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(ii) AWS D1.4/D1.4M:2011 Structural Welding Code—Reinforcing Steel, 2011.

(iii) AASHTO/AWS D1.5M/D1.5: 2015–AMD1, Bridge Welding Code, 7th Edition, Amendment: December 12, 2016.

(e) *Additional design resources.* The FHWA supports using, as design resources to achieve context sensitive designs, guides that national organizations develop from peer-reviewed research, or equivalent guides that are developed in cooperation with State or local officials, when such guides are not in conflict with Federal laws and regulations.

[62 FR 15397, Apr. 1, 1997, as amended at 67 FR 6395, Feb. 12, 2002; 69 FR 18803, Apr. 9, 2004; 71 FR 26414, May 5, 2006; 74 FR 28442, June 16, 2009; 80 FR 61307, Oct. 13, 2015; 83 FR 54880, Nov. 1, 2018; 87 FR 41, Jan. 3, 2022]

PART 626—PAVEMENT POLICY

Sec.

626.1 Purpose.

626.2 Definitions.

626.3 Policy.

AUTHORITY: 23 U.S.C. 101(e), 109, and 315; 49 CFR 1.48(b)

SOURCE: 61 FR 67174, Dec. 19, 1996, unless otherwise noted.

§ 626.1 Purpose.

To set forth pavement design policy for Federal-aid highway projects.

§ 626.2 Definitions.

Unless otherwise specified in this part, the definitions in 23 U.S.C. 101(a) are applicable to this part. As used in this part:

Pavement design means a project level activity where detailed engineering and economic considerations are given to alternative combinations of subbase, base, and surface materials which will provide adequate load carrying capacity. Factors which are considered include: Materials, traffic, climate, maintenance, drainage, and life-cycle costs.

§ 626.3 Policy.

Pavement shall be designed to accommodate current and predicted traffic needs in a safe, durable, and cost effective manner.

PART 627—VALUE ENGINEERING

Sec.

627.1 Purpose and applicability.

627.3 Definitions.

627.5 Applicable projects.

627.7 VE programs.

627.9 Conducting a VE analysis.

AUTHORITY: 23 U.S.C. 106(e), 106(g), 106(h), 112(a) and (b), 302, 315; and 49 CFR part 18.

SOURCE: 79 FR 52975, Sept. 5, 2014, unless otherwise noted.

§ 627.1 Purpose and applicability.

(a) The purpose of this part is to prescribe the programs, policies and procedures for the integration of value engineering (VE) into the planning and development of all applicable Federal-aid highway projects.

(b) Each State transportation agency (STA) shall establish and sustain a VE program. This program shall establish the policies and procedures under which VE analyses are identified, conducted and approved VE recommendations implemented on applicable projects (as defined in § 627.5 of this part). These policies and procedures should also identify when a VE analysis is encouraged on all other projects where there is a high potential to realize the benefits of a VE analysis.

(c) The STAs shall establish the policies, procedures, functions, and capacity to monitor, assess, and report on the performance of the VE program, along with the VE analyses that are conducted and Value Engineering Change Proposals (VECP) that are accepted. The STAs shall ensure that its sub-recipients conduct VE analyses in compliance with this part.

§ 627.3 Definitions.

The following terms used in this part are defined as follows:

(a) *Bridge project.* A bridge project shall include any project where the primary purpose is to construct, reconstruct, rehabilitate, resurface, or restore a bridge.

(b) *Final design.* Any design activities following preliminary design and expressly includes the preparation of final construction plans and detailed specifications for the performance of construction work.

(c) *Project*. The term “project” means any undertaking eligible for assistance under title 23 of the United States Code. The limits of a project are defined as the logical termini in the environmental document and may consist of several contracts, or phases of a project or contract, which may be implemented over several years.

(d) *Total project costs*. The estimated costs of all work to be conducted on a project including the environment, design, right-of-way, utilities and construction phases.

(e) *Value Engineering (VE) analysis*. The systematic process of reviewing and assessing a project by a multidisciplinary team not directly involved in the planning and development phases of a specific project that follows the VE Job Plan and is conducted to provide recommendations for:

(1) Providing the needed functions, considering community and environmental commitments, safety, reliability, efficiency, and overall life-cycle cost (as defined in 23 U.S.C. 106(f)(2));

(2) Optimizing the value and quality of the project; and

(3) Reducing the time to develop and deliver the project.

(f) *Value Engineering (VE) Job Plan*. A systematic and structured action plan for conducting and documenting the results of the VE analysis. While each VE analysis shall address each phase in the VE Job Plan, the level of analysis conducted and effort expended for each phase may be scaled to meet the needs of each individual project. The VE Job Plan shall include and document the following seven phases:

(1) Information Phase: Gather project information including project commitments and constraints.

