

ENGINEERING DIRECTIVE

Petricia A. Leavenworth

CHIEF ENGINEER

Pre-25% Design Scoping Procedure

General Guidance

This Engineering Directive provides a procedure for refining the scope of a project approved by the Project Review Committee (PRC) and establishing the basis for a 25% design submission. This procedure shall apply to all municipal and state projects except for various location maintenance projects or as otherwise determined through consultation with the Deputy Chief Engineer for Project Development or his/her designee.

1. PRC approves the project.

- 1.1. Responsible section head assigns the Project Manager (PM).
- 1.2. Project Manager requests PARS Numbers.
- 1.3. Project Manager confirms purpose and need and evaluates need for Project Scoping Meeting (PSM) and consults with the Deputy Chief Engineer for Project Development, if needed.
- 1.4. Project Manager notifies proponent to include PSM in design schedule, if needed.

2. Proponent issues the Design NTP or directs design advancement to begin within 24 months of PRC Approval and notifies MassDOT through the PM or local District office.

- 2.1. Proponent includes direction to develop schedule for participating in a Project Scoping Meeting, performing data collection and conceptual design and conducting Over The Shoulder (OTS) Review within 6 months of Design NTP or direction to advance design.

3. Project Manager conducts the Project Scoping Meeting within 6 months of NTP or design advancement using the Project Scoping Checklist (Attachment 2). Proceed to Step 4 if PSM not needed.

- 3.1. Create meeting invitation list using Attachment 1 as a guide.
- 3.2. Consult with District to identify meeting site. On-site meetings are preferred unless conditions warrant a virtual site meeting using MaPIT or another digital tool.
- 3.3. Project Manager and/or Designer conducts overview of existing conditions.
- 3.4. Project Manager reviews Purpose and Need and Scope of Work as approved by PRC.
- 3.5. Identify any risks to pursuing scope as approved by the PRC. Examples include underground utilities, limited right of way, environmental impacts.
- 3.6. Obtain input for cross section(s) to accommodate all users, project limits and project scope; identify utility constraints, preliminary environmental permitting requirements, and design exceptions.

3.7. Determine data collection and conceptual analysis needs. Examples include draft design justification workbook, safety alternatives analysis, and typical section alternatives.

4. Designer performs data collection and develops conceptual design(s).

4.1. Data considerations: Utility survey, crash data, roadway safety audits, traffic counts, field survey and base plan, hydraulic analysis, borings, preliminary structures report, pavement test pits and cores, and other project data as required.

4.2. Design requirements: Consider public outreach meetings with local officials/general public/project abutters; perform early utility coordination; early environmental coordination; gather other data as needed. Develop conceptual (10% level) design(s) with critical cross sections, roll plan and preliminary profile views; preliminary Intersection Control Evaluation (ICE) Stage 2; prepare draft Design Justification Workbook identifying potential design exceptions; prepare preliminary project estimate; prepare design schedule using schedule template; prepare preliminary ROW impact summary; and provide preliminary construction staging using the default construction duration by project type.

5. Project Manager conducts the Pre-25% OTS Review to confirm the scope and cross section within 6 months of Design NTP (for municipal/state projects) or design advancement (for MassDOT in-house design).

5.1. Schedule meeting two weeks in advance using Attachment 1. Attach meeting material to the meeting invitation to provide materials in advance of the meeting.

5.2. Project manager conducts OTS Review of Purpose and Need and scope as approved by the PRC and the conceptual design(s) and analysis with the project team including all items identified in the Project Scoping Checklist (Attachment 2). In-person meetings are preferred on-site or in a District Office to confirm the scope, selection of preferred conceptual design, and resolve any remaining internal comments and public concerns.

5.3. Project manager documents the OTS Review and progress by summarizing the scoping meeting and OTS review.

6. Project Manager/Proponent schedules public outreach as needed within 3 months.

7. Project Manager evaluates the current scope of work and public feedback against the PRC Approved Purpose and Need and Scope of Work.

7.1. If the scope has changed as defined in the DSC/PRC Resubmission Criteria below the PM shall elevate the issue to the Office of the Chief Engineer through the Design Solutions Committee (DSC) for resolution in Step 8.

