

CHAPTER 2

SCOPE PROCESS AND PROJECT MANAGEMENT

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INTRODUCTION

The South Dakota Department of Transportation (SDDOT) is an active member of American Association of State Highway and Transportation Officials (AASHTO) to share common national design standards for the state highway system. The AASHTO Technical Committee on Geometric Design publishes the document *A Policy on Geometric Design of Highways and Streets*. The current edition of *A Policy on Geometric Design of Highways and Streets* and other design guidance as listed below, but not limited to, shall be referenced for design standard guidance when establishing project criteria if this manual does not provide guidance in a particular design area.

- *AASHTO - LRFD Bridge Design Specifications*
- *Highway Capacity Manual*
- *AASHTO Roadside Design Guide*
- *Highway Safety Manual*
- *Manual on Uniform Traffic Control Devices (MUTCD)*
- *AASHTO - Guide for the Development of Bicycle Facilities*
- *AASHTO - A Policy on Design Standards—Interstate System*
- *AASHTO - Roadway Lighting Design Guide*
- 23 C.F.R. 625
- Policy Number [DOT-P&E-PD-6.0, Definition and Standards for Construction/Reconstruction, Resurfacing, Restoration and Rehabilitation of Highways and Bridges under State Jurisdiction](#)

In order to economize major highway construction projects in South Dakota, a formal process to establish the proper scope for these projects should follow this chapter.

This process addresses the purpose and needs of the highway as well as identifies work centers involved in the design process, maintains consistency across the state, provides more accurate cost estimates, and utilizes the available funding in the most effective manner possible. The process should be applied to all pertinent projects to be entered into the Statewide Transportation Improvement Program (STIP).

The Approved Scope is the resulting detailed document used to describe a project's type of work, limits of work and the appropriate design standards to complete the project's construction plans as well as determining the project's schedule and cost estimate. The scope document is created through the SDDOT "Concept to Contract (C2C)" computer application.

PROJECT IDENTIFICATION/SCOPE PROCESS

The need for a project can be identified by a combination of management systems, department personnel, and public input. The “Concept” of a project should include the proposed project limits, work type, and potential impacts.

Scope Document Details

The scope document will define the purpose and need of the project while outlining the existing characteristics along with projected conditions of roadway elements. If the project is scoped after it has been added to the STIP, the author will verify the project elements.

The Scope will consist of the following:

- Executive Summary – General summary of the project
- Project Characteristics – Notes the project as identified in the STIP, identifies any additional studies or outside resources, environmental impacts, utility impacts, agreements or resolutions needed, survey needs, and construction sequencing.
- Background Information – Old plans, other projects in the STIP, traffic data, crash data, roadway characteristics, structure information, lighting/signal/intersection data, and excluded elements.
- Proposed Project Information – Includes the various types and appropriate design standards for work which may be included in a project such as: ADA, grading, hydraulic, structures, resurfacing/surfacing, roadside development, ROW, safety, and traffic
- Appendix – Location for additional information or reports
- Sign Off – Section of the scope where the scope is signed by the appropriate regions, area, or program.
- Design Exception – If a design exception is determined to be applicable for a project.

Draft Scope

During the development of the Draft Scope or project “Concept”, the recommendations from appropriate managers of the following management systems must be included for analysis:

- Bridge Management
- Pavement Management
- Highway Capacity
- Highway Safety
- Culvert Management
- Roadway Lighting
- Traffic Signals
- Guardrail System
- Planning Studies (normally capacity related)
- Etc.

The purpose of the draft scope is to combine background information on the roadway segment and begin to build the purpose and need of the project. The background information for roadway and elements will be completed along with recommendations from the appropriate management systems. Once this is done, all potential options are listed with pros and cons associated with each option for each need. Typical needs and appropriate improvement types associated with South Dakota highways are listed in the Proposed Project Information tab of the C2C scoping module for each project.

The draft scope may be sent to stakeholders and/or a Project Kick-off meeting may be conducted if the project is anticipated to reconstruct the roadway or for special projects. Their review at this stage is to provide additional possible options before proceeding on to the next step.

Proposed Scope

The proposed scope identifies the purpose and need of the project as identified by the author. The proposed scope will include the background information along with proposed improvements to the roadway facility. The improvements will fit the purpose and need of the project.

The author will review and make recommendations on improvements to the route which meet all pertinent state policy, federal, and design manual requirements. If elements of the roadway facility do not meet design standards, the author should review the feasibility and reasonability of making improvements. If, through their analysis, modifications are neither feasible nor reasonable the author should draft a design exception. If the element which is being excepted is on the NHS and inclusive of the Ten Controlling Criteria, the design exception will require FHWA approval on all Interstate projects and Projects of Division Interest (PODI). The process for developing a design exception is explained under the section of this chapter labeled “Design Exceptions”

The author will determine if a public meeting in accordance with the public involvement policy is needed for the project including, but not limited to, the following:

- Impacts to adjacent properties
- Modification of lane configuration
- Environmental Impacts
- Informal Public Input which could impact the scope of work

Recommended Scope

The recommended scope is the “final draft” version of the scope document submitted for the approval of required department personnel. By this point in the scoping process, all scope review comments received from department personnel, public, FHWA and other stakeholders will be addressed.

