1. Preliminary Plans Review Package .....		4
<b>D. ADVANCE PLANS.....</b>		<b>4</b>
1. Advance Plans Review Package .....		4
2. Quality Control/Quality Assurance.....		5
<b>E. FINAL PLANS.....</b>		<b>5</b>
1. Final Plans Review Package .....		5
<b>F. PS&amp;E SUBMITTAL.....</b>		<b>5</b>
<b>G. ADDITIONAL DATA REQUIRED FOR SPECIAL PROJECTS .....</b>		<b>6</b>
1. Traffic Signal Projects .....		6
2. Projects Involving the State Highway System.....		6
3. Special Research of Use of Experimental Features .....		6
4. Bridge Projects.....		6
a. Design Acceptance Package .....		6
b. Approval Authorities .....		6
c. Timing Of Review Comments.....		7
d. Submittal Of Data.....		7
e. Bridges On State Right Of Way .....		7
5. Value Engineering .....		7
a. Authority For Value Engineering .....		8
b. Why Value Engineering Is Needed .....		8
c. Value Engineering Application (General) .....		8
d. Value Engineering Coordinator.....		9

# SECTION B

# NON-CERTIFIED AGENCY

## Chapter 10

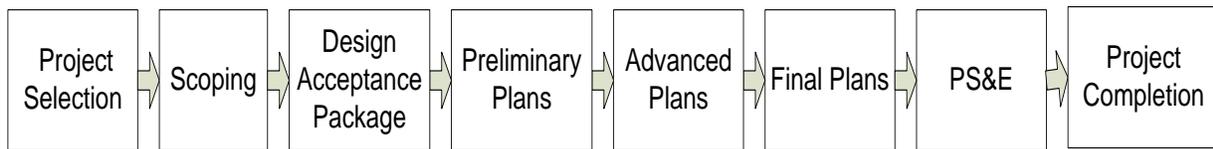
## Design Approval

On all FHWA funded transportation projects, non-certified local agencies must obtain and document design approval prior to preparation of Plans, Specifications and Estimates (PS&E).



### A. OVERVIEW

The design approval process involves a series of milestones as depicted within the following flow chart. This chapter generally addresses roadway design; information specific to bridge design is located in Section B, Chapter 14 of this *LAG Manual*.



### B. DESIGN ACCEPTANCE PACKAGE (30 PERCENT)

The Design Acceptance Package (DAP) is a critical milestone in the decision-making process that establishes the geometric boundaries of the project footprint, and provides for a more reliable update to the project scope, schedule, and budget. Design acceptance occurs at the end of the initial design phase and requires all project disciplines to review the design for balance of context with standards and policies. It is the primary opportunity for both technical and non-technical stakeholders to review design elements according to their specific interest.

The items listed below, required for design approval, are normally included in the Design Acceptance Package. Additional information regarding project submittals and related checklists is available from ODOT's Project Delivery Guide.

## **1. Traffic Data**

The local agency should include a design-year Average Daily Traffic (ADT) forecast during the design. The design year should be 15 years from the projected start of construction for resurfacing, restoration and rehabilitation projects and 20 years from the projected start of construction for new construction/reconstruction projects.

## **2. Right of Way**

The Design Acceptance Package may include the Right of Way map and proposed footprint. Refer to Chapter 9, Right of Way Procedures in the non-certified section of this *LAG Manual* for further details.

## **3. Horizontal- Vertical Alignment**

The local agency shall include a plan showing the proposed horizontal alignment, existing streets and proposed intersections. Such plan should show only sufficient detail to generally portray the scope of the project. If there is little change in the profile, the local agency need not include a profile. If there is significant change, then the local agency should furnish a profile showing existing and recommended vertical alignments.

## **4. Roadway Section**

The roadway section provides typical roadway sections for each general type of roadway in the project. This is not required on signal projects if the lane description has been shown.

## **5. Cost Estimate**

The cost estimate shall reflect all project construction items and shall contain costs for Preliminary Engineering (PE), Construction Engineering (CE), Contingencies, Mobilization and Temporary Traffic Control. The costs submitted shall be noted in the project prospectus. The stand alone project agreement between ODOT and the local agency shall be used.

## **6. Environmental Considerations**

Environmental considerations, including public involvement requirements, must be documented and approved by ODOT/FHWA. Additional information is available in Chapter 5, Environmental Processes of this *LAG Manual*.

