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### 305.01 Introduction

This chapter outlines the principles and methodology adopted by the Washington State Department of Transportation (WSDOT) for successful project management. WSDOT's project management process is the standard practice adopted by the department to manage projects, and it provides a method to meet WSDOT's management principles. This chapter focuses on preconstruction activities such as cost estimating, risk management, task planning, schedule development, and budgeting, as well as managing scope, schedule, and budget.

The WSDOT Secretary's Executive Orders 1028, 1032, 1038, and 1053 were issued to ensure a consistent process for context sensitive solutions (CSS), design project management, and risk-management statewide.

Secretary's Executive Order E 1090, Moving Washington Forward: Practical Solutions, directs employees to implement least cost planning and practical design principles throughout all phases of project delivery. One of the primary objectives is to do more projects, and address more problems, more quickly. This supplements Secretary's Executive Order E 1082, Business Practices for Moving Washington, which established the expectation that decision-making will be sustainable and cost-effective, in support of our economy, environment, and communities. Links to these polices are provided in the References section below. (See [Chapter 1100](#) for more information on practical design.)

WSDOT's project management process includes "best management practices" and the tools, templates, examples, and guidance necessary to successfully deliver Capital Transportation projects. The process will enhance communications when designers hand off projects to construction project management.

Following are brief discussions about and links to other WSDOT project development resources. These include technical manuals, research reports, and online design-related websites.

### 305.02 References

#### 305.02(1) *Federal/State Laws and Codes*

[23 United States Code \(USC\) 106](#), Project approval and oversight

### 305.02(2) WSDOT Policies

Directives, Executive Orders, Instructional Letters, Manuals, and Policy Statements

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/default.htm>

Executive Order E 1028, Context Sensitive Solutions

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/1028.pdf>

Executive Order E 1032, Project Management

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/1032.pdf>

Executive Order E 1038, Enterprise Risk Management

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/1038.pdf>

Executive Order E 1053, Project Risk Management and Risk Based Estimating

🔗 [www.wsdot.wa.gov/publications/fulltext/cevp/1053policy.pdf](http://www.wsdot.wa.gov/publications/fulltext/cevp/1053policy.pdf)

Executive Order E 1090, Moving Washington Forward: Practical Solutions

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/1090.pdf>

Executive Order E 1096, WSDOT 2015–17: Agency Emphasis and Expectations

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/1096.pdf>

Executive Order E 1082, Business Practices for Moving Washington

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/1082.pdf>

Instructional Letter IL 4071, Risk-Based Project Estimates for Inflation Rates, Market Conditions, and Percentile Selection

🔗 <http://wwwi.wsdot.wa.gov/publications/policies/fulltext/4071.pdf>

Project Delivery Memos

🔗 [www.wsdot.wa.gov/design/projectdev/memos.htm](http://www.wsdot.wa.gov/design/projectdev/memos.htm)

### 305.03 Definitions

For a complete glossary of project management terms, see:

🔗 [www.wsdot.wa.gov/publications/fulltext/projectmgmt/pmog/pm\\_glossary.pdf](http://www.wsdot.wa.gov/publications/fulltext/projectmgmt/pmog/pm_glossary.pdf)

For a complete glossary of cost estimating and risk assessment terms, see:

🔗 <http://www.wsdot.wa.gov/nr/rdonlyres/d10b9b96-9c03-479c-8b52-17ff7bff9a0f/0/glossaryofterms.doc>

For cost estimating definitions, see:

🔗 [www.wsdot.wa.gov/publications/manuals/m3034.htm](http://www.wsdot.wa.gov/publications/manuals/m3034.htm)

### 305.04 Design Project Management Overview

WSDOT's project management process provides the framework for project managers to deliver projects on time and within scope and budget. WSDOT employs a number of tools to manage projects effectively and efficiently.