Approved Scope

The approved scope is the final scope document issued by the department. All comments from previous versions of the scope have been addressed and its purpose is to guide the designer. If modifications are needed to the project after the scope has been approved, a scope amendment is to be completed.

Signing/Approving of Scopes

The scope will be approved by the appropriate stakeholders during the recommended scope phase. The stakeholders consist of the design offices, areas, and regions. If agreement on the scope cannot be met by any entity, the Planning & Engineering and Operations Division Directors can approve or require modifications on their behalf.

Distribution of the Scope

The scope will be sent to all programs within the Division of Planning & Engineering, the appropriate area and region offices, and to the FHWA, on projects environmentally classified as a CE2 or CE3 and all federal Projects of Division Interest (PODI),. Each program, area, or region should make the scope available to appropriate personnel within their office to solicit comments.

Scope Amendment

A scope amendment is to be issued on an approved scope if, through the design process or development of new information, work has either been revised, added or removed from the project which impacts the purpose and need, cost, schedule, environment, or involved work centers. The scope amendment will be approved by all impacted design offices, area, region, and Project Development.

There are two types of Scope Amendments:

1. Formal Scope Amendments require approval from Scope Approvers and affected offices, examples include:
 - a. Addition of work requiring a work center not previously involved based on the Approved Scope; such as adding Structure or RCBC replacement, Signals, Lighting, etc.
 - b. Major changes to the project limits; as would be the case if absorbing another segment or project
 - c. Changes to the project scope which require rescheduling and change of programmed fiscal years

2. Informational Scope Amendments do not require approval but are shared with Project Stakeholders, examples include:
 - a. Clarification of items already included in scope; such as if an Approved Scope referred to replacing most roadway lighting in a segment and reusing a number of light poles, but during Preliminary Design Inspection it is determined to replace all light poles.
 - b. Minor changes to project limits; such as excluding a small segment or adding a surfacing exception.
 - c. Quite often scope changes will be discussed in meetings involving all Project Stakeholders. In this case Informational Scope Amendments may be used for more major changes when those changes have been discussed and agreed upon in person and/or in a group/meeting format.

DESIGN STANDARDS

The design standards for each project will be dictated by the anticipated improvements. Unless stated otherwise, the standards in the Road Design Manual are for reconstruction or 4R projects. Design criteria for other improvements can be found in DOT policy PE 6.0, as identified in the appendix. If a design criterion is not specifically addressed in the Road Design Manual, reference should be made to the appropriate AASHTO Design Manual as noted in the introduction of this chapter.

The decision tree in Figure 2-1 is intended to guide the author in selecting the appropriate design standards for various improvements.

