



Project Delivery Network (PDN)

Version 3.0 | March 2024

Integrated Program Delivery (IPD)



Read First: How to Use the PDN

The TDOT Project Delivery Network (PDN) is a scalable guide for those involved with the delivery and management of projects. This *How To* answers some of the typical questions regarding purpose and use of the PDN, alongside defining the common terms used throughout.

What is the purpose of the PDN?

The PDN was developed to provide consistency and transparency throughout the project delivery process, enabling project teams to improve reliability and efficiency. The PDN outlines the stages, activities, tasks, deliverables, and (links to) references to accomplish these ends.

Specifically, the PDN assists technical teams and Project Managers, to achieve the following:

- Maintain consistency via a logical progression of activities throughout the planning, environmental, and design phases.
- Clearly define the construction scope of work and programmed amount at the beginning of the project.
- Streamline steps and procedures throughout the project development process.
- Define key project deliverables and activities to build an MS Project schedule that a Project Manager and team follow to deliver the project.
- Identify opportunities for multidisciplinary collaboration throughout each stage of the process.
- Provide a systematic quality process for key deliverables.

What role does the project team play in the PDN?

Coordination is essential for project success. The Project Manager leads team integration and communication necessary to deliver a successful project, which meets the project's goals, on

PDN Common Terms

Stage: A major step of the project development process that concludes with a milestone.

Activity: The overall action(s) completed by a discipline or Project Manager to move to the next stage of the PDN. An activity is represented by an identifier (e.g., 2EN1, 3RW2) as shown on the PDN Activity Diagram (discussed further below).

Task: The step(s) and process(es) necessary to complete an activity.

Detail: The task description to explain what and why of a task.

PDN Activity Diagram: A “map” of all PDN’s activities that could be used to deliver a project.

Navigation Tip to Use Bookmarks & Internal Links within the PDN

- Download the PDN document to use the PDF bookmarks or internal links for easy navigation.
- Within an activity, click a blue link (see examples below) to go to an internal link in the document. Examples:
 - ([see OST1](#) for related information)
 - **Related section:** [OST1](#)
 - ([see Appendix F](#) for an example template)
- Click the button in the PDF program to go back to the previous page or click **alt key + left arrow key** to go back to the previous page, once you have read the section in question.

schedule and within budget. One of the foundational elements of the PDN is that it can be used by multiple audiences (TDOT staff, consultants, and construction contractors) to understand the roles and responsibilities of each team member.

The project team works in a matrix organization to achieve the goal of project delivery where various disciplines and expertise are required. This fosters a team approach to solve challenges, optimize innovation, incorporate efficiency, and develop employees. Team members often have responsibilities across multiple projects at different stages within the PDN. The matrix provides flexibility in managing workload and understanding priorities. This structure incorporates dual managerial reporting responsibilities along functional lines and project delivery along project team lines. (See **Figures 1 & 2** and footnoted terms below for how this interaction is structured.)

A project team may consist solely of TDOT employees, a combination of TDOT employees and consultant team members, or solely consultant staff with oversight from assigned TDOT staff.

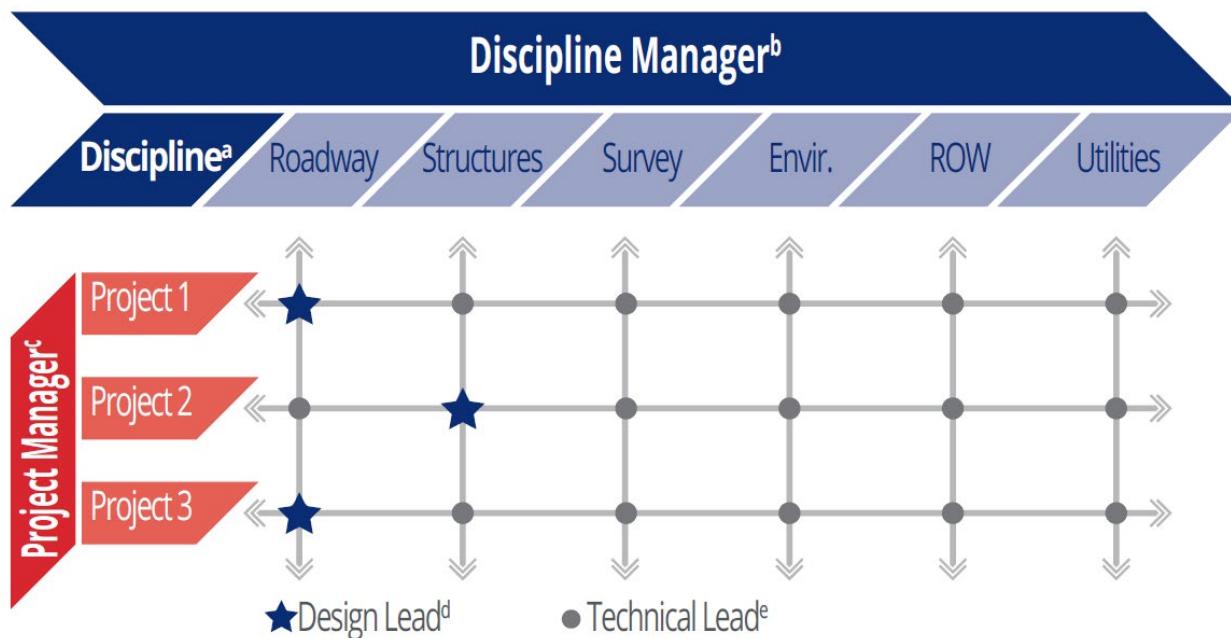


Figure 1: Matrix Organization for Projects

^a **Discipline** is a branch of knowledge for a technical specialty (e.g., planning, environmental, right-of-way, utilities, design-related specialties)

^b **Discipline Manager** is a TDOT employee responsible to lead, establish, and manage the operations, processes, quality delivery, and people (including staff workload) associated

with a specific discipline. The Discipline Manager ensures their staff understands and adheres to policies, procedures, and standards related to their discipline.

^c **Project Manager** is typically a TDOT employee responsible to establish and lead a team in delivery of a defined project or program within an agreed upon schedule and budget. Consultant Project Managers, if hired, report to the TDOT Project Manager.

^d **Design Lead** is designated by the project manager (typically at the beginning of the project) and is responsible to organize all disciplines' technical design and associated plans, specifications, and estimates for review and submittal. For example on **Figure 1**, the Design Lead for a roadway-led project would be the Roadway Design Lead; for structures-led project, this would be the Structural Design Lead. Another example on **Figure 2** identifies design leads from various disciplines depending on the program.

^e **Technical Lead** is responsible for the technical expertise, deliverables, interdisciplinary reviews, and coordination of their discipline's technical portion of the project or program with the Project Manager and other technical disciplines. This role may be performed by a TDOT employee and/or consultant staff.

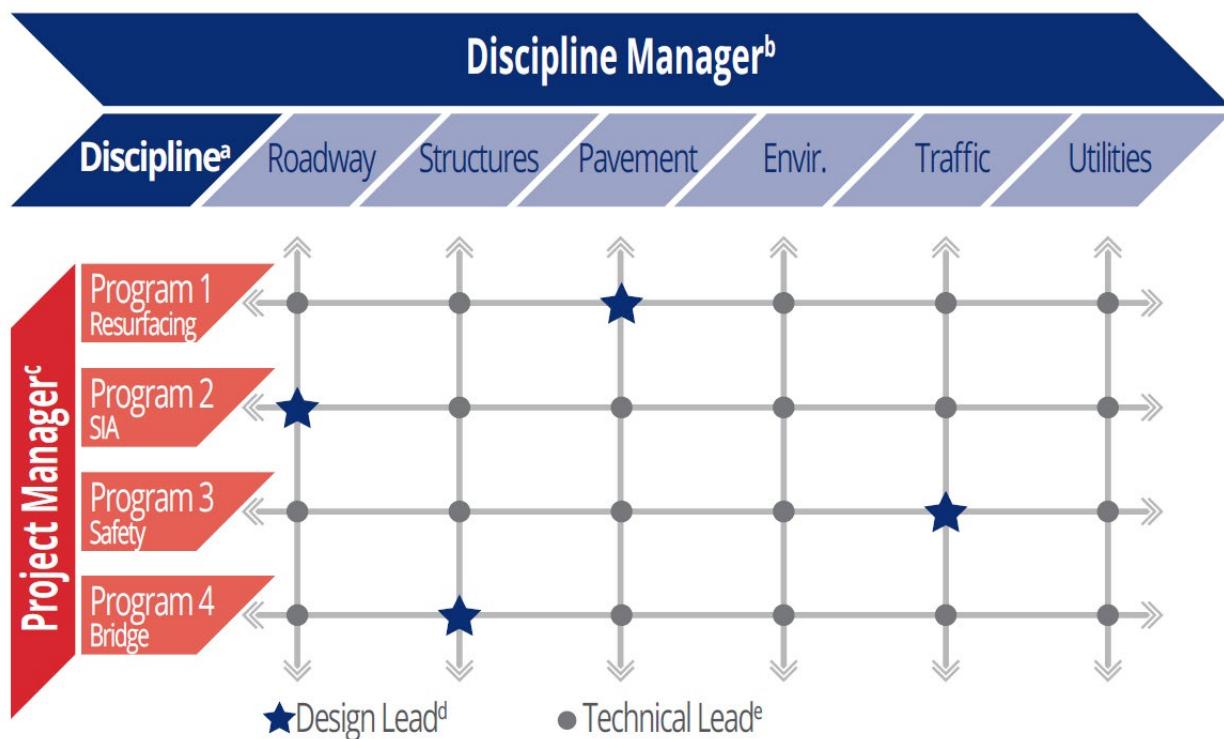


Figure 2: Matrix Organization for Programs

The Project Manager oversees this interactive and collaborative team to meet scope, schedule, and budget goals, while considering available resources and risks and without sacrificing quality. Final decisions impacting scope, schedule, and budget ultimately fall to the Project Manager.