## 305.04(1) Project Management Process

### 305.04(1)(a) Overview

For an overview of project management, with links to the WSDOT project management process for delivering the WSDOT Capital Construction Program, see the following website:

🔗 [www.wsdot.wa.gov/projects/projectmgmt](http://www.wsdot.wa.gov/projects/projectmgmt)

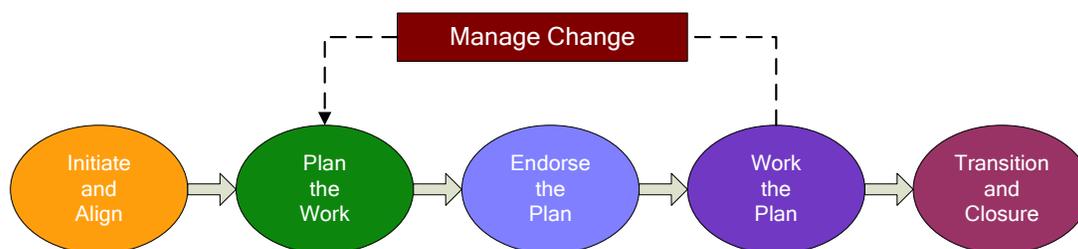
Exhibit 305-1 shows the five steps in the project management process used to deliver Capital Transportation projects. The following link takes you to a table with a more detailed description of the five steps: 🔗 [www.wsdot.wa.gov/nr/rdonlyres/a76c71ef-c926-4a13-9615-c9f341f3baaf/0/wsdotproj\\_mgmt\\_process.pdf](http://www.wsdot.wa.gov/nr/rdonlyres/a76c71ef-c926-4a13-9615-c9f341f3baaf/0/wsdotproj_mgmt_process.pdf)

### 305.04(1)(b) Design Process Deliverables

The following website will take you to the Deliverable Expectation Matrix, which identifies the appropriate design process deliverable cells in the Master Deliverables List (see 305.04(2)(b)):

🔗 [www.wsdot.wa.gov/publications/fulltext/design/demintro.pdf](http://www.wsdot.wa.gov/publications/fulltext/design/demintro.pdf)

#### Exhibit 305-1 WSDOT Project Management Process



## 305.04(2) Project Management Tools

### 305.04(2)(a) Project Management and Reporting System (PMRS)

The PMRS is a tool for effective and efficient management of design project schedules, resources, and costs. The following website provides tools for project planning, work breakdown structure (WBS) development, scheduling, and resource and cost management:

🔗 <http://wwwi.wsdot.wa.gov/planning/cpdm/pmrs.htm>

### 305.04(2)(b) WSDOT's Master Deliverables List (MDL)

The Master Deliverables List (MDL) is a comprehensive listing of project elements. This list is agreed upon across WSDOT and is intended as a starting point for the creation of the project Work Breakdown Structure (WBS) and to ensure:

- All appropriate project elements are included in the project management plan and schedule.
- The MDL activity codes, related titles, and descriptions provide a common vocabulary across all projects and between project teams, region and Headquarters (HQ) management, and specialty/support groups.

For additional information, see:

🔗 [www.wsdot.wa.gov/projects/projectmgmt/masterdeliverables.htm](http://www.wsdot.wa.gov/projects/projectmgmt/masterdeliverables.htm)

## 305.05 Cost Estimating for Design Project Development

Cost estimating guidance has been developed by the Strategic Assessment and Estimating Office (SAEO) and WSDOT Project Development.

### 305.05(1) Project Phases

There are four main phases or levels of design project development:

- Planning
- Scoping
- Design
- Plans, Specifications, and Estimates (PS&E)

The estimate for each level of project development has a specific purpose, methodology, and expected level of accuracy. As the project progresses, more data are available and the expected accuracy range narrows. For more information, see the [Cost Estimating Manual for WSDOT Projects](#).

#### 305.05(1)(a) Planning

The planning-level estimate is used to estimate the funding needs for long-range planning and to prioritize needs for the Highway System Plan. These estimates are typically prepared with little project definition detail.

#### 305.05(1)(b) Scoping

A scoping-level estimate is used to set the baseline cost for the project and to program the project. A project is programmed when it is entered into the Capital Improvement and Preservation Program (CIPP) and the Biennial Transportation Program. The scoping estimate is important because it is the baseline used by the Legislature to set the budget, and all future estimates will be compared against it.

#### 305.05(1)(c) Design

Estimates prepared at the various design levels, including Geometric Review, General Plans Review, and Preliminary Contract Review, are used to track changes in the estimated cost to complete the project in relation to the current budget (CIPP or “Book” amount).