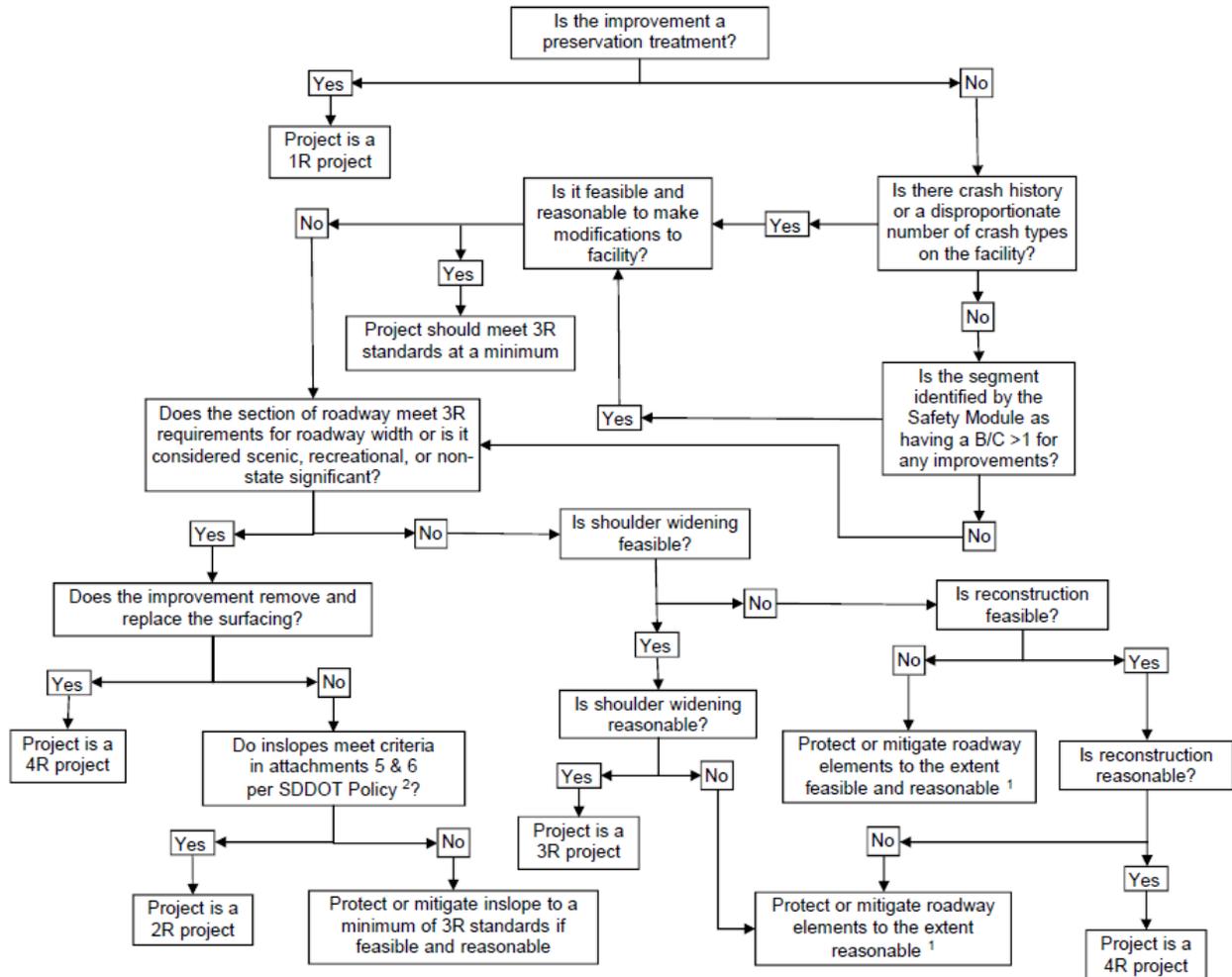
Design Speed

Design Speed is the selected speed used to determine the various geometric design features of the highway. The selected design speed should be a logical one with respect to the topography, anticipated operating speed, the adjacent land use, and the functional classification of the highway. In selection of design speed, every effort should be made to attain a desired combination of safety, mobility, and efficiency within the constraints of environmental quality, economics, aesthetics, and social or political impacts. Once the design speed is selected, all of the pertinent highway features should be related to it to obtain a balanced design.

For reconstruction/construction of high-speed (≥ 55 mph) rural and/or urban highways the design speed selected should generally be 5 mph greater than the posted speed (typically 85th percentile of the operating speed). However the design speed may be set equal to the posted speed based on the following.

- Cost – If a higher design speed causes extreme excavation or results in significant impacts to adjacent property and increased right-of-way acquisition
- Environment – If a higher design speed causes significant impacts to the surrounding environment

For reconstruction/construction of intermediate (45 to 50 mph) and low speed (≤ 40 mph) urban highways the design speed selected may be equal to or 5 mph greater than the posted speed. For example, in areas where it is anticipated that the posted speed will be lowered in the future based on development and increased traffic volumes, the design speed selected may be set equal to the current posted speed.



¹ Mitigation of roadway elements should meet a minimum of 3R standards

² SDDOT policy "Definition and Standards for Construction/Reconstruction, Resurfacing, Restoration and Rehabilitation of Highways and Bridges under State Jurisdiction"

Figure 2-1 Design Standards Flow Chart

DESIGN EXCEPTIONS

Introduction

Designers and engineers are faced with many complex tradeoffs when designing transportation facilities. A good design balances cost; safety; mobility; social, natural and environmental impacts; and the needs of a wide variety of roadway users.

Highway design criteria that have been established through years of practice and research, form the basis by which designers achieve this balance. These criteria are expressed as minimum dimensional values or ranges of values for various elements of the three-dimensional design features of the highway. The criteria are intended to deliver an acceptable, cost-effective level of performance (traffic operations, safety, maintainability, and constructability). The criteria are updated and refined as research and experience increase knowledge in the fields of highway engineering, traffic operations, and safety.

Designers are trained to use accepted design criteria throughout the project development process. Striving to meet design criteria is important because it is the primary means by which a high-quality roadway will be produced. A highway or roadway that reflects full compliance with accepted design criteria decreases the probability that safety or traffic operational problems will develop. Thus, using design values that lie within typical ranges provides for a high degree of quality control and reduced risk.

It must be recognized, however, that to achieve the balance described above, it is not always possible or practical to meet design criteria. There are a wide variety of site-specific conditions and constraints that designers encounter. Roadways have a multitude of contexts. Establishing design criteria that cover every possible situation, each with a unique set of constraints and objectives, is not possible. On occasion, designers encounter situations for which the appropriate solution may suggest that using a design value or dimension outside the normal range of practice is necessary. Arriving at this conclusion requires the designer to understand how design criteria affect safety and operations. For many situations, there is sufficient flexibility within the design criteria to achieve a balanced design and still meet minimum values. However, when this is not practical, a design exception should be considered.

The National Highway System

The NHS includes the Interstate system and other routes that are principal arterials serving major travel destinations, highways that provide an important function for national defense, and highways that provide connections to other intermodal transportation facilities.

By federal regulation, FHWA is responsible for establishing design standards on the NHS (23 CFR 625) and has adopted several American Association of State Highway and Transportation Officials (AASHTO) publications as the minimum design criteria for the NHS.

Design exceptions are required on any project on the NHS when design values are used that do not meet the Controlling Criteria. FHWA has developed specific guidance on what constitutes the need for a design exception, and how design exceptions are to be studied, documented, and approved. This guidance addresses FHWA requirements for design exceptions. For additional information on FHWA's requirements, see the Guidance on NHS Design Standards and Design Exceptions: at <http://www.fhwa.dot.gov/design/standards/qa.cfm>. An Environmental Impact review is needed for all design exceptions on NHS projects.