How is a project delivered using the PDN?

The PDN takes a project through the following five stages. (**Note:** Each stage is defined in terms of high-level goals that can be accomplished at any point in the stage **and** a milestone [represented on the PDN as a diamond] to assess the status of the project, review the project schedule, and memorialize when the stage is completed.)

Stage 0: Planning

- **Goal:** Develop an initial project vision and conceptual layout and report (e.g., the Concept Report) to transition into the subsequent final design stages (Stages 1 through 4).
- **Milestone:** Upon distribution of the Concept Report, which includes establishing the preliminary scope and estimate for funding consideration, the team can begin the project development process in Stage 1.

Stage 1: Context/Scoping

- **Goal:** Establish the team and define critical project goals and intended outcomes for scope, schedule, budget, quality, and risks.
- **Milestone:** Upon completion of the Scoping Meeting (see [1PM5](#) for related information), the team has collectively defined the project details (scope, schedule, budget, quality, and risks), and the team is ready to move into the Footprint Established phase (Stage 2).

Stage 2: Footprint Established

- **Goal:** Set the horizontal and vertical alignment (if not already completed in Stage 1) and initiate work related to environmental, right-of-way (ROW), utilities, and construction.
- **Milestone:** Upon completion of the Functional Design Plans Field Review (see [2PM5](#) for related information), the team has defined the alignment and established the footprint.

Stage 3: Plan-in-Hand

- **Goal:** Complete all plans, specifications, and estimates to be packaged for letting and prepare the project for advertisement.
- **Milestone:** Upon completion of the Plan-in-Hand Field Review (see [3PM2](#) for related information), the team has completed all design work (with remaining comments to be resolved in Stage 4) and progressed or completed the obtaining of necessary environmental permits, securing of local municipality agreements, relocating of impacted utilities, and acquiring of needed right-of-way.

Stage 4: PS&E

- **Goal:** Finalize the project's plans, specifications, and estimates (PS&E) and ensure all agreements, permits, and certifications are in place for letting.
- **Milestone:** Upon completion of the PS&E Review (see [4PM2](#) for related information), the project is ready to be advertised for letting.

Stage 5: Construction Advertisement, Letting, and Award

- **Goal:** Prepare, advertise, and award the construction contract.
- **Milestone:** After the project is advertised, TDOT awards and executes a contract to complete project construction.

How is the PDN updated?

The PDN is intended to be dynamic and continually improved upon, and over time, the processes described herein are updated to ensure process refinement. As such, TDOT encourages suggestions and comments from users to improve the process or identify opportunities for further acceleration or streamlining.

Submitted comments will be reviewed on a regular basis for incorporation into the document. While an update to the PDN can take place at any time depending on the critical nature of the change, updates are planned annually. This will be an opportunity for all users to review and update their processes.

Submit PDN questions, comments, or revisions to <mailto:TDOT.PD@TN.gov>.

How are PDN updates communicated?

PDN updates are memorialized in three ways:

- 1) The version's decimal number (e.g., Version 2.2, Version 3.1) is revved up for each PDN update within a calendar year, with whole number updates being done annually.
- 2) A summary narrative and a "redline" compilation of changes (comparing the previous version to the new version) allow the reader to quickly review what was changed from one version to the next.
- 3) The reader can note the last time an activity/section has been updated by referencing the "last update date" in the section's footer.

Last update date

OEN1 Conduct Initial Environmental Desktop Review
January 2024

1

How are project stages and activities presented in the PDN?

Each stage consists of multiple activities, consisting of five parts:

- 1) Activity identifier and brief descriptor (defined further below)
- 2) Overview of the activity
- 3) Reference list and links to commonly used documents that guide a user on completing the activity
- 4) Responsibility table that lists all deliverables that may need to be developed/completed for the activity (defined further below)
- 5) Details for each task that further describe how to apply the steps, processes, and reference materials to complete the activity

More information about these five parts follow **Figure 3**.

[Back to PDN Overview](#)



Activity Identifier

2ST1 Complete Hydraulic Design

Overview

Choose the preliminary structure types/sizes and provide the project team with an initial assessment on the acceptability of the horizontal and vertical alignment provided in the initial line and grade .dgn (as part of the Line and Grade Package). Choose the most appropriate structure based on in-depth hydraulic modeling and provide final hydraulic design information to the project team and other stakeholders. **Note: proposed structures may change SIGNIFICANTLY from the initial assessment to the final hydraulic design completed in this stage.**

References

- [Design Procedures for Hydraulic Structures](#)
- Tennessee Structures Memoranda (offline)

Responsibility Table

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Initial Hydraulic Grade Assessment Letter	<ul style="list-style-type: none">▪ Verify Proposed Grade and Estimated Hydraulic Structure Sizes	Hydraulic Lead	Assigned Hydraulic Supervisor
Draft Hydraulic Layout (aka Sketch (only if bridge))	<ul style="list-style-type: none">▪ Develop Draft Hydraulic Layout		Assigned Hydraulic Supervisor CADD Technician
Sealed Hydraulic Design File	<ul style="list-style-type: none">▪ Hydraulically Model the Proposed Conditions, Evaluate Proposals, and Select Appropriate Structure		Hydraulic Regional Manager and/or State Hydraulic Engineer
Sealed Hydraulic Layout	<ul style="list-style-type: none">▪ Finalize Hydraulic Layout		Hydraulic Regional Manager and/or State Hydraulic Engineer CADD Technician
Final Hydraulic Letter	<ul style="list-style-type: none">▪ Finalize Hydraulic Design Information		Hydraulic Regional Manager and/or State Hydraulic Engineer

Task Details

Verify Proposed Grade and Estimated Hydraulic Structure Sizes

Any structure with the 2% Annual Exceedance Probability (AEP) flow of 500 cfs or higher requires a detailed hydraulic study by the Hydraulic Design Section. Culverts with flow below 500 cfs are the responsibility of Roadway Design. The Structural Design Lead handles bridges with no hydraulic crossing or bridges that have a flow below 500 cfs. For each project with an

Figure 3: Example PDN Activity Breakdown

Activity Identifier

As identified on **Figure 3**, each activity has a unique "Activity Identifier" for scoping the services to be provided and tracking progress in MS Project as the project evolves. The activity identifiers consist of the following:

- (Stage Number) (Discipline Abbreviation) (Identifying Activity Number)

Using **Figure 3** as an example, the identifier is "2ST1".

- The "2" indicates that the activity is completed in the Footprint Established Stage (Stage 2).
- The "ST" identifies the abbreviation for the Structures discipline as the lead for this activity.
- The "1" represents this as the first activity for that discipline in Stage 2.

The Activity Identifier includes the following abbreviations for all the disciplines represented in the PDN:

EN – Environmental	GT – Geotech	MM – Multimodal
PV – Pavement	PM – Project Management	RD – Roadway
RW – Right-of-Way	SD – STID	ST – Structures
SY – Survey	TO – Traffic Ops	UT – Utility

Responsibility Table

The Responsibility Table for each activity identifies the deliverables, associated task(s) to complete, and the responsible party(ies) for each task(s). The listed tasks do not represent all task(s) needed to complete an activity and is ***not necessarily the chronological order for completion***. Tasks are completed in accordance with the agreed upon durations and logic in the MS Project schedule.

As listed under the "Responsible Party" column, the "Activity Leader" is the member of the project team responsible for ensuring that the task is completed successfully, and the "Additional Support" is anyone other than the Activity Leader who has responsibility for or can help support task completion. The table is not intended to list all team members involved with a task, and the Activity Leader may delegate advancement of specific tasks or deliverables to other team members.

The "Responsible Party" for the project management activities are not listed because the Project Manager leads each activity, with additional support provided by the project team. When a specific team member is needed to support the Project Manager to complete a task, the narrative identifies that team member.

What is the PDN activity diagram/overview?