(2) Function Analysis Phase: Analyze the project to understand the required functions.

(3) Creative Phase: Generate ideas on ways to accomplish the required functions which improve the project’s performance, enhance its quality, and lower project costs.

(4) Evaluation Phase: Evaluate and select feasible ideas for development.

(5) Development Phase: Develop the selected alternatives into fully supported recommendations.

(6) Presentation Phase: Present the VE recommendation to the project stakeholders.

(7) Resolution Phase: Evaluate, resolve, document and implement all approved recommendations.

(g) *Value Engineering Change Proposal (VECP)*. A construction contract change proposal submitted by the construction contractor based on a VECP provision in the contract. These proposals may improve the project’s performance, value and/or quality, lower construction costs, or shorten the delivery time, while considering their impacts on the project’s overall life-cycle cost and other applicable factors.

§ 627.5 Applicable projects.

(a) A VE analysis shall be conducted prior to the completion of final design on each applicable project that utilizes Federal-aid highway funding, and all approved recommendations shall be included in the project’s plans, specifications and estimates prior to authorizing the project for construction (as specified in 23 CFR 630.205).

(b) Applicable projects requiring a VE analysis shall include the following:

(1) Each project located on the National Highway System (NHS) (as specified in 23 U.S.C. 103) with an estimated total project cost of \$50 million or more that utilizes Federal-aid highway funding;

(2) Each bridge project located on the NHS with an estimated total project cost of \$40 million or more that utilizes Federal-aid highway funding;

(3) Any major project (as defined in 23 U.S.C. 106(h)), located on or off of the NHS, that utilizes Federal-aid highway funding in any contract or phase comprising the major project;

(4) Any project where a VE analysis has not been conducted and a change is made to the project’s scope or design between the final design and the construction letting which results in an increase in the project’s total cost exceeding the thresholds identified in paragraphs (b)(1), (2) or (3) of this section; and

(5) Any other project FHWA determines to be appropriate that utilizes Federal-aid highway program funding.

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(c) An additional VE analysis is not required if, after conducting a VE analysis required under this part, the project is subsequently split into smaller projects in the design phase or the project is programmed to be completed by the letting of multiple construction projects. However, the STA may not avoid the requirement to conduct a VE analysis on an applicable project by splitting the project into smaller projects, or programming multiple design or construction projects.

(d) The STA's VE Program's policies and procedures should identify when VE analyses are to be considered or conducted for projects falling below the required thresholds identified in paragraph (b) of this section in the planning and development of transportation projects where there is a high potential for the project to benefit from a VE analysis. While not required, FHWA encourages STAs to consider the following projects that may benefit from a VE analysis:

(1) Complex projects on or off the NHS that have a total project cost of \$25 million or more;

(2) Complex Bridge Projects on or off the NHS with an estimated total project cost of \$20 million or more;

(3) Design-build projects on or off the NHS with an estimated cost of \$25 million or more; and

(4) Any other complex, difficult or high cost project as determined by the STA.

(e) A VE analysis is not required for projects delivered using the design-build method of construction. While not required, FHWA encourages STAs and local public authorities to conduct a VE analysis on design-build projects that meet the requirements identified in paragraph (b) of this section.

(f) A VE analysis is required on projects delivered using the Construction Manager/General Contractor (CM/GC) method of contracting, if the project meets the requirements identified in paragraph (b) of this section.

§ 627.7 VE programs.

(a) The STA shall establish and sustain a VE program under which VE analyses are identified, conducted and approved VE recommendations implemented on all applicable projects (as

defined in §627.5). The STA's VE program shall:

(1) Establish and document VE program policies and procedures that ensure the required VE analysis is conducted on all applicable projects, and encourage conducting VE analyses on other projects that have the potential to benefit from this analysis;

(2) Ensure the VE analysis is conducted and all approved recommendations are implemented and documented in a final VE report prior to the project being authorized to proceed to a construction letting;

(3) Monitor and assess the VE Program, and disseminate an annual report to the FHWA consisting of a summary of all approved recommendations implemented on applicable projects requiring a VE analysis, the accepted VECPs, and VE program functions and activities;

(4) Establish and document policies, procedures, and contract provisions that identify when VECP's may be used; identify the analysis, documentation, basis, and process for evaluating and accepting a VECP; and determine how the net savings of each VECP may be shared between the agency and contractor;

(5) Establish and document policies, procedures, and controls to ensure a VE analysis is conducted and all approved recommendations are implemented for all applicable projects administered by local public agencies; and ensure the results of these analyses are included in the VE program monitoring and reporting; and

(6) Provide for the review of any project where a delay occurs between when the final plans are completed and the project advances to a letting for construction to determine if a change has occurred to the project's scope or design where a VE analysis would be required to be conducted (as specified in §625.5(b)).