Non-NHS Highways

Non-NHS projects are designed, constructed, operated, and maintained in accordance with State laws, regulations, directives, and design and construction standards. Therefore, there is no federal requirement for design exceptions on highways and streets that are not part of the NHS, regardless of funding source. However, States are encouraged to analyze situations and document exceptions on non-NHS routes in a similar fashion when design values are used that do not meet their adopted criteria.

Design Exceptions

Design Exceptions are required when any one of the Ten (10) Controlling Criteria is not met.

- 1) Design Speed
- 2) Lane Width
- 3) Shoulder Width
- 4) Horizontal Curve Radius
- 5) Superelevation Rate
- 6) Maximum Grade
- 7) Stopping sight distance (SSD)
- 8) Cross slope
- 9) Vertical Clearance
- 10) Design Loading Structural Capacity

Design decision making, and approval authority varies based on ownership of the highway in question and its functional role or classification within the nation's highway system. Broadly, roads can be considered part of the National Highway System (NHS) or other (non-NHS). Design exceptions on the Interstate and for plans, specifications and estimates, that were designated as PODI under the current Federal Oversight Agreement must be reviewed and approved by the FHWA. On routes that are not designated as PODI, the State will still follow the Design Exception process for any one of the 10 Controlling Criteria. In addition FHWA reduced the number of controlling criteria to two (2) on low speed highways (i.e. non-freeways with <50 mph design speed), however the State will utilize the 10 Controlling Criteria for design exceptions regardless of design speed.

Design Deviations

For those design deviations not part of 10 Controlling Criteria (e.g. clear zone, lateral offset) appropriate documentation/justification shall be provided by the Transportation Planning Engineer (TPE) or Design Engineer with approval provided by the office Program Manager. The documentation/justification will be included as part of the scope and/or project document folder. FHWA approval is not needed for design deviations. The design deviations documentation approved by the Program Manager should be sent to the FHWA Operations Engineer for their information on all Interstate projects and PODI.

DESIGN EXCEPTION APPROVAL PROCESS

A design exception is required whenever the minimum standards for the Controlling Criteria specified for the different categories of construction projects (i.e., 4R, 3R, Special Facilities, Road Design Manual, Local Roads Plan, Bicycle Facilities, etc.) are not met.

In order to evaluate whether a design exception is warranted, both the feasibility and reasonability should be reviewed for consideration.

Feasibility is a review of whether modifications can be made to the facility considering the surrounding topography, social and environmental impacts, and future maintenance. The *AASHTO Highway Safety Manual* should be used to compare the existing and future crash frequency with and without the modifications. Consultation with the department's Traffic and Safety Engineer should be done to verify crash potential.

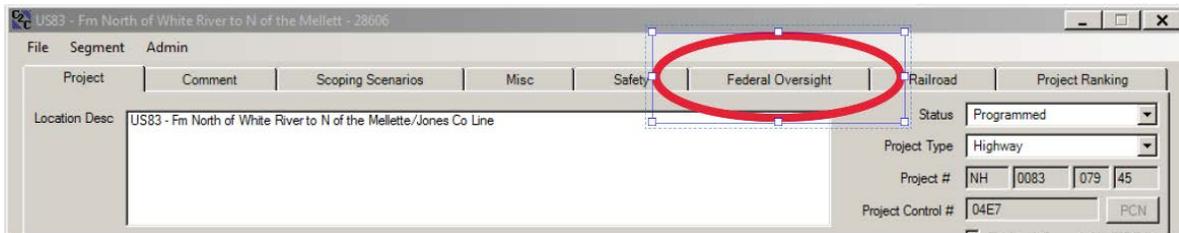
Reasonability is based on engineering judgment and cost benefit analysis of modifications outside of the pavement surface. Based on the existing and potential crash frequency, the engineer should consult with the department's Traffic and Safety Engineer to identify life cycle cost benefit of such modifications. Engineering judgment should be exercised when considering the function of the facility, traffic mix, traffic volume, and route continuity.

Exceptions to design standards should be first discussed at project scoping, project team meetings, or during reconnaissance studies. When enough data is available, agreement on standards and from which standards to request exceptions should be reached at these meetings. Requests for design exception require justification. Some considerations which **may** cause a request for an exception to the design standards are listed below:

- Excessive construction cost or cost/benefit
- Compatibility with adjacent sections
- No plans for improvement of adjacent sections in the foreseeable future
- Proposed improvements or changes in standards for the highway corridor
- Preservation of historic property or scenic value
- Additional right of way requirements
- Environmental impacts
- Low crash history and/or crash potential
- Low traffic volumes

Simply making a request for a design exception is not assurance that the request will be granted. Therefore, early submittal of the request is paramount to a smooth design process.