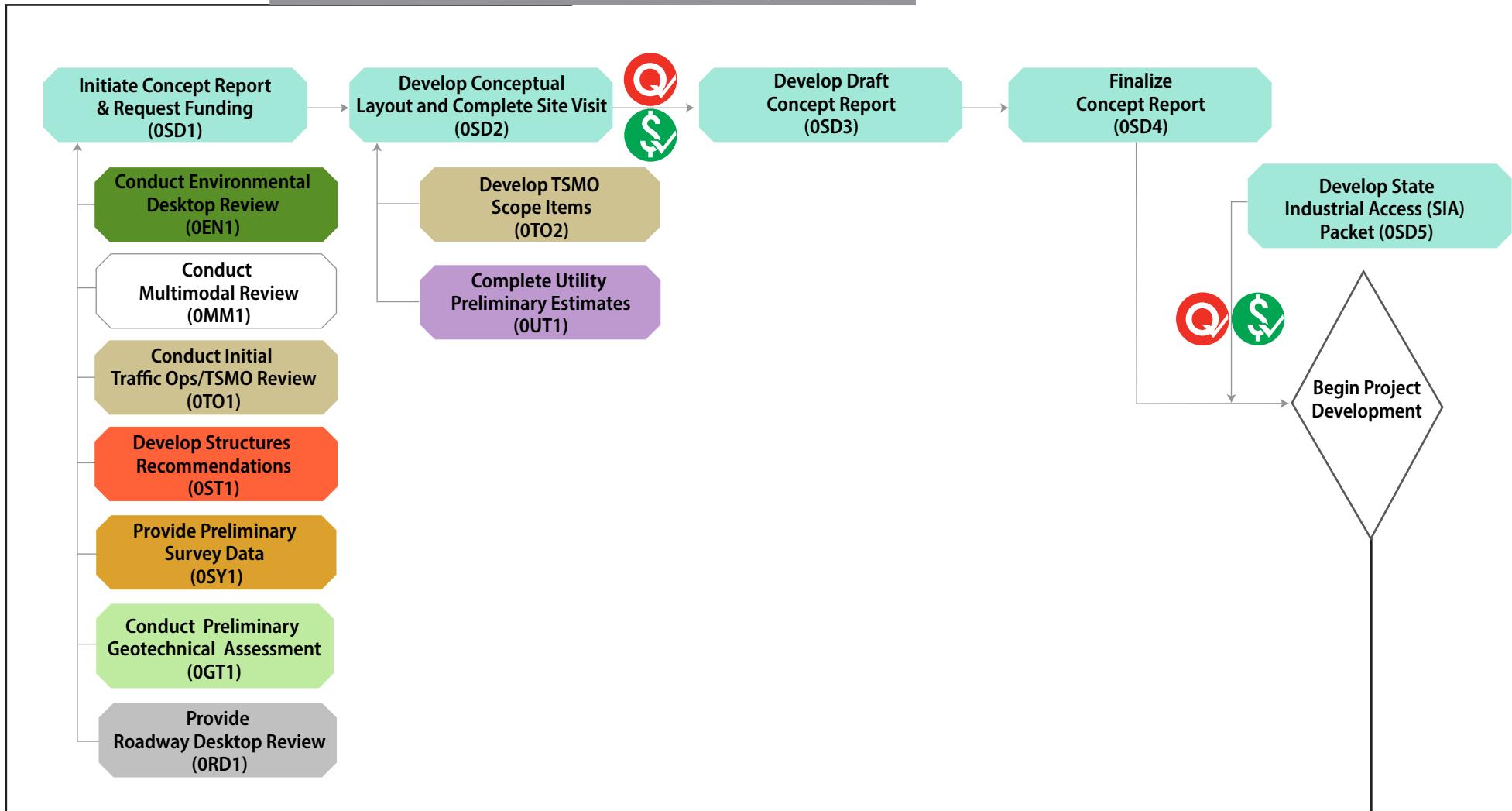
From the earliest planning activities through letting, the following (see the two-page overview [PDN Activity Diagram](#)) illustrates a "map" of all the PDN's activities that could apply when delivering a project (because not all projects require every activity). The Project Manager has

the responsibility and authority to work with the project team members to identify the appropriate activities for a specific project.

The PDN Activity Diagram/Overview includes various unique features to guide the user.

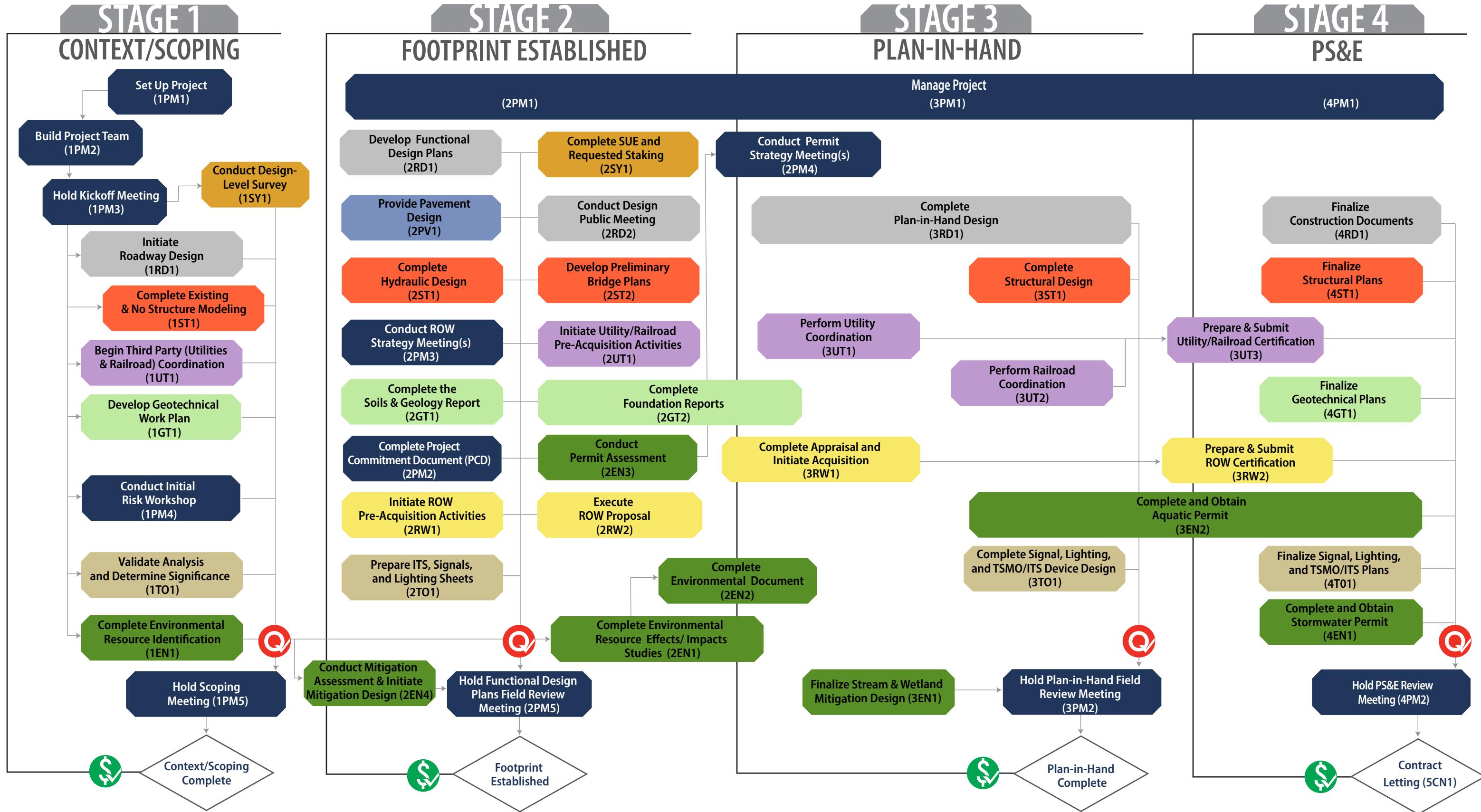
- The Discipline Legend shown at the bottom of each figure denotes an individual color for each discipline that has an activity to complete. These colors follow suite in the Concept Report as well.
- Major milestones (denoted by diamonds) conclude each stage.
- Each stage is organized by column and represents a series of activities that may need to be completed before moving onto the next stage.
 - The activities are not laid out chronologically but are generally grouped by discipline. Many activities can and should be completed simultaneously. As such, the network requires collaboration between disciplines as part of the matrix organization. The Project Manager works with technical leads to select project-relevant activities and to develop a project schedule that defines the logical relationships and order of activities for a specific project.
 - The Project Manager coordinates and ultimately determines the order and dependencies of project activities (including finalizing the logic when developing the project's MS Project schedule), keeping in mind multidisciplinary activities that could occur in the same or different stage(s) to optimize project delivery.
 - **NOTE:** It may be advantageous to advance certain activities within a stage earlier or even advance activities in later stages to the current stage, if it is more efficient to deliver the project.
- Each activity box is interactively linked to its associated section in the PDN.
 - By clicking on an activity box, a user is directed to that discipline's section for further details on the required activity's tasks and/or deliverables.
 - The header of each discipline's section includes a "Back to PDN Overview" link that takes the user back to the PDN Activity Diagram/Overview.

DEVELOP CONCEPT REPORT



DISCIPLINE LEGEND



**DISCIPLINE LEGEND**

ENVIRON

PAVEMENT

GEOTECH

ROADWAY

PROJECT MGT

ROW

STRUCTURES

SURVEY

TRAFFIC OPS

UTILITY

QUALITY CHECK

COST ESTIMATE CHECK

0EN1 Conduct Environmental Desktop Review

Overview

Identify known environmental resources and coordinate with the Strategic Transportation Investments Division (STID) and/or Long-Range Planning (LRP) to inform the design/alignment of a proposed project that avoids or minimizes environmental impacts.