(b) STAs shall ensure the required VE analysis has been performed on each applicable project including those administered by subrecipients, and shall ensure approved recommendations are implemented into the

project's plans, specifications, and estimates prior to the project being authorized for construction (as specified in 23 CFR 630.205).

(c) STAs shall designate a VE Program Coordinator to promote and advance VE program activities and functions. The VE Coordinator's responsibilities should include establishing and maintaining the STA's VE policies and procedures; facilitating VE training; ensuring VE analyses are conducted on applicable projects; monitoring, assessing, and reporting on the VE analyses conducted and VE program; participating in periodic VE program and project reviews; submitting the required annual VE report to the FHWA; and supporting the other elements of the VE program.

§ 627.9 Conducting a VE analysis.

(a) A VE analysis should be conducted as early as practicable in the planning or development of a project, preferably before the completion of the project's preliminary design. At a minimum, the VE analysis shall be conducted prior to completing the project's final design.

(b) The VE analysis should be closely coordinated with other project development activities to minimize the impact approved recommendations might have on previous agency, community, or environmental commitments; the project's scope or schedule; and the use of innovative technologies, materials, methods, plans or construction provisions.

(c) When the STA or local public agency chooses to conduct a VE analysis for a project utilizing the design-build project delivery method, the VE analysis should be performed prior to the release of the final Request for Proposals or other applicable solicitation documents.

(d) For projects delivered using the CM/GC contracting method, a VE analysis is not required prior to the preparation and release of the RFP for the CM/GC contract. The VE analysis is required to be completed and approved recommendations incorporated into the project plans prior to requesting a construction price proposal from the CM/GC contractor.

(e) STAs shall ensure the VE analysis meets the following requirements:

(1) Uses a multidisciplinary team not directly involved in the planning or design of the project, with at least one individual who has training and experience with leading VE analyses;

(2) Develops and implements the VE Job Plan;

(3) Produces a formal written report outlining, at a minimum:

(i) Project information;

(ii) Identification of the VE analysis team;

(iii) Background and supporting documentation, such as information obtained from other analyses conducted on the project (e.g., environmental, safety, traffic operations, constructability);

(iv) Documentation of the stages of the VE Job Plan which would include documentation of the life-cycle costs that were analyzed;

(v) Summarization of the analysis conducted;

(vi) Documentation of the proposed recommendations and approvals received at the time the report is finalized; and

(vii) The formal written report shall be retained for at least 3 years after the completion of the project.

(f) For bridge projects, in addition to the requirements in subsection (e), the VE analyses shall:

(1) Include bridge substructure and superstructure requirements that consider alternative construction materials; and

(2) Be conducted based on:

(i) An engineering and economic assessment, taking into consideration acceptable designs for bridges; and

(ii) An analysis of life-cycle costs and duration of project construction.

(g) STAs and local public agencies may employ qualified consultants (as defined in 23 CFR 172.3) to conduct a VE analysis. The consultant shall possess training and experience with leading VE analyses. A consulting firm or individual shall not be used to conduct or support a VE analysis if they have a conflict of interest (as specified in 23 CFR 1.33).

(h) STAs, and local public agencies are encouraged to use a VECP clause (or other such clauses under a different

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name) in an applicable project's contract, allowing the construction contractor to propose changes to the project's plans, specifications, or other contract documents. Whenever such clauses are used, the STA and local authority will consider changes that could improve the project's performance, value and quality, shorten the delivery time, or lower construction costs, while considering impacts on the project's overall life-cycle cost and other applicable factors. The basis for a STA or local authority to consider a VECP is the analysis and documentation supporting the proposed benefits that would result from implementing the proposed change in the project's contract or project plans.

(i) Proposals to accelerate construction after the award of the contract will not be considered a VECP and will not be eligible for Federal-aid highway program funding participation. Where it is necessary to accelerate construction, STAs and local public agencies are encouraged to use the appropriate incentive or disincentive clauses so that all proposers will take this into account when preparing their bids or price proposals.

PART 630—PRECONSTRUCTION PROCEDURES

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AUTHORITY: 23 U.S.C. 106, 109, 112, 115, 315, 320, and 402(a); Sec. 1110, 1501, and 1503 of Pub. L. 109–59, 119 Stat. 1144; Pub. L. 105–178, 112 Stat. 193; Pub. L. 104–59, 109 Stat. 582; Pub. L. 97–424, 96 Stat. 2106; Pub. L. 90–495, 82 Stat. 828; Pub. L. 85–767, 72 Stat. 896; Pub. L. 84–627, 70 Stat. 380; 23 CFR 1.32 and 49 CFR 1.81 and 1.85, and Pub. L. 112–141, 126 Stat. 405, sections 1303 and 1405.

Subpart A—Project Authorization and Agreements

SOURCE: 66 FR 23847, May 10, 2001, unless otherwise noted.