Design Exceptions for Interstate projects and projects selected as PODI by FHWA shall be submitted to the responsible FHWA Operations Engineer for review and approval, following DOT approvals by the responsible Program Manager or Region Engineer and the Project Development Engineer. Determination of whether a project has been chosen as a PODI by FHWA is possible by looking the project up in C2C software application as shown here:



or by using [Project Search on SDDOT Intranet](#) as shown on below:



The responsible Program Manager or Region Engineer and Project Development Engineer will review for approval design exception requests for projects without FHWA oversight. The Administration Program Manager will review design exceptions for approval on Local Government projects.

State or Federal Projects

For State or Federal Projects, a design exception should be completed as a part of the project scope and reside in the Conception to Construction (C2C) scoping module. If it is determined that a design exception is needed, the TPE shall utilize the Design Exception tab as part of the scoping process. The approval requests are sent via email to the necessary approval parties. FHWA will be emailed a copy of the Design Exception and asked for their approval, if the project is on the Interstate or has been selected by FHWA as a PODI requiring oversight. A copy of their approval or rejection will be retained within the scoping document.

All design exceptions not originating in the C2C module will be added to the module for tracking purposes.

SDDOT Policy DOT-P&E-PD-6.0 *Definition and Standards for Construction/Reconstruction, Resurfacing, Restoration and Rehabilitation of Highways and Bridges under State Jurisdiction*, <http://intranet.dot.sd.gov/policy/detail.asp?pid=537> provides design standards for use on construction/reconstruction, resurfacing, restoration, and rehabilitation projects, to address the purpose and need of the facility while promoting safety through effective asset management.

Design exceptions on State or Federal projects need to be signed by the Office of Project Development Program Manager. In addition, design exceptions need to be signed by either:

- The Office of Road Design Program Manager when roadway design exceptions involving deviation from controlling criteria minimums in the AASHTO design specifications, SDDOT Road Design Manual or the above policy,
- or
- The Office of Bridge Design Program Manager for bridge design controlling criteria.

Local Agency Projects

Local Agency project design exceptions not on a State Highway or on the NHS follow a slightly different process. The approval of design exceptions is under the authority of the Administration Program Manager, and the intervening steps between the request and approval may differ from the standard design exception process. Designers involved in local agency contracts should contact the Local Government Engineer and review the Local Roads Plan: <http://sddot.com/business/local/docs/localroadsplan.pdf> for processing design exceptions on local agency projects. Form DOT-701 at M:\DOT\Common\AllDOTForms\DOTForms401-899\DOT701_DesignExceptionRequest_Local_Government_Agency.doc should be used to process Local Agency design exceptions. The design exceptions need to be reviewed and approved by the Local Agency. The complete documentation for a design exception should be retained permanently in the project file.

Design exceptions for local government projects must be signed by the Administration Program Manager. Structure design exceptions should be co-signed by the Office of Bridge Design Program Manager.

FHWA will be emailed a copy of the Design Exception and asked for their approval, if the project has been selected by FHWA as a PODI.

PROJECT MANAGEMENT ROLES AND RESPONSIBILITIES

SDDOT uses a collaborative effort to manage projects, relying on specialized staff from a variety of Offices to efficiently deliver quality projects through the efforts of the Project Manager, Work Unit Coordinator and Project Team.

Project Management Steps or Components:

1. Initiate the Project
2. Plan the Project
3. Execute the Project
4. Monitor and Control the Project
5. Close the Project

What does a Project Manager manage?

1. Scope
2. Schedule
3. Cost
4. Risk
5. Quality
6. Resources

Project Team Definition and Role

- Project Team includes every person/resource working on the project or involved in completion of the project.
- Team meetings may be held with the affected members.
- Individual team member responsibilities range depending on role. May include completing work tasks, providing information or recommendations, or making decisions regarding the project future.
- Team members will maintain ongoing communication with other project team members on specific project issues.
- The Team meets as needed throughout the design and development of a project; beginning with project scope, through any potential schedule changes or other issues.

Project Manager (PM) Role

- Provide input and participate in setting of initial schedule based on scope and project knowledge.
- Regularly review entire schedule at review points to remain current on project status.
- Participate in reschedule process to ensure changes to project timelines are acceptable.
- Monitors project activities in Primavera to ensure schedule is being met.

- Brings issues affecting project schedule to the attention of management immediately.
- Ensure project and requirements are reviewed.
- Expect and anticipate project changes and adapts to changes as necessary.
- Initiates and follows project control process as needed.
- Ensure any change to scope or schedule is formally reviewed and approved by project team and/or affected work center.
- Ensure needed project personnel are involved in meetings on critical points of the project (e.g. kick-off meeting, review points, scope amendments, etc.) so all parties are involved in and/or aware of project decisions.
- Ensure conflicting resources are addressed and resolved between PM and work center of other projects.
- Communicate modifications to scope, schedule, quality, STIP impacts, and so forth so others are aware and impacted projects can be adjusted if needed.
- Accurately reports project status to work units and management.
- Keeps project and activity date information current in Primavera for own work unit.
- Verify resources are assigned to projects as soon as practical.
- Assesses and manages resource workload for own work unit.
- Ensure overall project quality standards are met.
- Ensure adequate communication between team members and other project teams as needed.
- Recognizes outstanding performance and celebrates accomplishments.
- Documents lessons learned and shares with others.