References

- [TDOT Environmental Procedures Manual](#) (under the *Other Policies and Further Guidance* tab)
- [TDOT Environmental Guidelines](#)
- [TDOT Technical Handbooks](#) (in development)
- [TDOT Toolkit](#) (in development)
- [STID Comment Resolution Form](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Environmental Desktop Review Form	<ul style="list-style-type: none">▪ <i>Identify Known Environmental Resource Information</i>	Environmental Technical Leads	Environmental Administrative Lead
Concept Report Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ <i>Review the Concept Report</i>		

Identify Known Environmental Resource Information

Identification of environmental resources is critical to avoid or minimize impacts early in a project's planning and conceptual layout development. When considering environmental resources, there is a hierarchy in preservation efforts that starts with avoidance of the resources. To facilitate avoidance, the assigned Environmental Technical Lead(s) identifies and communicates known resource information to the STID Project Manager or LRP group, via the Environmental Desktop Review Form, to help in defining the draft conceptual layout ([see OSD2](#) for related information).

To initiate, an environmental desktop review request is emailed to TDOT.ENV.SpecialProjects@tn.gov following the process outlined in the *NEPA Handbook*.

Once the request is received, the assigned Environmental Technical Lead(s):

- Reviews the project location map (or .kmz), draft purpose and need or reason for the project, and all relevant information available to identify known resources. This could include:
 - Regulatory agency databases,
 - GIS layers
 - TDOT legacy documentation, and
 - All other potential data sources for previously identified environmental resources.
- Inputs information about the identified resources into the Environmental Desktop Review Form and attaches relevant supporting documentation related to the type, area, size, location, and boundaries of sensitive environmental resources.

Within two weeks of receiving the request from STID, the Environmental Administrative Lead returns the Environmental Desktop Review and/or provides comments using the STID Comment Resolution Form, returning a completed form(s) to the STID Project Manager via email ([see OSD2](#) for related information).

Related section: [OSD1](#)

Attend Site Visit

A project site visit allows the internal divisions and external stakeholders to discuss the proposed improvement, challenges, and requests to consider as the Concept Report is drafted. While the Environmental Technical Lead(s) provides comments for all projects, the Leads only attend a site visit for projects if there are known resources that need to be avoided or if resources and potential project impacts are better discussed in person.

When receiving notification from the STID Project Manager (which includes the date of the visit and a packet of information), the assigned Environmental Technical Lead(s) reviews the site visit packet to prepare for the site visit. Any discussion or findings from the site visit may refine the Environmental Technical Study Area (ETSA), potentially adjust the conceptual layout, and/or establish the scope of the environmental technical studies for Stage 1 ([see 1EN1](#) for related information).

Review the Concept Report

Within two weeks of receiving the draft Concept Report, the Environmental Administrative Lead provides review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

1EN1 Complete Environmental Resource Identification

Overview

Investigate the Environmental Technical Study Area (ETSA) to locate, identify and document environmental resources, including initiating coordination of resource findings with appropriate regulatory agencies and assisting in development of the concept design or Line and Grade Package to avoid or minimize environmental impacts.

References

- [*TDOT Environmental Procedures Manual*](#) (under the *Other Policies and Further Guidance* tab)
- [*TDOT Environmental Guidelines*](#)
- TDOT Technical Handbooks* (in development)
- TDOT Toolkit* (in development)
- [*Appendix I: FHWA Summary of Actions in the PDN*](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Environmental Boundaries Report for Historic Preservation	<ul style="list-style-type: none">▪ <i>Identify Historic Property Boundary(ies) and Initiate Agency Coordination</i>	Historic Lead	NEPA Lead, Roadway Design Lead, Structural Design Lead
Section 106 Identification Study			
Environmental Boundaries Report for Archaeology	<ul style="list-style-type: none">▪ <i>Identify Boundary(ies) for Potentially Eligible Archaeology Sites and Initiate Agency Coordination</i>	Archaeological Lead	
Section 106 Phase One Identification Study			
Native American Early Coordination Package and Correspondence	<ul style="list-style-type: none">▪ <i>Conduct Native American Coordination to Identify Consulting Parties</i>	Native American Coordination Lead	
Environmental Boundaries Report for Ecology	<ul style="list-style-type: none">▪ <i>Identify the Ecology Site Boundaries</i>	Ecology Lead	
Air Quality Study	<ul style="list-style-type: none">▪ <i>Establish Air Quality Designation</i>	Air Quality Lead	
Environmental Boundaries Report for Noise	<ul style="list-style-type: none">▪ <i>Identify Potential Noise Receptor Locations</i>	Noise Lead	
Environmental Boundaries Report for Hazardous Materials	<ul style="list-style-type: none">▪ <i>Identify Potential Hazardous Materials Sites</i>	Hazardous Materials Lead	
Phase 1 Environmental Site Assessment			
Environmental Boundaries Report for Section 4(f) Resources and Section 6(f) Resources	<ul style="list-style-type: none">▪ <i>Identify Section 4(f) and Section 6(f) Resources</i>	Historic Lead or NEPA Lead	

Technical studies' goal is to identify environmental resources that could be impacted by the proposed project and inform the project team of potential impacts. The project team determines if avoidance and minimization of impacts to environmental resources is possible. Depending on the project team's determination of avoidance or minimization efforts, the Environmental Leads determine if further study in Stage 2 is required to finalize the schedule for the Project Commitment Document (PCD).

To that end, when scoping a project's environmental efforts, the Environmental Technical Leads and/or National Environmental Policy Act (NEPA) Lead identify resources that could be impacted by the project. These resources will be provided to the project team for inclusion on the plans and to determine if avoidance measures are possible. Depending on the avoidance and minimization efforts, the Environmental Technical Leads and/or National Environmental Policy Act (NEPA) Lead determine the technical studies required to be completed for the project in Stage 2, which may add activities and time to the schedule not originally known during Stage 1.

Upon review of relevant project information, each Environmental Technical Lead determines next steps for evaluation, documenting those resources that:

- Fall under the Programmatic Agreement or an MOU/MOA, or
- Do not exist in the ETSA and, therefore, do not require further study, or
- Need further study in Stage 2 for inclusion in the Environmental Document and environmental boundaries depicted on the plans as soon as the location information is available.

Identify Historic Property Boundary(ies) and Initiate Agency Coordination

The purpose of this task is to identify preliminary historic property boundaries, pending agency and final reviews, within the ETSA. In accordance with the *Environmental Guidelines, Cultural Resources Handbook*, and *Cultural Resources Toolkit*, the Historic Lead:

- Conducts fieldwork to identify National Register-listed or eligible above-ground resources.
- Identifies historic property boundaries and provides location details to the Roadway Design Lead/Engineer for inclusion in the Line and Grade Package.
 - This step aids the Roadway Design Lead/Engineer when documenting their avoidance and minimization efforts as the design progresses ([see 1RD1](#) for related information).
 - These boundaries must remain intact throughout the life of the design plans.

- Completes an Environmental Boundaries Report that identifies the National Register boundaries for each of the historic properties within the ETSA.
- Initiates coordination with the State Historic Preservation Officer (TN-SHPO) for concurrence on the National Register Boundary(ies) of historic property(ies) in the ETSA. Note: Only TDOT Environmental staff can complete this step.
- Coordinates with the Roadway Design Lead and/or Structural Design Lead to strategize efforts to avoid or minimize impacts to potentially eligible site(s) when evaluating the concept design and/or developing the Line and Grade Package.

The Historic Lead files the Section 106 Identification Study, TN-SHPO concurrence, Environmental Boundaries Report, and all other related documentation at the designated location in the project folder.

Identify Boundary(ies) for Potentially Eligible Archaeology Sites and Initiate Agency Coordination

The purpose of this task is to identify preliminary archaeology site boundaries, pending agency and final reviews, of eligible archaeology sites within the ETSA. In accordance with the *Environmental Guidelines*, *Cultural Resources Handbook*, and *Cultural Resources Toolkit*, the Archaeological Lead:

- Conducts fieldwork to identify eligible archaeology sites/resources.
- Identifies site boundaries and provides location details (identified in accordance *TDOT Environmental Guidelines* for archaeological site) to the Roadway Design Lead/Engineer for inclusion in the Line and Grade Package.
 - This step aids the Roadway Design Lead/Engineer when documenting their avoidance and minimization efforts as the design progresses ([see 1RD1](#) for related information).
 - These boundaries must remain intact throughout the life of the design plans.
- Completes an Environmental Boundaries Report that identifies the boundaries for each of the archaeology sites within the ETSA.
- Initiates coordination with the State Historic Preservation Officer (TN-SHPO) for concurrence on the potential archaeology sites in the ETSA. Note: Only TDOT Environmental staff can complete this step.
- Coordinates with the Roadway Design Lead and/or Structural Design Lead to strategize efforts to avoid or minimize impacts to potentially eligible site(s) when evaluating the concept design and/or developing the Line and Grade Package.

The Archaeological Lead files the Section 106 Phase One Identification Study, TN-SHPO concurrence, Environmental Boundaries Report, and all other related documentation at the designated location in the project folder.

Conduct Native American Coordination to Identify Consulting Parties

The purpose of this task is to coordinate with federally recognized Native American tribes within the project area and identify which tribes are Section 106 Consulting Parties. In accordance with the *Environmental Guidelines, Cultural Resources Handbook, and Cultural Resources Toolkit*, the Native American Coordination Lead:

- Completes an Early Coordination Packet.
- Corresponds with federally recognized Native American Tribes.

The Native American Coordination Lead files all related documentation at the designated location in the project folder.