## **7. Permits**

Refer to Chapter 5, Environmental Processes in this *LAG Manual* and ODOT's Highway Design Manual for a listing of permits that may be required.

## **C. PRELIMINARY PLANS**

Submittal of Preliminary Plans is the primary opportunity for technical staff to provide comments and feedback on the adequacy and appropriateness of the design with regard to the standards described under ODOT and the AASHTO guidelines (available at the AASHTO Bookstore) according to project needs. The LPA should submit these to ODOT about 3 months before the bid date.

### **1. Preliminary Plans Review Package**

The Preliminary Plans Review Package shall include:

- Preliminary project plans;
- Preliminary cost estimates;
- Traffic reports;
- Final geotechnical report; and
- Final hydraulics report.

For NHS projects over \$25 million, a Value Engineering study must be performed and the results or summary included in the preliminary design – see the Value Engineering Section at the end of this chapter.

## **D. ADVANCE PLANS**

Submittal of the Advanced Plans Package is a key interim step of the contract document phase and requires all project disciplines to review draft contract documents for completeness and accuracy. It is the primary opportunity for technical staff to provide quality control review of the project plans, specifications, and estimates as a package.

### **1. Advance Plans Review Package**

The Advanced Plans Review Package shall include:

- Advanced project plans;
- Advanced project construction cost estimate;
- Advanced Construction Standard Specifications and Special Provisions;
- Pavement design; and
- Construction schedule.

## **2. Quality Control/Quality Assurance**

Quality control should be occurring throughout project development. Quality assurance should occur during the advance plans review. Quality assurance is a shared responsibility among ODOT, the local agencies, and the consultants on the project.

### **E. FINAL PLANS**

This step occurs in follow-up to review and comment on the advanced plans and specifications. It is the last opportunity for contract documents to be reviewed by technical staff for quality control and document completeness, before the project is ready to move forward for FHWA review (when needed) and PS&E submittal.

#### **1. Final Plans Review Package**

Based on the comments provided during the Advanced Plans review, the draft contract documents are advanced to the final plans.

The Final Plans Review Package shall include:

- Final project plans;
- Final construction cost estimate;
- Final Construction Standard Specifications and Special Provisions.

### **F. PS&E SUBMITTAL**

This point of decision-making provides certainty of the completeness of a project for bid. Decision-making with any desired interim milestones between Design Acceptance Package and Plans Specifications and Estimate submittal (e.g., TS&L, Advanced, and Final Plans) should be addressed through individual Quality Control Plans and Project Development Change Requests as needed. For information regarding PS&E submittals, refer to Chapter 11, in Section B of this *LAG Manual*.

For further information regarding project submittals and related checklists, reference ODOT's Project Delivery Manual.

## **G. ADDITIONAL DATA REQUIRED FOR SPECIAL PROJECTS**

### **1. Traffic Signal Projects**

The LPA shall provide warrants for signalization in accordance with the *Manual on Uniform Traffic Control Devices*. Designs for signalization at intersections with state routes require review and approval by ODOT. A signal permit is required for all traffic signals on state routes. LPAs should contact their Regional Local Agency Liaison (LAL), as early application and coordination with ODOT's Region Traffic Engineer is required.

### **2. Projects Involving the State Highway System**

Designs for all projects involving state highway system shall be submitted to ODOT's Regional Local Agency Liaison for processing and obtaining ODOT approval. All work at intersections with the state highway system requires submittal of an intersection plan to the Regional Local Agency Liaison for processing and obtaining ODOT approval. Prints of existing intersection plans are available from ODOT. Revisions should be shown on these prints.

### **3. Special Research of Use of Experimental Features**

Such projects may require a special research plan. Contact the LAL for additional information.

### **4. Bridge Projects**

#### **a. Design Acceptance Package**

For projects that include bridges, the Design Acceptance Package should include a Type, Size and Location (TS&L) Design Package as described in Chapter 14, Section B of this *LAG Manual*.

#### **b. Approval Authorities**

Refer to FHWA's Bridge Technology Memorandum and Chapter 14, Bridge, in Section B of this *LAG Manual*, for additional information regarding "unusual" bridges. For bridge projects, the approving authority for the Design Acceptance Package is outlined in Approval Authority Matrix in Section A, Appendix to Chapter 2 in this *LAG Manual*. In addition, bridge projects that fall under the category of "major" (e.g. a bridge estimated to cost more than \$5 million) or "unusual," require ODOT's approval prior to final TS&L. Refer to FHWA's Bridge Technology Memorandum and Chapter 14, Bridge, in Section B of this *LAG Manual*, for additional information regarding "unusual" bridges. For bridge projects on state routes, the NHS, and for any local agency bridge project that will be advertised and awarded by ODOT, design approval by ODOT's Bridge Engineer is required.