Work Unit Coordinator (WUC) Role

- Provide input in setting of initial schedule related to knowledge area.
- Expect and anticipate project changes and manage changes for work center activities.
- Assess and manage resource needs for work unit.
- Regularly reviews schedule activities for work unit and remains on top of schedule/date changes.
- Ensures work center quality standards are met.
- Review project portfolios, (e.g. multiple projects or entire Fiscal Year) to identify conflicting work center resources and time commitments and works with work center Program Manager to address and resolve.
- Brings issues affecting project schedule to the attention of work center Program Manager immediately.
- Communicate with PM and other project team members when work center schedule issues are anticipated.
- Review any change to scope or schedule to determine impact to work center activities.

- Participate in project team meetings and come prepared with current project information.
- Assign resources to projects as soon as possible and manage resource workload.
- Anticipate gaps in short-term workload and be proactive in seeking work to fill the gaps.
- Anticipate future workload and resource needs and determine how those needs will be met.
- Reviews durations and labor units assigned to activities and makes recommendations for needed changes at project review points.
- Accurately report project status of said work unit.
- Keeps project and activity date information current in Primavera.
- Recognizes outstanding performance and celebrates accomplishments.
- Ensures adequate communication between team members and other projects. Seeks out information needed and shares information needed by others.

Resource Role

- Complete assigned activities/tasks on a project.
- Maintain ongoing communication with other project team members on specific project issues.
- Keep activity/task status current by entering start and finish dates.
- Communicate with supervisors on existing and future workload, project issues, and priorities.

Project Delivery Engineer Role

- Determine network and set initial project schedule based on a STIP year and scope information.
- Ensure initial project baseline is recorded and future baselines are recorded as needed.
- Provide recommendations on initial and review point schedule changes to assist PM and WUC on schedule adjustments.
- Problem solve schedule issues.
- Review and reschedule projects based on predetermined review points of PM and WUC request.
- Work with project team to manage changes to schedule.
- Work with PM & WUC to ensure any change to scope is reflected in schedule and communicated to other project team members.
- Participates in project team meetings, initiates and facilitates meetings as needed.
- Review project portfolios, (e.g. multiple projects or entire FY) to identify conflicting resources and time commitments and assists project teams to address and resolve by making recommendations.
- Communicates modifications to schedule to project team.

- Modifies schedules in the Primavera system ensuring information is accurate and reliable.
- Document schedule changes in Primavera Notebook.
- Document scheduling lessons learned and share with others.
- Initiate resource allocation discussions with PMs and WUCs.
- Work with Project Development Engineer to identify projects that may need to move in the STIP. This may also include follow up meetings with different project teams.
- Initiate project meetings when a schedule is in danger of falling behind due to seasonal restrictions, etc. This may also include ways to advance projects and ensure proper communication/coordination happens between the necessary offices.

Project Schedule Coordinator Role

- Determine network and set initial project schedule based on a STIP year and scope information.
- Ensure initial project baseline is recorded and future baselines are recorded as needed.
- Provide options on initial and review point schedule changes to assist PM and WC on schedule adjustments.
- Review and reschedule projects based on predetermined review points or PM and WUC request.
- Work with project team to manage changes to schedule.
- Work with PM & WUC to ensure any change to scope is reflected in schedule and communicated to other project team members.
- Participates in project team meetings, initiates and facilitates meetings as needed.
- Review project portfolios, (e.g. multiple projects or entire FY) to identify conflicting resources and time commitments and assists project teams to address and resolve by making recommendations.
- Communicates modifications to schedule to project team.
- Modifies schedules in the Primavera system as directed and ensures information is accurate and reliable.
- Defers schedule change decisions to PM and Change Control Process.
- Document schedule changes in Primavera Notebook.
- Document scheduling lessons learned and share with others.

Transportation Planning Engineer (TPE) Role

- Provide input and participate in setting of initial schedule based on scope and project knowledge.
- Participate in reschedule process, as necessary, to ensure changes to project timelines are acceptable.
- May resolve conflicts between projects, including financial, scheduling, geographical, etc.
- Expect and anticipate project changes and adapts to changes as needed.

- Ensures any change to scope is formally reviewed and approved by PM and WUC.
- May ensure needed project personnel are involved in meetings on critical points of the project that effect the scope (eg. kick-off meeting, scope amendments, etc.) so all parties are involved in and/or aware of project decisions.
- Communicate with team members on modifications to scope & STIP impacts, so others are aware and impacted projects can be adjusted if needed.
- May ensure adequate communication between team members and other project teams as needed.

PROJECT SCHEDULE CHANGES

Project schedule changes may be made at designated points in the project or if deemed necessary for the integrity of the schedule. Coordination will be maintained throughout project schedule review and consideration for any changes to project schedule in Primavera. This includes any changes due to STIP Revisions, Scope Amendments, and any scheduled review point or from special requests for schedule review.

All base networks and schedules are designed with predetermined Review Points built in at specific milestone points of a projects life cycle. Schedules will be reviewed at the predetermined Review Points. If the schedule review will result in changes to the current schedule, the schedule should be reviewed with the PM and any affected WUCs. Schedule changes must be approved by the PM. All schedule changes must be documented in the Project Notebook with date of the change, reason for the change, authority for the change, and scheduler making the change.

