

## V. PROJECT DESIGN

This chapter outlines requirements for the design of any Federal-aid LPA project. This chapter only applies to Infrastructure projects. Infrastructure projects are those that involve any ground disturbance or that involve an existing structure. Examples include sidewalks, streetscape projects, installing signs, restoration of historic buildings, ADA ramps, pavement striping, bicycle accommodations and any major construction project.

Depending on the complexity of the project, it may be necessary to meet regularly with the Administering Office and other KYTC representatives during the design phase.

### V.1. Design Requirements

All projects must be designed to meet the applicable standards and guidelines. For roadway and roadside design, the *KYTC's Highway Design Manual (current edition)* must be followed:

<https://transportation.ky.gov/Organizational-Resources/Policy%20Manuals%20Library/Highway%20Design.pdf>

The KYTC uses the current edition of the following manuals for roadway design projects and would consider the LPAs use of these manuals acceptable:

- KYTC's Highway Design Manual
- KYTC's Standard Drawings
- KYTC's Standard Specifications for Road and Bridge Construction
- AASHTO's A Policy on Geometric Design of Highways and Streets
- AASHTO's Roadside Design Guide
- AASHTO's Guide for the Development of Bicycle Facilities
- FHWA's Flexibility in Highway Design
- FHWA's Manual on Uniform Traffic Control Devices (MUTCD)

On local roads, the LPA may, in some cases, with prior approval from the Administering Office, follow defensible standards not included as KYTC standards, such as AASHTO standards. The LPA must formally request any such exception from the Administering Office and should not proceed until written approval from KYTC is received.

Where applicable, projects must comply with the *Secretary of the Interior's Standards for the Treatment of Historic Properties*, which can be found at:

[http://www.nps.gov/history/local-law/arch\\_stnds\\_8\\_2.htm](http://www.nps.gov/history/local-law/arch_stnds_8_2.htm)

For bicycle facility projects, *AASHTO's Guide for the Development of Bicycle Facilities (current edition)* must be followed.

Other bicycle, pedestrian and trail guidelines may be acceptable. Two promoted by FHWA are:

- NACTO Urban Bikeway Design Guide, and
- ITE Designing Walkable Urban Thoroughfares: A Context Sensitive Approach

Certain design work, such as roadway design, must be completed by a licensed Professional Engineer (PE). Other design work must be completed by other professionals, such as architects or landscape architects having the appropriate licenses and certifications, as required by state statute. **Chapter III** of this LPA Guide covers the requirements associated with hiring design professionals. Any professional conducting design services for the LPA should attend the project team pre-design meeting discussed in **Chapter II**.

The LPA Project Development Checklist (PDC) and Design Review Checklist (LDRC) are explained in detail in **Chapter I**; these checklists can be found at the following links, respectively, and a copy of each is provided at the end of this chapter:

<http://transportation.ky.gov/Program-Management/Documents/LPA1%20-%20Attach%201%20-%20PDC.docx>

<http://transportation.ky.gov/Program-Management/Documents/LPA1%20-%20Attach%202%20-%20LDRC.docx>

The LDRC acts to ensure that those creating designs for construction follow the requirements set by statute and regulation; it must be completed by the LPA’s professional engineer or design consultant and submitted to the appropriate KYTC Administering Office with the complete Plans, Specifications, and Estimate (PS&E) package for review and concurrence prior to advertisement for construction bids. Concurrence with the PS&E package, LPA-PDC and the LDRC by the Administering Office is required prior to advertisement for construction bids.

**The LPA may not advertise for construction until KYTC has signed the PDC and LDRC and the LPA has received a written notice to proceed from its Administering Office. Note: Funding must always be authorized by FHWA prior to notice to proceed.**

The LPA must submit to the Administering Office the final project plans with the signed LDRC for KYTC review and approval. The Administering Office will route the LDRC to the appropriate KYTC professionals to review the design plans to ensure all requirements are met. At this time, if needed, the District LPA Coordinator will provide the plans and the encroachment permit (completed by the LPA) to the District Permits Department for review. There should always be early coordination with the District Permits Department. The LPA should work with the Administering Office to establish this coordination.

If the project affects any historic properties, the Administering Office will submit the final plans to the State Historic Preservation Officer. He/she will ensure that the designs meet all requirements relating to the historic nature of the project area.

As mentioned in other relevant sections, the final plans submittal must include:

- Right of Way lines;
- Any “no impact” letters from utility companies;
- Any right of way deeds, easements, releases;
- Completed right of way certification form; and
- Any approved deviations from the construction procurement process to allow for materials selection outside of the normal process.

The LPA should work with the Administering Office to determine what additional submittals are required during project development, such as preliminary line and grade and inspection.