### **c. Timing Of Review Comments**

It is important that review comments be made as soon as practical in the project development process. For example, comments on major features of a bridge project such as structure type, location, length, constructability, etc., should be made at the Type Size & Location stage. Significant comments made later in the project's development may not be accommodated without significant changes to environmental and right of way clearances and significant project delays and increased costs. Comments at the PS&E stage should be limited to refinements in the plans and specifications and suggestions for improved details.

### **d. Submittal Of Data**

Refer to the Non-Certified Bridge chapter of this LAG Manual for additional information regarding the submittal of data.

### **e. Bridges On State Right Of Way**

Bridge projects designed and constructed by an LPA within state right of way must be coordinated with ODOT's LAL who will serve as the project liaison and the ODOT contact for all aspects of the project. The liaison will coordinate ODOT technical reviews and ensure that adequate coordination between the LPA and ODOT takes place at each appropriate stage.

All pertinent review data submitted to the LPA by ODOT's Senior Local Bridge Standards Engineer concerning constructability, safety, aesthetics, or use of the bridge by the motoring public will be forwarded to the local agency through ODOT's LAL.

Local agencies should refer to Section B, Chapter 14 of this *Manual* for detailed information related to delivery of local agency bridge projects.

## **5. Value Engineering**

Value Engineering, as stated on ODOT's Value Engineering website, is the systematic application of recognized techniques by multi-disciplined teams which identifies the function of a product or service, establishes a worth for that function generates alternatives through the use of creative thinking and provides the needed functions at the lowest overall cost.

FHWA policy regarding value engineering states:

“...[t]he FHWA will assure that a VE [value engineering] study is performed on all federal-aid funded NHS projects with an estimated cost (includes design, right of way and construction costs) of \$25 million or more and on other federal-aid projects where its employment has high potential for cost savings. In addition, FHWA will strongly encourage State Departments of Transportation to use VE throughout highway project development, design and construction.”

Refer to FHWA's Value Engineering website for additional details.

### **a. Authority For Value Engineering**

FHWA will ensure that a Value Engineering study is performed on all federal-aid funded National Highway System projects with an estimated cost (includes design, right of way and construction costs) of \$25 million or more and on other federal-aid projects where its employment has high potential for cost savings. In addition, FHWA will strongly encourage state departments of transportation to use Value Engineering throughout highway project development, design and construction.

### **b. Why Value Engineering Is Needed**

ODOT recognizes the need for responsible use of revenue and resources while providing a safe and efficient transportation system. To meet this need, the Department established and maintains a Value Engineering program. The goal of the Value Engineering program is to ensure that projects are cost-effective while maintaining or improving project function.

### **c. Value Engineering Application (General)**

Value Engineering studies may be conducted during one or more project development stages. In general, Value Engineering studies performed early in project development have a greater potential for savings than Value Engineering studies performed later in project development. Some projects may not benefit from a Value Engineering study, while others may benefit from several studies conducted at different times and focusing on different aspects of the project. It is important to structure the Value Engineering study to the level of detail appropriate for the current development stage of the project. Study timing phases include but are not limited to:

**Solution Identification Phase** – In this phase, a value engineering study will evaluate, refine, or reduce alternatives prior to proceeding with project development. Types of projects include the Statewide Transportation Improvement Program (STIP), corridor, reconnaissance and Transportation System Plans (TSP).

**Preliminary Design** - Preliminary Design occurs prior to the Environmental Impact Study. At this stage major project elements have been completed. The Value Engineering study will evaluate project elements and limit alternatives for advancement. The design completion is at approximately 30 percent.

**Final Design** – The Value Engineering study will evaluate design details, materials and staged construction. The design is approximately 60-90 percent complete.

**Construction** – The Value Engineering study will evaluate and minimize major cost elements and potential overruns.

**d. Value Engineering Coordinator**

When the decision is made to proceed with a Value Engineering study, the local agency may contact ODOT's Value Engineering Coordinator to facilitate the Value Engineering study or the local agency may obtain a Value Engineering consultant to facilitate the study and serve as the acting value engineering coordinator for the Value Engineering study.

For additional information regarding the Value Engineering process contact LAL.