Identify Ecology Site Boundaries

The purpose of this task is to identify preliminary ecology boundaries, pending agency and final reviews, within the ETSA. In accordance with the *Environmental Guidelines, Ecology Handbook, and Ecology Toolkit*, the Ecology Lead:

- Conducts fieldwork to identify water, species, and habitat resource feature boundaries within the ETSA.
- Identifies site boundaries and provides shapefiles or location details to the Roadway Design Lead/Engineer for inclusion in the Line and Grade Package.
 - This step aids the Roadway Design Lead/Engineer when documenting their avoidance and minimization efforts as the design progresses ([see 1RD1](#) for related information).
 - These boundaries must remain intact throughout the life of the design plans.
- Completes an Environmental Boundaries Report that identifies the boundary for each ecological feature within the ETSA.
- Initiates coordination with all state and federal regulatory agencies for concurrence on the water, species, and habitat resources identified. Note: Only TDOT Environmental staff can complete this step.
- Coordinates with the Roadway Design Lead and/or Structural Design Lead to strategize efforts to avoid or minimize impacts to potentially eligible site(s) when evaluating the concept design and/or developing the Line and Grade Package.

The Ecology Lead files the EBR, ecology shapefiles or location details, and all other related documentation at the designated location in the project folder.

Establish Air Quality Designation

To initiate an air quality study to determine if there are impacts to air quality, the Air Quality Lead determines the study area's air quality designation (e.g., attainment, non-attainment,

maintenance area) in accordance with the *Environmental Guidelines, Air & Noise Handbook, and Air & Noise Toolkit*.

The Air Quality Lead notifies the Project Manager and Roadway Design Lead of the designation so that the team can complete needed documentation if no further study is needed or account for the time required to complete further study and analysis using the Line and Grade Package in Stage 2.

Identify Potential Noise Receptor Locations

The purpose of this task is to identify potential noise receptors within the ETSA. In accordance with the *Environmental Guidelines, Air & Noise Handbook, and Air & Noise Toolkit*, the Noise Lead:

- Conducts fieldwork to identify potential noise-sensitive receivers/receptors within the ETSA.
- Identifies receiver/receptor and provides location details to the Roadway Design Lead/Engineer for inclusion in the Line and Grade Package. These boundaries must remain intact throughout the life of the design plans.
- Completes an Environmental Boundaries Report that identifies the potential noise sensitive receivers/receptors.
- Coordinates with the Roadway Design Lead and/or Structural Design Lead to strategize efforts to avoid or minimize impacts to potentially receiver(s)/receptor(s) when evaluating the concept design and/or developing the Line and Grade Package.

On the chance that an initial noise study can advance in this Stage 1, the Noise Lead may elect to input a set of modeling and design assumptions into the noise model based on the conceptual layout and information in the final Concept Report ([see OSD2](#) and [OSD3](#) for related information).

- This early modeling would represent a worst-case scenario for potential noise barrier locations and size.
- As the Line and Grade Package is solidified by the Roadway Design Lead at the end of this Stage 1, the Noise Lead would likely have to re-run the noise model with the more accurate horizontal and vertical alignment from the current design plans.
- The steps to complete a required noise analysis are further detailed in Stage 2.

The Noise Lead files the Environmental Boundaries Report and all other related documentation ([see 2EN1](#) for related information) at the designated location in the project folder.

Related section: [2EN1](#), [2GT2](#), [2RD1](#)

Identify Potential Hazardous Materials Sites

The purpose of this task is to identify and avoid hazardous materials locations within the ETSA. In accordance with the *Environmental Guidelines* and *Hazardous Materials Handbook*, the Hazardous Materials Lead:

- Completes appropriate level of Hazardous Materials review within the ETSA, based on information available, and conducts any initial (e.g., Phase 1) Environmental Site Assessments or other studies, as required.
- Identifies site boundaries and provides location details to the Roadway Design Lead/Engineer for inclusion in the Line and Grade Package.
 - This step aids the Roadway Design Lead/Engineer when documenting their avoidance and minimization efforts as the design progresses ([see 1RD1](#) for related information).
 - These boundaries must remain intact throughout the life of the design plans.
- Completes an Environmental Boundaries Report that identifies the boundary for each site within the ETSA.
- Initiates coordination, as needed, with all state and federal regulatory agencies. Note: Only TDOT Environmental staff can complete this step.
- Coordinates with the Roadway Design Lead and/or Structural Design Lead to strategize efforts to avoid or minimize impacts to site(s) when evaluating the concept design and/or developing the Line and Grade Package.

The Hazardous Materials Lead files the Environmental Boundaries Report and all other related documentation at the designated location in the project folder.

Identify Section 4(f) and Section 6(f) Resources

The purpose of this task is to identify, avoid, and minimize harm to Section 6(f) and Section 4(f) resources within the ETSA. In accordance with the *Environmental Guidelines* and *NEPA Handbook*, the Historic Lead or NEPA Lead (depending on the resource):

- Conducts fieldwork to identify potential Section 4(f) and/or Section 6(f) resources within the ETSA.
- Identifies site boundaries and provides location details to the Roadway Design Lead/Engineer for inclusion in the Line and Grade Package.
 - This step aids the Roadway Design Lead/Engineer when documenting their avoidance and minimization efforts as the design progresses ([see 1RD1](#) for related information).
 - These boundaries must remain intact throughout the life of the design plans.
- Completes an Environmental Boundaries Report that identifies the boundary for each site within the ETSA.
- Initiates coordination with the Official with Jurisdiction (OWJ) and FHWA for concurrence on the type of 4(f) impact (*de minimis*, full 4(f), temporary occupancy, etc.).



- Note: Only TDOT Environmental staff can complete this step.
- This step can be completed if the impacts are known at the time of submittal. This may occur in Stage 2.
- Initiates coordination with the Tennessee Department of Environment and Conservation (TDEC) and National Park Service (NPS), as needed, for any identified potential impacts to 6(f) resources identified.
 - Note: Only TDOT Environmental staff can complete this step.
 - This step can be completed if the impacts are known at the time of submittal. This may occur in Stage 2.
- Coordinates with the Roadway Design Lead and/or Structural Design Lead to strategize efforts to avoid or minimize impacts to potentially eligible site(s) when evaluating the concept design and/or developing the Line and Grade Package.

The Historic Lead or NEPA Lead files the Environmental Boundaries Report and all other related documentation at the designated location in the project folder.

2EN1 Complete Environmental Resource Effects/Impacts Studies

Overview

Ensure compliance with all relevant federal and state environmental laws and regulations via technical studies that document impacts to each environmental resource type as identified within the Environmental Technical Study Area (ETSA) and the immediate vicinity.

References

- [*TDOT Environmental Procedures Manual*](#) (under the *Other Policies and Further Guidance* tab)
- [*TDOT Environmental Guidelines*](#)
- TDOT Technical Handbooks* (in development)
- TDOT Toolkit* (in development)
- [*Appendix I: FHWA Summary of Actions in the PDN*](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Resource Effect/Impact Evaluations	<ul style="list-style-type: none">▪ <i>Complete Necessary Resource Effect/Impact Evaluations</i>	NEPA Lead	
Section 106 Effects Assessment and Concurrence	<ul style="list-style-type: none">▪ <i>Complete Historic Preservation Effects Study</i>	Historic Lead	
Phase Two Archaeology Eligibility Study and Concurrence	<ul style="list-style-type: none">▪ <i>Complete Phase Two Archaeological Eligibility Study</i>	Archaeological Lead	
Air Quality Impact Study	<ul style="list-style-type: none">▪ <i>Complete Air Quality Impact Study</i>	Air Quality Lead	
Noise Abatement Study and Noise Barrier Locations	<ul style="list-style-type: none">▪ <i>Complete Noise Abatement Study</i>	Noise Lead	
Ecology Reports and Concurrence	<ul style="list-style-type: none">▪ <i>Finalize Ecology Environmental Boundaries Report</i>	Ecology Lead	
Hazardous Materials Study	<ul style="list-style-type: none">▪ <i>Complete Hazardous Materials Study</i>	Hazardous Material Lead	

For the scoped technical studies, the assigned Technical Lead references:

- The ETSA to ensure the current alignment does not extend beyond the originally studied area, and
- The Line and Grade Package or Functional Design Plans ([see 1RD1](#) and [2RD1](#) for related information) to assess impacts to identified environmental resources within the proposed right-of-way.



If design changes alter the project footprint (horizontal and vertical) or modify a design feature or scope element that will impact environment resources (such as altering a bridge configuration to include bridge piers in the water) after the Environmental Document is approved, additional studies, documentation, and coordination with the regulatory agencies may be required, and the Environmental Document would need to be re-evaluated so that construction funding may be obligated prior to letting the project.

The project team, led by the NEPA Lead, Roadway Design Lead, and Project Manager, should regularly discuss impacts and consequences of potential design changes prior to finalization in order to discuss the risk to the project schedule in completing a NEPA re-evaluation.

Complete Necessary Resource Effect/Impact Evaluations

In addition to the identified studies completed by the various Technical Leads (see below), the NEPA Lead completes or requests all other required resource impact evaluations, which may include:

- Social/community impacts
- Farmland
- Environmental justice
- Economic and business impacts
- Land use planning and land use
- Visual quality
- Traffic and crash
- Section 4(f) and section 6(f)
- Wild and scenic rivers
- Floodplains
- Pedestrian and bicycle
- Energy
- Construction
- Indirect and cumulative

The NEPA Lead files the effects memos and all other related documentation at the designated location in the project folder, notifying the project team when complete. The NEPA Lead includes the relevant information with the Environmental Document in accordance with the *Environmental Guidelines* and *NEPA Handbook*.