Design Approval is an important stage of design for estimating purposes. At Design Approval, the configuration of the project is known. This will solidify many items in the scope, such as right of way needs, likely permit conditions, environmental mitigation, quantities of major items, and outside stakeholders. As scope definition improves, the accuracy of the estimate will likewise improve. The work effort required to prepare, document, and review the estimate also increases.

An important element of the project is the Basis of Estimate (BOE). The BOE is a documented record of pertinent communications that have occurred and agreements that have been made between the estimator and other project stakeholders. The BOE, which is to be included in the Project File, is characterized as *the one deliverable that defines the scope of the project, and it ultimately becomes the basis for change management*. For guidance in developing the BOE, and a template to help in its preparation, see the [Cost Estimating Manual for WSDOT Projects](#).

**305.05(1)(d) PS&E**

The Engineer's Estimate (part of PS&E) is prepared for the Final Contract Review in preparation for advertisement, and it is used to obligate construction funds and evaluate contractors' bids.

**305.05(2) Risk Management**

Project risks can be "opportunities" (positive events) as well as "threats" (negative events) that might affect scope, schedule, or budget. Risk assessment is the first phase of project risk management. Its purpose is to maximize the results of positive events and minimize the consequences of adverse events. For more information on risk assessment, see:

 [www.wsdot.wa.gov/projects/projectmgmt/riskassessment/](http://www.wsdot.wa.gov/projects/projectmgmt/riskassessment/)

**305.05(2)(a) Design Project Risk Management Process****305.05(2)(a)(1) Risk Management Planning**

Using a systematic process, determine how to approach, plan, and execute risk management activities throughout the life of a design project.

**305.05(2)(a)(2) Identify Risk Events**

Determine which risks might affect the design project and document their characteristics. It may be a simple risk assessment organized by the design project team or an outcome of the Cost Estimate Validation Process/Cost Risk Assessment workshop process.

**305.05(2)(a)(3) Qualitative Risk Analysis**

Assess the impact and likelihood of the identified risk and develop prioritized lists of these risks for further analysis or direct mitigation. The design team should elicit assistance from subject matter experts or functional units to assess the risks in their respective fields.

**305.05(2)(a)(4) Quantitative Risk Analysis**

Numerically estimate the probability that the design project will meet its cost and time objectives. Quantitative analysis is based on a simultaneous evaluation of the impacts of all identified and quantified risks.

**305.05(2)(a)(5) Risk Response Planning**

Develop options and determine actions to enhance opportunities and reduce threats to the design project's objectives.

**305.05(2)(a)(6) Risk Monitoring and Control**

Track and monitor the impact of identified risks, monitor residual risks, and identify new risks, ensuring the execution of risk plans, and evaluate their effectiveness in reducing risk or enhancing opportunities. Risk Monitoring and Control is an ongoing process for the life of the design project.

For more information on risk planning and risk management, see:

 [www.wsdot.wa.gov/publications/fulltext/cevp/projectriskmanagement.pdf](http://www.wsdot.wa.gov/publications/fulltext/cevp/projectriskmanagement.pdf)

### 305.05(2)(b) Inclusion of Formal Project Risk Assessment: CRA, CEVP, VERA

WSDOT policy requires a Cost Risk Assessment (CRA) for projects over \$25 million and a Cost Estimate Validation Process (CEVP) for projects over \$100 million. Both of these processes include an estimate review.

Value Engineering Methodology may be combined with any risk assessment for use in project evaluation. Value Engineering Risk Assessment (VERA) is a process that combines both Value Engineering Methodology and the tools and procedures of Cost Risk Assessment. The VERA process is used when accelerated project delivery is desired along with minimizing and/or mitigating quantified risks.

It is recommended that all projects undergo at least an internal project team review for each estimate update.

- Consider a peer review or region review for each estimate that is complex or includes significant changes to scope or design development.
- Consider a region/HQ or external estimate review for all projects over \$10 million or for projects that are complex during the design phase.

Document each estimate review in the Project File, and clearly show any changes made to the estimate as a result of the review.