Definitions

Base Network Schedule – A project schedule template which includes predecessor and successor activities that may occur on various types of projects and is customized based upon the project scope to develop a project schedule.

Schedule Change – Use the reschedule feature to introduce new data to the schedule and affect schedule dates. Most schedule changes will fall in the routine schedule adjustment category.

Routine Schedule Adjustments: Changes to the schedule that may affect the dates and outcome.

- Adding/deleting activities based on scope or new project information
- Adjusting durations and labor units based on scope or new project information
- Adding constraints for desired results

PM's and WUC's must be notified of changes to a project schedule. If the change has a significant impact to the schedule, such as effecting multiple work centers or modification of the risk status, a Team meeting may be warranted.

Schedule Modification: Changes to the schedule that include modification of relationships between activities in the base network. The main intent of schedule modifications is to more closely match a project's realistic schedule as progress occurs and activities are completed.

Key points to consider regarding Schedule Modifications:

- Schedule Modifications support customizing schedule adaptations to the unique combination of an individual project characteristics and actual progress.
- Coordination and support is necessary from the PM's and WUC's.

Preferred Ready Date – The preferred ready date window for a project based on the improvement type

Preferred Letting Date – The preferred letting date window for a project based on the improvement type

	Grading/Shoulder Widening		Bridge Replacement		Bridge Rehab	
	Preferred Ready Date	Preferred Letting Date	Preferred Ready Date	Preferred Letting Date	Preferred Ready Date	Preferred Letting Date
FY 2018-2021	May - Sept	Sept - Jan	June - Dec	Sept - April	June - Dec	Sept - April
FY2022	May 2021 - Sept 2021	Aug 2021 - Jan 2022	June 2021 - Dec 2021	Sep 2021 - Apr 2022	June 2021 - Dec 2021	Sep 2021 - Apr 2022
FY2023	March 2022 - Sept 2022	Aug 2022 - Jan 2023	Apr 2022 - Dec 2022	Sep 2022 - Apr 2023	Apr 2022 - Dec 2022	Sep 2022 - Apr 2023
FY2024	Jan 2023 - Sept 2023	Aug 2023 - Jan 2024	Feb 2023 - Dec 2023	Sep 2023 - Apr 2024	Feb 2023 - Dec 2023	Sep 2023 - Apr 2024
FY2025	Jan 2024 - Aug 2024	Aug 2024 - Jan 2025	Feb 2024 - Nov 2024	Sep 2024 - Apr 2025	Feb 2024 - Nov 2024	Sep 2024 - Apr 2025
	Surfacing/Resurfacing		ADA		Pavement Preservation	
	Preferred Ready Date	Preferred Letting Date	Preferred Ready Date	Preferred Letting Date	Preferred Ready Date	Preferred Letting Date
FY 2018-2021	June - Dec	Sept - April	July - Oct	Oct - Feb	June - Jan	Sept - June
FY2022	June 2021 - Nov 2021	Sep 2021 - Apr 2022	July 2021 - Oct 2021	Oct 2021 - Feb 2022	June 2021 - Dec 2021	Sep 2021 - June 2022
FY2023	Apr 2022 - Nov 2022	Sep 2022 - Apr 2023	May 2022 - Oct 2022	Oct 2022 - Feb 2023	June 2022 - Dec 2022	Sep 2022 - June 2023
FY2024	Feb 2023 - Nov 2023	Sep 2023 - Apr 2024	March 2023 - Oct 2023	Oct 2023 - Feb 2024	May 2023 - Dec 2023	Sep 2023 - June 2024
FY2025	Feb 2024 - Oct 2024	Sep 2024 - Apr 2025	March 2024 - Sept 2024	Oct 2024 - Feb 2025	May 2024 - Nov 2024	Sep 2024 - June 2025

Table 2-1 Preferred Ready and Letting Dates

Risk Status – an overall indication of an individual projects risk measured in red, yellow, or green

Green (On Schedule) – Activities are completed on schedule and project falls within the preferred ready date window.

Yellow (At Risk) – The ready date is within 1-3 months of the preferred ready date window.

Red (Critical) – The ready date is more than 3 months behind the preferred ready date window. If a project is identified as red, the PM must coordinate resolution to the project schedule with the project team and scheduling personnel.

EVALUATION POINTS / MILESTONES	THRESHOLD AT EACH POINT TO DETERMINE STATUS LEVEL		
	"GREEN" = On Schedule, which means Project is within Desired Ready Date for Project Type	"YELLOW" = Behind Schedule or At Risk, if Behind Schedule, Project is 1-3 months past desired Ready Date	"RED" = CRITICAL, which means Project Schedule is 3+ Months past desired Ready Date
Post Scope Based on Ready Date	X	X	X
Post Survey Based on Ready Date	X	X	X
Preliminary Design Based on Ready Date	X	X	X
Post TS&L Based on Ready Date	X	X	X
Public Involvement Based on Ready Date	X	X	X
Final Design Based on Ready Date	X	X	X
Release to ROW Based on Ready Date	X	X	X
Pre-ROW Negotiations Based on Ready Date	X	X	X
Post ROW Negotiations Based on Ready Date	X	X	X
Complete Final Plans Based on Ready Date	X	X	X

Table 2-2 Project Risk Status

Purpose of Risk Status

The project risk status is used to aid the PM and act as a communication tool for the delivery of projects. Project risk status can be changed through either a reschedule of a project or the PM or WUC self-identifying a change in risk status, which will then be verified through a reschedule. For example, if a PM identifies a that the release to Right-of-Way date will be missed, they can request a status change on a project. Depending on the planned finished and expected finish dates, the project may move to a yellow or red risk status

Change in Risk based on a Reschedule

Projects are rescheduled during predetermined project evaluation points based on the schedule. Through this effort, project ready dates can and will move along with other activities in the project schedule. If the project ready date falls out of the preferred ready date window, the risk status will change.