Complete Historic Preservation Effects Study

If National Register listed or eligible properties are identified in the ETSA, the Historic Lead drafts an Historic Preservation Effects Study to document the effect the design would have on the impacted historic resource(s). The Study is based on the Line and Grade Package or a version of the Functional Design Plans (depending on project complexity and needed detail to complete the assessment) provided by the Roadway Design Lead and is subject to change if/when design plans change. If design plans change, the study may need to be conducted again.

The State Historic Preservation Officer (TN-SHPO) is provided an opportunity to comment on the Historic Preservation Effects Study and provides written comments about the project.

In accordance with the *Environmental Guidelines, Cultural Resources Handbook, and Cultural Resources Toolkit*, the Historic Lead:

- Completes a Section 106 Effects Assessment and Memorandum of Agreement (if applicable).
- Continues to coordinate with the Roadway Design Lead and/or Structural Design Lead to strategize and document efforts to avoid, minimize, and/or mitigate impacts to the potentially eligible site(s).
- Coordinates with the State Historic Preservation Officer (TN-SHPO) and consulting parties for concurrence on the effect the project would have on the historic resource(s). Note: Only TDOT Environmental staff can complete this step.

The Historic Lead files the Section 106 Effects Assessment, the TN-SHPO concurrence, and all other related documentation at the designated location in the project folder, notifying the project team when complete. The Historic Lead provides this documentation to the assigned NEPA Lead for inclusion with the Environmental Document in accordance with the *Environmental Guidelines Cultural Resources Handbook, and Cultural Resources Toolkit*.

Complete Phase Two Archaeological Eligibility Study

If potentially eligible archaeology sites identified in the ETSA cannot be avoided, a Phase Two Archaeological Study is required to determine if a site is eligible for listing in the National Register of Historic Places. The Phase Two Archaeological Eligibility Study is based on the right-of-way locations identified in the Line and Grade Package or a version of the Functional Design Plans (depending on project complexity and needed detail to complete the study). After phase two testing is completed, the State Historic Preservation Officer (TN-SHPO) is provided an

opportunity to determine if the site is eligible for listing in the National Register of Historic Places. If design plans change, the study may need to be conducted again.

In accordance with the *Environmental Guidelines Cultural Resources Handbook, and Cultural Resources Toolkit*, the Archaeological Lead:

- Completes a Phase Two Archaeological Eligibility Study.
- Continues to coordinate with the Roadway Design Lead and/or Structural Design Lead to strategize and document efforts to avoid, minimize, and/or mitigate impacts to the potentially eligible site(s).
- Coordinates with the State Historic Preservation Officer (TN-SHPO) for concurrence on the National Register eligibility of the archaeology site. Note: Only TDOT Environmental staff can complete this step.

The Archaeological Lead files the Phase Two Archaeological Eligibility Study, TN-SHPO Concurrence, and all other related documentation at the designated location in the project folder, notifying the project team when complete. The Archaeological Lead provides this documentation to the assigned NEPA Lead for inclusion with the Environmental Document in accordance with the *Environmental Guidelines* and *Cultural Resources Handbook*.

Complete Air Quality Impact Study

Depending on the air quality designation determined in Stage 1, the Air Quality Lead completes an Air Quality Impact Study, which may include a hot-spot analysis, using the Line and Grade Package in accordance with the *Environmental Guidelines* and *Air & Noise Handbook*. If design plans change, the study may need to be conducted again.

The Air Quality Lead files the Air Quality Impact Study and all other related documentation at the designated location in the project folder, notifying the project team when complete. The Air Quality Lead provides this documentation to the assigned NEPA Lead for inclusion with the Environmental Document in accordance with the *Environmental Guidelines* and *Cultural Resources Handbook*.

Complete Noise Abatement Study

To finalize noise abatement for impacted land use areas (provided that the previous study in Stage 1 identified noise-sensitive land use areas/receptors within the ETSA), the Noise Lead completes a Noise Abatement Study that evaluates (or confirms) the need for noise barriers and determines if barriers are feasible and reasonable in accordance with the *TDOT Noise Policy*,

Environmental Guidelines, and *Air & Noise Handbook*. If design plans change, the study may need to be conducted again.

The Noise Lead files the Noise Abatement Study and all other related documentation at the designated location in the project folder, notifying the project team when complete. The Noise Lead provides this documentation to the assigned NEPA Lead for inclusion with the Environmental Document in accordance with the *Environmental Guidelines* and *Cultural Resources Handbook*.

The Noise Lead coordinates with the Roadway Design Lead and Structural Design Lead on placement of any proposed noise barriers on the Functional Design Plans prior to the associated field review. The noise barriers remain throughout the life of the design plans and are refined in coordination with the Roadway Design Lead, Structural Design Lead, and Lead Geotechnical Engineer/Geologist.

Related section: [2GT2](#)

Complete Ecology Environmental Boundaries Report

To identify impacts to the identified ecology features within the ETSA and in accordance with the *Environmental Guidelines* and *Ecology Handbook*, the Ecology Lead:

- Reviews the Line and Grade Package or a version of the Functional Design Plans (depending on project complexity and needed detail to complete the assessment) provided by the Roadway Design Lead.
- Completes any updates to the Environmental Boundary Report (EBR) that identify impacts to ecology features within the ETSA. If design plans change, the study may need to be conducted again.
- Coordinates with all state and federal regulatory agencies for concurrence on the impacted features within the ETSA. Note: Only TDOT Environmental staff can complete this step.

The Ecology Lead files the reports and all other related documentation at the designated location in the project folder, notifying the project team when complete. The Ecology Lead distributes the EBR to all project team members, including the NEPA Lead, Environmental Mitigation Lead, and Environmental Permit Lead in accordance with the *Environmental Guidelines* and *Cultural Resources Handbook*. The Ecology Lead coordinates with the Roadway Design Lead and Project Manager on any updates to the environmental boundaries on all applicable design plans.

Complete Hazardous Materials Study

To finalize project impacts to hazardous materials (if any), the Hazardous Materials Lead:

- Conducts any additional Environmental Site Assessments or other studies as required.
- Reviews the Line and Grade Package or a version of the Functional Design Plans (depending on project complexity and needed detail to complete the assessment) provided by the Roadway Design Lead.
- Completes any updates to the Environmental Boundary Report (EBR) that identify impacts to hazardous materials within the ETSA. If design plans change, the study may need to be conducted again.
- Coordinates with all state and federal regulatory agencies for concurrence on the impacted features within the ETSA. Note: Only TDOT Environmental staff can complete this step.
- Communicates any future remediation activities (e.g., asbestos abatement, removal, or closure of Underground Storage Tanks (USTs), etc.) to the project team to incorporate into the delivery and construction schedule.

The Hazardous Materials Lead files the reports and all other related documentation at the designated location in the project folder, notifying the project team when complete. The Hazardous Materials Lead distributes the EBR to all project team members, including the NEPA Lead in accordance with the *Environmental Guidelines and Hazardous Materials Handbook*. The Hazardous Materials Lead coordinates with the Design Lead and Project Manager on any updates to the environmental boundaries on all applicable design plans.

Confirm Multimodal Compliance Determination

Based on the Final Multimodal Considerations and Recommendations in the Concept Report (including a compliance determination and any noted exceptions to the *TDOT Multimodal Access Policy*), the NEPA Lead (or as assigned) reviews the multimodal information to:

- Confirm that the *TDOT Multimodal Access Policy* has not changed since and that the plans/ETSA are generally consistent with the published Concept Report.
- If either item has changed, the NEPA Lead (or assigned) requests that the Multimodal Lead review the current design and update the Multimodal Considerations and Recommendations and confirm the determination/justification in the multimodal section of the Environmental Document.
- Once confirmed, include the published compliance determination/justification to complete the multimodal section of the Environmental Document ([see OMM1](#) for related information).

2EN2 Complete Environmental Document

Overview

Complete a categorical exclusion (CE), either C-list, PCE, or D-list, NEPA document or Tennessee Environmental Evaluation Report (TEER) to document the environmental decision.

References

- [TDOT Environmental Procedures Manual](#) (under the *Other Policies and Further Guidance* tab)
- [TDOT Environmental Guidelines](#)
- TDOT Technical Handbooks (in development)
- TDOT Toolkit (in development)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
NEPA Document or TEER	<ul style="list-style-type: none">▪ <i>Complete Environmental Document</i>▪ <i>Receive Approval</i>	NEPA Lead	Environmental Administrative Lead

Review/Finalize Purpose and Need Statement

As part of completing the Environmental Document, the NEPA Lead reviews the purpose and need, clarifying any language with the assigned STID Project Manager, if needed. The NEPA Lead includes the final purpose and need with the Environmental Document in accordance with the *Environmental Guidelines* and *NEPA Handbook*.

Complete Environmental Document

Compliance with the NEPA is required for all TDOT projects that have FHWA/federal funding. Compliance for state-funded projects (no FHWA/federal funding) is through a Tennessee Environmental Evaluation Report (TEER). The NEPA document or TEER must be completed prior to acquisition of any property for the project (*see 3RW1* for related information).