Refer to the *Project Risk Management Guide* for more information about risk, CRAs, and CEVPs:  
[www.wsdot.wa.gov/projects/projectmgmt/riskassessment/default.htm](http://www.wsdot.wa.gov/projects/projectmgmt/riskassessment/default.htm)

### 305.06 Value Engineering

Value engineering (VE) is a systematic process that uses a team chosen from a variety of disciplines to improve the value of a project through the analysis of its functions. The VE process incorporates, to the greatest extent possible, the values of design; construction; maintenance; contractor; state, local and federal approval agencies; other stakeholders; and the public.

For additional information about value engineering, see [Chapter 310](#).

### 305.07 Context Sensitive Solutions (CSS)

Context Sensitive Solutions is a model for transportation project development that considers the total context of a transportation project. CSS is a collaborative, interdisciplinary, holistic approach to the development of transportation projects. It is both process and product, characterized by a number of attributes. It involves all stakeholders, including community members, elected officials, interest groups, and affected local, state, and federal agencies. CSS supports practical design, helping all parties understand context, design considerations, and trade-offs in decision-making. Often associated with design in transportation projects, CSS should be a part of all phases of program delivery, including long-range planning, programming, environmental studies, design, construction, operations, and maintenance.

Essentially, the CSS approach is that transportation projects must be designed for the physical aspects of facilities serving specific transportation objectives, as well as for a project's effect on the aesthetic, social, economic, and environmental needs and constraints.

Key issues for designers may include:

- Access management
- Urban median design
- Bike and pedestrian access and safety
- Streetscaping
- Transit and freight
- Traffic calming
- Business access
- Operational intent of the facility
- Urban forestry

For guidance on incorporating Context Sensitive Design, see:

🔗 [www.wsdot.wa.gov/design/policy/csdesign](http://www.wsdot.wa.gov/design/policy/csdesign)

## 305.08 Additional Design Resources

### 305.08(1) Technical Manuals

There are many WSDOT technical manuals used in project development. Links to the most recent versions are available at the Publications Services Index website:

🔗 [www.wsdot.wa.gov/publications/manuals/index.htm](http://www.wsdot.wa.gov/publications/manuals/index.htm)

### 305.08(2) Administrative Manuals

Some administrative manuals (such as the *Agreements Manual*) are used in project development. These manuals are available on WSDOT's internal Administrative Manuals website: 🔗 <http://wwwi.wsdot.wa.gov/publications/manuals/>

### 305.08(3) Transportation Research and Reports

The following WSDOT Research websites may be of interest during project development:

*Understanding Flexibility in Transportation Design – Washington* guidance manual:

🔗 [www.wsdot.wa.gov/research/reports/600/638.1.htm](http://www.wsdot.wa.gov/research/reports/600/638.1.htm)

Transportation Research home page: 🔗 [www.wsdot.wa.gov/research/](http://www.wsdot.wa.gov/research/)

Research Reports Index: 🔗 [www.wsdot.wa.gov/research/reports](http://www.wsdot.wa.gov/research/reports)

### 305.08(4) Online Design Guidance

The WSDOT Design Support website contains the DDP and Project File Checklists, Basis of Design and instructions, Design Parameters and Criteria worksheets:

🔗 <http://www.wsdot.wa.gov/Design/Support.htm>

The WSDOT Development Division's website provides links to various design and PS&E-related resources and contacts: 🔗 [www.wsdot.wa.gov/design/](http://www.wsdot.wa.gov/design/)

The Project Development home page is a design-related resource:

🔗 [www.wsdot.wa.gov/design/projectdev/](http://www.wsdot.wa.gov/design/projectdev/)

**305.08(5) Project Management Online Guide**

The WSDOT Project Management Online Guide (PMOG) is an interactive website that includes links to project management tools and templates, to manuals and specifications, and examples of good practice:

🔗 [www.wsdot.wa.gov/projects/projectmgmt/onlineguide/preconstruction.htm](http://www.wsdot.wa.gov/projects/projectmgmt/onlineguide/preconstruction.htm)

**305.08(6) Project Management and Reporting System (PMRS) Web Portal**

WSDOT implemented the Project Management and Reporting System (PMRS) to assist with managing and reporting the status of capital transportation projects. PMRS provides WSDOT project managers with current business practices and integrated tools to assist with making good decisions on management of project scope, schedule, and cost.

🔗 <http://wwwi.wsdot.wa.gov/planning/cpdmo/pmrs.htm>