PROJECT CONTROL MANAGEMENT FRAMEWORK

Project controls are used to manage a project throughout the life cycle. Any change to a project after work has begun can have a significant impact in a variety of ways. Changes can affect outcomes, cause rework, effect schedules, impact STIP year as well as other results. One minor change at any stage can affect many other parts of the project. To limit impact, change needs to be managed and intentional. Multiple project change controls have been defined to ensure that when changes are needed or issues arise, processes are followed to ensure project schedules and outcomes are not impacted in unintended ways or without authority.

Refer to specific change control processes/policies for:

- STIP Revisions
 - [STIP Revision Checklist/Submittal Form](#)
- Scope Amendments
 - Defines when a scope amendment is needed, what is the process to request, what work is involved, what rework may result and what the schedule impact will be. See Scope Amendment section previously discussed in this chapter.
- Change in project design, such as, but not limited to: project grade line, work limits, geometrics, access, drainage, curb & gutter, retaining walls, foundations (not including modification of begin/end of project).
 - Work limits are defined as the anticipated construction area for a particular project. PM must identify and communicate with work units affected, what level of notification/discussion is needed with the work units, what work is involved, what rework may result and what the schedule impact will be. *(guidance to be developed)*
- Project Quality Control/Expectations
 - Quality standards and design standards not being met are detrimental to the time, money and resources put into a project. Need to define quality expectations (*what is enough? what is too much? etc*). All work done on projects should be with the goal/intent that work quality and project standards are met so not to impact project results or completion. *(guidance to be developed)*
- Primavera schedule changes
 - Define when project schedules will be reviewed and may be modified and identify the authority to authorize schedule changes. See Project Schedule Changes section previously discussed in this chapter.
- Business Process Changes
 - Process to define steps and impacts to major business changes *(guidance to be developed)*

Tools in place to support the change control processes include:

- Team involvement on developing Initial Schedule
 - All work unit involvement to develop the best possible schedule based on information available.
- Institute a Project Hand-Off meeting between the scope process and prior to design beginning for 3R and 4R projects.
 - PM will determine need and timing of hand-off meeting with TPE and other work units.
- Scheduled Review Points
 - Defined points in a schedule where the actual progress is evaluated and scheduled updated.
- At Risk Status Indicator
 - Flag assigned to each project and updated at scheduled review points to indicate if the project is on schedule or amount of time off schedule. Risk status is based on anticipated ready date alignment with preferred letting dates.
- Project Control Meetings
 - Analyzing needed actions and options on At Risk projects. Also, making decisions on saving or deferring a project.
- Schedule Delay Indicators
 - Identifying the root cause of significant schedule delays or STIP year deferrals.

Project Change Control Process

Project control process will be used to review any change in deliverables during the life of a pre-construction project. Each work unit has a set of deliverables toward final accomplishment of the project. Deliverables are the completed project related work that is passed from one unit to another at a designated point in the process. At certain points of the projects life cycle, the process may change slightly due to the work units impacted by a change. PMs and Program Managers may determine when it is appropriate for a control process step to be bypassed or adjusted.

Office/Program internal project control.

1. Resource identifies:
 - a. Issue or concern with a project aspect
 - b. Idea for change or improvement to the project
2. Resource discusses with supervisor/lead worker before veering from project plans or standard practice.
3. If minor impact to project plans, schedule, etc. does not affect other work centers or project outcome, WUC makes decision.
4. If impacts to project plans, schedule, etc. affects other work centers, causes rework or has potential to affect project outcome, WUC involves next level supervisor.

5. At this point the issue is referred to the Division/Department Project Control Process.

Division/Department Project Control Process:

1. Upon identification of an issue that will affect the project or project schedule, notification is made to the TPE, WUC, PM or Program Manager of the issue. Notification must include what the issue is, why the change is being recommended and other viable options to avoid or minimize the change.
2. The TPE, WUC, or PM coordinates with other affected work units. Provide the same information as above. Discussion with all involved parties to consider each work unit's impact and the overall project impact.
3. Collective decision on approving the change weighing the significance of the change, the necessity of the change (need to have versus nice to have), impact to the project schedule and STIP year, impact to resources of affected work units.
4. For high profile projects (4R), changes that move a construction year include notification of Division Directors and Project Development Program Manager.
5. STIP year changes are approved by the Project Development Program Manager, Division Directors, Secretary of Transportation, and Transportation Commission.
6. The project schedule will reflect the fiscal year change after the STIP Revision is approved and finalized.