## **V.2 ADA**

Section 504 of the 1973 Rehabilitation Act prohibits discrimination on the basis of disability in federally assisted programs. Section 504 requirements for USDOT administrations are covered under *49 CFR Part 27* (USDOT), Nondiscrimination on the Basis of Disability in Programs and Activities Receiving or Benefiting from Financial Assistance. The Americans with Disabilities Act (ADA, 1990, *Public Law 101-336*) is a broader civil rights statute that prohibits discrimination against people with disabilities in all areas of public life.

To ensure compliance, the LPA should reference:

- The United States Access Board’s Public Rights-of-Way Accessibility Guidelines (PROWAG) found at:  
<http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines>
- The ADA Accessibility Guidelines for Buildings and Facilities found at:  
<http://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/background/adaag>
- The KYTC Standard Drawings regarding the design elements for ADA compliant pedestrian facilities found at:  
<http://transportation.ky.gov/Highway-Design/Pages/2016-Standard-Drawings.aspx>

## **V.3. Communicating All Promises (“CAP”)**

During any phase of the project, the LPA and its representatives may make promises or commitments to citizens, government agencies, or companies. Any promises must be made with great care and documented and signed by the promisee to prevent confusion regarding the terms of the promise. The LPA should take care to make only reasonable promises; if there is any question about reasonableness, the LPA should ask the Administering Office. All promises must be incorporated into the project design plans and listed in the Bid Proposal. This ensures that the CAPs are clearly communicated to the contractor to whom the job is awarded. This is also important to the project team and LPA in keeping all CAPs on record and should help to ensure that any future maintenance personnel are aware of all CAPs.

## **V.4. Materials Provided by the LPA**

Federal law requires that materials used on the project must be selected through the construction procurement process.<sup>1</sup> If the design requires the LPA to provide materials or indicates that materials are to be obtained outside of the construction procurement process, the LPA must request that KYTC make a finding that it is in the public interest.<sup>2</sup> The LPA may make such a request by contacting its Administering Office. If KYTC makes a finding that a deviation from the construction procurement process is in the public interest, the finding may have to be approved by FHWA.

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<sup>1</sup> 23 CFR § 635.407

<sup>2</sup> 23 CFR § 635.407(a)

These approvals must be attached to the LDRC and design plans when they are submitted to the Administering Office for review. These materials and their sources should be included in the proposal to be bid on by the potential contractors discussed in **Chapter VIII**.

**V.5. Patented or Proprietary Materials**

Federal regulations also dictate that federal funds may not be used, directly or indirectly, to pay any premium or royalty on any patented or proprietary material, specification, or process outside of the construction procurement process.<sup>3</sup> This means, for example, that the design plans cannot dictate that Stanley door hinges or Elmer’s glue be used. Instead the plans must describe the characteristics of door hinges or glue that would meet the project’s needs without specifying a brand name.

If, upon request from the LPA, KYTC certifies that such an item is essential for synchronization with existing highway facilities, or that no equally suitable alternative exists, an exception may be granted. This KYTC certification must be attached to the LDRC and design plans when they are submitted to the Administering Office for KYTC review. These materials and their sources should be included in the proposal to be bid on by the potential contractors discussed in **Chapter VIII**.

*FHWA guidance regarding patented and proprietary materials can be found at the following web address:*  
<http://www.fhwa.dot.gov/construction/cqit/proprietary.cfm>

**V.6. Engineer’s Estimate**

After the design plans have been approved, the LPA must obtain an Engineer’s Estimate (“EE”) prepared by the professional who created the design plans.<sup>4</sup>

The EE is very important. The EE may be used to authorize construction funds and to evaluate bid proposals. No bid may be considered if it is 5% over the amount in the EE without approval from the Administering Office. In these cases, the LPA must contact the Administering Office to discuss why the bid is higher than the EE and to discuss funding.

If it is determined that the project will cost more than the amount of funds available, the LPA must work with the Administering Office to address the shortfall so that the entire project may be completed. If additional funding cannot be secured, the scope of the project may have to be adjusted. The LPA must work closely with the KYTC Administering Office to ensure any scope adjustments are acceptable to KYTC and FHWA.

If the bids are lower than the EE, the funding authorization may be reduced by the Administering Office to match the award amount and costs for resident inspection, if applicable. The LPA must not presume that the difference between the low bid and the EE or the difference in the low bid and the original project award amount is additional money for the LPA to use for additional project activities.

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<sup>3</sup> 23 CFR § 635.411.

<sup>4</sup> 23 CFR § 630.106(4).

Because estimating is not a perfect science, alternative bidding, discussed in **Chapter VIII** may be used to help the LPA optimize its ability complete the original project scope.

The EE must list all construction tasks and materials (“Bid Items”) and assign a cost to each. The EE bid items must contain a similar level of detail to that used in the industry, for ease of comparison with the bids. The template used to prepare the EE must be provided in the bid proposal with all quantities listed (for recommended unit price bidding, other options are discussed in **Chapter VIII**). **The EE must be kept confidential to ensure that bidders give their best price, instead of merely meeting the prices set in the EE.**<sup>5</sup>

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<sup>5</sup> KRS 176.080