The Environmental Document may be completed using the Concept Report's conceptual layout if there are no resources identified and impacts to assess in the ETSA. However, if potential impacts are possible, the Environmental Document is completed using an early set of draft Functional Design Plans or compiled Functional Design Plans (depending on project complexity and needed detail to complete the Environmental Document).

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If design changes alter the project footprint (horizontal and vertical) or modify a design feature or scope element that will change an impact to an environment resource(s) after the Environmental Document is approved, additional studies, documentation, and coordination with the regulatory agencies may be required, and the Environmental Document would need to be re-evaluated so that construction funding may be obligated prior to letting the project.

The project team, led by the NEPA Lead, Roadway Design Lead, and Project Manager, should regularly discuss impacts and consequences of potential design changes prior to finalization in order to discuss the risk to the project schedule in completing a NEPA re-evaluation.

The NEPA Lead completes the Environmental Document template in accordance with the *Environmental Guidelines, NEPA Technical Handbook, and NEPA Toolkit*.

Receive Approval

The Environmental Lead reviews and approves the NEPA Document or TEER or coordinates the approval of the NEPA Document with FHWA (including project-specific durations for initial submittal, response to FHWA comments, and final approval process) in accordance with the *Environmental Guidelines, NEPA Technical Handbook, and NEPA Toolkit*.

The NEPA Lead distributes to applicable project team members (including the Roadway Design Lead, Programming Lead, and Environmental Permit Lead) and then files the approved NEPA Document or TEER, with all other related documentation, into the designated location in the project folder.

2EN3 Conduct Permit Assessment

Overview

Complete a permit assessment referencing the environmental features/boundaries detailed in the Environmental Boundaries Report (EBR) as depicted on the Line and Grade Package or Functional Design Plans. Use the assessment to coordinate design options and permit sketches to support developing and submitting a project's permit applications.

References

- [TDOT Environmental Procedures Manual](#) (under Other Policies and Further Guidance)
- [TDOT Environmental Guidelines](#)
- [TDOT Technical Handbooks](#) (in development)
- [TDOT Toolkit](#) (in development)
- [TDOT Environmental Permitting Design Process](#)

Deliverables

Deliverable	Task	Responsible Party ^a Activity Leader
Permit Assessment (Redline Plans and request for Permit Sketches)	<ul style="list-style-type: none">▪ <i>Conduct Permit Assessment</i>	Environmental Permit Lead
Permittable Plans Package	<ul style="list-style-type: none">▪ <i>Finalize Plans and Sketch Review and Prepare Permittable Plans Package</i>▪ <i>Evaluate Permittable Plans Package</i>	Environmental Permit Lead

^a The Environmental Permit Lead may be staff from the TDOT Permit Section or Regional ETO staff (as assigned).

Conduct Permit Assessment

Federal and state aquatic resource permits are required for proposed impacts to streams and wetlands. A Permit Assessment:

- Ensures that the design is in compliance with federal and state environmental regulations,
- Identifies required environmental permits for all TDOT projects, and
- Begins the coordination process with the Roadway Design Lead and other project team members on how to develop permittable plans and sketches that meet all regulatory requirements.

To conduct the assessment, the Environmental Permit Lead (assigned staff from the TDOT Permit Section or as assigned to the Regional ETO staff) reviews:



- The Environmental Boundaries Report (notably the features/boundaries depicted in the EBR),
- Current version of the Utility Coordination Plans (if available), and
- Line and Grade Package or Functional Design Plans (either of which must include the boundaries of the identified ecological features) to identify and communicate permit requirements.

This includes identifying potential design revisions (within the established footprint only), permit sketches, and information describing alternatives considered to avoid and minimize impacts.

If there are no proposed impacts to stream or wetland areas in the EBR, then further action is not required, and the assessment is submitted as noted below.

If there are potential impacts to streams and wetlands, the Environmental Permit Lead then:

- Reviews impacts to environmental features (streams and wetlands).
- Based on the impacts, identifies the types of environmental permits required.
- Redlines plans to identify required changes in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*.
- Coordinates with the Roadway Design Lead on all required design revisions/redlines to ensure the plans meet regulatory requirements for avoidance and minimization.
- Identifies the need for permit sketches and the location where permit sketches are required.
- Coordinates with the Mitigation Lead when mitigation credits or natural channel designs ([see 2EN4](#) and [3EN1](#) for related information) are required.

The Environmental Permit Lead submits the permit assessment for the Functional Lead review in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*. Once approved, the Environmental Permit Lead provides the documentation to the Roadway Design Lead and Project Manager and files the documentation in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*.

Related sections: [2RD1](#), [1SY1](#), [3UT1](#)

Finalize Plans and Sketch Review and Prepare Permittable Plans Package

When impacts to streams and wetlands are identified, the Environmental Permit Lead:

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- Continues to coordinate with the Roadway Design Lead on all required design revisions/redlines to ensure the plans meet regulatory requirements for avoidance and minimization.
- Finalizes permit sketches in coordination with the Roadway Design Lead/Engineer.
- Prepares the permittable plans package(s).

The Environmental Permit Lead submits the permittable plans package to Headquarters Permitting for review in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*.

Related section: [2RD1](#)

Evaluate Permittable Plans Package

Headquarters Permitting reviews the permittable plans package to ensure all federal and state requirements have been met in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*.

2EN4 Conduct Mitigation Assessment and Initiate Mitigation Design

Overview

Assess mitigation to offset identified and unavoidable stream and wetland impacts from the project in Stage 2. Initiate the mitigation design to offset and generate mitigation credits required for the “transportation project,” as opposed to an off-site mitigation project (delineated throughout this section).

References

- [TDOT Environmental Procedures Manual](#) (under the *Other Policies and Further Guidance* tab)
- [TDOT Environmental Guidelines](#)
- [TDOT Technical Handbooks](#) (in development)
- [TDOT Toolkit](#) (in development)

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
Mitigation Assessment	<ul style="list-style-type: none">▪ Complete Mitigation Assessment	Environmental Mitigation Lead	
Draft Mitigation Plans	<ul style="list-style-type: none">▪ Develop Preliminary Mitigation Plan	Mitigation Designer	Environmental Mitigation Lead

^a The Environmental Mitigation Lead is assigned staff from the TDOT Mitigation Office.

Complete Mitigation Assessment

To meet federal and state mitigation regulation, policy, and guidance and to determine if there are impacts to environmental features that require mitigation, the Environmental Mitigation Lead (assigned staff from the TDOT Mitigation Office) reviews the Line and Grade Package (which must include boundaries of identified ecological features) and the Environmental Boundaries Report (EBR) as part of a Mitigation Assessment to:

- Identify stream and wetland areas requiring mitigation.
 - If there are no stream or wetland areas in the EBR, then the mitigation assessment and further action are not required.
- Identify the availability of a Mitigation Bank or In-Lieu Fee mitigation credits.

- Where Mitigation Bank or In-Lieu Fee credits are not available, identify potential locations on or adjacent to the transportation project for on-site permittee responsible mitigation (PRM) and associated needs for additional mitigation right-of-way.

If locations on or adjacent to the transportation project (as opposed to an off-site mitigation project) are suitable for on-site mitigation, then the Environmental Mitigation Lead identifies those areas on the plans and requests any additional mitigation right-of-way be identified on the Functional Design Plans as part of the mitigation assessment. The Environmental Mitigation Lead completes and submits the mitigation assessment to the Roadway Design Lead, Project Manager, and the ROW Division.

The TDOT Mitigation Office reviews and approves the mitigation assessment in accordance with the *Environmental Guidelines*, *Mitigation Technical Handbook*, and *Mitigation Toolkit*. Once approved, the Environmental Mitigation Lead provides the documentation to the Roadway Design Lead or Roadway Engineer, who coordinates possible changes to right-of-way needs with the Project Manager and ROW Lead. The Environmental Mitigation Lead also files the documentation in accordance with the *Environmental Guidelines*, *Mitigation Technical Handbook*, and *Mitigation Toolkit*.

Develop Preliminary Mitigation Plan

Compensatory mitigation offsets unavoidable stream and wetland impacts from transportation projects, and the final mitigation design is a requirement of the state and federal permitting process to offset and generate mitigation credits required for the transportation project.

As part of the design development in Stage 2, the Mitigation Designer develops plans for the proposed on-site mitigation area(s) in accordance with the *Environmental Guidelines*, *Mitigation Technical Handbook*, and *Mitigation Toolkit* and as directed by the Environmental Mitigation Lead. The plans are to depict the needed right-of-way for stream mitigation and preliminary stream channel design. The Environmental Mitigation Lead reviews the plans and then provides mitigation plan sheets to the Roadway Design Lead for incorporation into the Functional Design Plans. When mitigation needs cannot be fully addressed as part of the transportation project, an off-site mitigation project could be required. This requires a separate set of mitigation plans.

As the Roadway Engineer/Roadway Design Lead develops the Utility Coordination Plans, the project team should note that right-of-way used for mitigation typically is not to be used for utility relocations for the transportation project and/or future utility relocations; however, this situation may be allowed to reduce a project's cost and schedule risk ([see 3EN1](#) for related

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information). The Environmental Mitigation Lead coordinates with the Roadway Design Lead and Utility Coordinator for reference on the roadway plans and Utility Coordination Plans.