DSC/PRC Resubmission Criteria

- The Project Contract Cost increases by an amount larger than the current contract cost + design contingency:
 - At the pre-25% Scoping Meeting, if an estimated contract cost is 10% greater than the PRC estimated construction cost (including design contingency), the project scope will be reviewed.
 - Post pre-25%, if the estimated construction cost of any design submission or updated cost is 5% greater than the pre-25% estimated construction cost (including design contingency), the project scope must be confirmed by the DSC. If no pre-25% submission, then the baseline will be the PRC construction cost.

- There is a change to the Project Scope or Project Limits that is outside of the original Purpose and Need of the project as approved at PRC, was not identified/approved during a Pre-25% Scoping Meeting or previous submission, or may cause a considerable delay to the schedule or deliverability of the project.

Examples of project changes requiring review:

- A new design alternative is being recommended that was not previously considered.
- The addition of new or expanded assets beyond the established project limits or need.
- The project is combined with another project or split off from an existing project.
- Modifications to the project scope or limits negatively impact project deliverability or schedule. Examples include, but are not limited to:
 - New ROW impacts such as Article 97, 4f, 6f, cultural resources, rail permits, new State or Local ROW, relocations, or additional survey work.
 - New Environmental Permitting.

7.2. If the scope and public feedback align with the PRC Approved project, proceed to Step 10.

8. Design Solutions Committee (DSC) decides whether the design can proceed to the next design stage (Step 10) or must be resubmitted to the Deputy Chief Engineer for Project Development for review and submission to PRC for further evaluation (Step 9).

9. Deputy Chief Engineer for Project Development reviews and submits project to PRC for further evaluation.

10. Project Manager proceeds to 25% Design by updating the Purpose and Need, documenting the scope, confirming the project description and amending initial design scope, if needed.

10.1. If the project description changes, the Project Manager coordinates with the Advertising Program Manager to finalize the description and notify the District and Planning regarding the need to amend the project in the STIP if necessary.

10.2. Amend initial design scope based on above to include design through 25% Design Public Hearing or design completion depending on the project.

Attachments:

Attachment 1 – Meeting Invite Chart

Attachment 2 – Project Scoping Checklist

Meeting Invite Chart

Choose core disciplines according to project type

Project Type -> Core Discipline	Bridge	Intersection Improvements *	Shared Use Path	New Construction	New Sidewalks, Curbing and Curb Ramps	Pavement Marking	Resurfacing	Roadway Reconstruction	Safety Improvements / SRTS	Traffic Signals	Other:
Designer (in-house or consultant)	R	R	R	R	R	R	R	R	R	R	R
Bridge	R	O	O	O	O	O	O	O	O	O	O
Highway Design*	R	R	R	R	R	R	R	R	R	R	R
District Construction	O	O	O	O	O	O	O	O	O	O	O
District all other disciplines	District Projects staff shall attend all meetings but consult with the District PDE to determine which other disciplines are needed.										
Environmental	R	O**	R	R	O	O	O	R	O	O	O
Geotechnical	R	O	O	R	O	O	O	R	O	O	O
Hydraulics***	R	O	O	R	O	O	O	O	O	O	O
FHWA	Consult with FHWA on all Projects of Division Interest (PODIs)										
Landscape	O	O	R	R	O	O	O	R	O	O	O
Materials	O	O	O	O	O	O	O	O	O	O	O
Pavement	O	R	O	R	O	O	R	R	O	O	O
ROW	R	R	R	R	R	O	O	R	R	R	R
Traffic and Safety****	O	R	O	O	O	O	O	R	R	R	O
Utilities	R	R	R	R	R	O	O	R	R	R	R
Transit	O	O	O	O	O	O	O	O	O	O	O
Municipality	R	R	R	R	R	R	R	R	R	R	O

R = Required, O = optional. * Highway Design shall include the ADA, Complete Streets, and/or the Location Engineers. **Consider Hazmat involvement with Intersection Improvement projects. *** Include Hydraulics for projects over water or will affect a river, stream or water course.

****Safety involvement may be beneficial for certain project types.

Attachment 2 – Project Scoping Checklist

The Project Scoping Checklist is available online at:

<https://www.mass.gov/doc/pre-25-design-scoping-procedure-e-21-002/download>