Once complete, the Environmental Mitigation Lead provides the documentation to the Roadway Design Lead and Environmental Permit Lead to incorporate into the permit application. The Environmental Mitigation Lead also files the documentation in accordance with the *Environmental Guidelines, Mitigation Technical Handbook, and Mitigation Toolkit*.

Related section: [3UT1](#), [2EN3](#), [3EN2](#)

3EN1 Finalize Stream and Wetland Mitigation Design

Overview

Finalize mitigation design to offset and generate mitigation credits required for the transportation project as soon as feasible, but no later than Stage 3.

References

- [*TDOT Environmental Procedures Manual*](#) (under the *Other Policies and Further Guidance* tab)
- [*TDOT Environmental Guidelines*](#)
- TDOT Technical Handbooks* (in development)
- TDOT Toolkit* (in development)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Final Mitigation Plans	▪ <i>Finalize Mitigation Plans</i>	Mitigation Designer	Environmental Mitigation Lead ^a

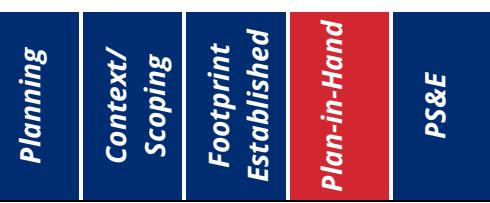
^a The Environmental Mitigation Lead is assigned staff from the TDOT Mitigation Office.

Finalize Mitigation Plans

To finalize the Stream and Wetland Mitigation Design Plan Sheets (the Mitigation Plans), the Mitigation Designer refines the sheets for the proposed on-site mitigation area(s) in accordance with the *Environmental Guidelines*, *Mitigation Technical Handbook*, and *Mitigation Toolkit* and as directed by the Environmental Mitigation Lead (assigned staff from the TDOT Mitigation Office). The plans continue to depict the previously identified right-of-way for stream mitigation, final mitigation design, and if there are utilities in the mitigation area (although not preferred, this may be allowed to reduce project's cost and schedule risk).

Once ready for review, the Environmental Mitigation Lead and a supervisor from the TDOT Mitigation Office review and approve the Mitigation Plans in accordance with the *Environmental Guidelines*, *Mitigation Technical Handbook*, and *Mitigation Toolkit*. Once approved, the Environmental Mitigation Lead provides the documentation to the Roadway Design Lead and Permits Section Designer for incorporation into the roadway plans after US Army Corp of Engineers (USACE) and Tennessee Department of Environment and Conservation (TDEC) review, comment, and approval as part of the permit application ([see 3EN2](#) for related information). The goal is to include this information as part of the Plan-in-Hand Plans in Stage 3, but if completed

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sooner, this information is incorporated into the current design (Functional Design Plans). The Environmental Mitigation Lead files the documentation in accordance with the *Environmental Guidelines, Mitigation Technical Handbook, and Mitigation Toolkit*.

3EN2 Complete and Obtain Aquatic Permit

Overview

Complete and submit the necessary aquatic permit application(s). Obtain permit(s), review the conditions, and distribute the permit(s) required to construct the projects.

References

- [*TDOT Environmental Procedures Manual*](#) (under the *Other Policies and Further Guidance* tab)
- [*TDOT Environmental Guidelines*](#)
- TDOT Technical Handbooks* (in development)
- TDOT Toolkit* (in development)
- [*TDOT Environmental Permitting Design Process*](#)

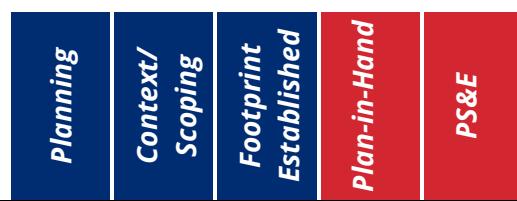
Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
Aquatic Permit Application	<ul style="list-style-type: none">▪ <i>Complete Aquatic Permit Application</i>▪ <i>Modify or Complete Aquatic Permit Applications (for Utility Relocations)</i>	TDOT Permit Section
Aquatic Resource Permit(s)	<ul style="list-style-type: none">▪ <i>Obtain Aquatic Resource Permits</i>	TDOT Permit Section

Complete Aquatic Permit Application

If no permits are required based on [2EN3](#), the Environmental Permit Lead (assigned staff from the TDOT Permit Section or as assigned to the Regional ETO staff) sends a “no-permit required” notification/email to the Project Manager, Roadway Design Lead, and others as detailed in the *Environmental Guidelines*, *Permits Technical Handbook*, and *Permits Toolkit*.

For impacts to environmental features (such as wetlands and streams), aquatic resource permits from the U.S. Army Corps of Engineers (USACE), the Tennessee Department of Environment and Conservation (TDEC), and the Tennessee Valley Authority (TVA) are potentially required as identified in [2EN3](#). Building off the permittable plans ([see 2RD1](#) for related information), a complete permit application and documentation is developed and submitted to the appropriate regulatory agencies to obtain the required permits.



To complete an application, the Environmental Permit Lead (assigned staff from the TDOT Permit Section):

- Determines the environmental impact details requiring a permit(s) and writes the permit application in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit* and relevant regulatory agency requirements.
- Includes all supporting documentation with the application, including the permittable roadway plans, permit sketches, mitigation information, Environmental Boundaries Report, and any other required agency coordination documentation.
- Submits the draft application to the TDOT Permit Section for review prior to submittal to the regulatory agency.

The TDOT Permit Section reviews and approves the permit application in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*. Once approved, the Environmental Permit Lead submits the application to the corresponding regulatory agency (i.e., TDEC, USACE, and TVA) and files the documentation in accordance with the *Environmental Guidelines, Permits Technical Handbook, and Permits Toolkit*.

The permit application submittal begins both the permitting process and review timeframes for the regulatory agency to confirm a complete application has been submitted.

Modify or Complete Aquatic Permit Applications (for Utility Relocation Impacts)

Considering when the aquatic permit application for the roadway project is submitted compared to when the Utility Relocation Plans (aka Rainbow Plans) are available for review ([see 3UT1](#) for related information), the Environmental Permit Lead may need to modify the previously submitted application or prepare an additional application to address impacts caused by unavoidable utility relocations to certain environmental features (such as wetlands and streams).

To do this, the Environmental Permit Lead follows the same process as listed above for completing an application.

NOTE: The need for this additional step may not be known until the Utility Relocation Plans (aka Rainbow Plans) have been received and reviewed. Depending on the extent of impacts, this step could considerably impact the project schedule (e.g., delay letting). To mitigate delay, the Project Manager, Roadway Design Lead, Utility Coordination Lead, and Environmental Permit Lead should coordinate as early and as often as possible to:



- Identify environmental features and potential areas not to be used for utility relocations, denoting these areas on the Utility Coordination Plans ([see 2RD1](#) for related information).
- Support the Utility Coordination Lead in his/her meetings and discussions with the Utility Owners on relocation impacts, notably if the relocation could impact an environmental feature.
- Evaluate schedule risk for either modifying the existing permit application or preparing and submitting a new application to address utility relocation impacts.

Related sections: [2RD1](#), [3UT1](#)

Obtain Aquatic Resource Permits

All aquatic resource permits must be obtained from the required state and federal regulatory agencies prior to work beginning in the coverage area. Once the permit(s) is obtained, the Environmental Permit Lead reviews the conditions and wording for accuracy, distributes, and files the permits in accordance with the *Environmental Guidelines*, *Permits Technical Handbook*, and *Permits Toolkit*.

4EN1 Complete and Obtain Stormwater Permit

Overview

Complete and submit the necessary stormwater permit application(s). Obtain permit(s), review the conditions, and distribute the permit(s) required to construct the project.

References

- [TDOT Environmental Procedures Manual](#) (under the *Other Policies and Further Guidance* tab)
- [TDOT Environmental Guidelines](#)
- [TDOT Technical Handbooks](#) (in development)
- [TDOT Toolkit](#) (in development)
- [TDOT Environmental Permitting Design Process](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Stormwater Application for CGP Coverage	<ul style="list-style-type: none">▪ <i>Complete Stormwater Permit Application</i>	Regional ETO Staff or TDOT Permit Section (as assigned)	Regional ETO Staff or TDOT Permit Section
NPDES Coverage	<ul style="list-style-type: none">▪ <i>Obtain NPDES Coverage</i>		

Complete Stormwater Permit Application

The National Pollutant Discharge Elimination System (NPDES) Construction Stormwater Permit is regulated by the Environmental Protection Agency (EPA) and delegated to TDEC. The NPDES program requires that construction projects incorporate appropriate erosion prevention and sediment control (EPSC) on the project and that a Stormwater Pollution Prevention Plan (SWPPP) is submitted as part of the application process.

To complete this task, the assigned Regional ETO Staff, Permit Section Staff, or SWPPP consultant (as assigned):

- Reviews the Functional Design Plans and EPSC plans for accuracy, redlining the plans to note changes.
- Note: When using a SWPPP consultant, a good practice is to procure the consultant about **six weeks prior to** the Functional Design Plans submittal date so that the consultant has an opportunity to comment on the Plans.



- Submits and coordinates comments with the Roadway Design Lead and applicable Roadway Engineer for revisions with enough time prior to the Plan-in-Hand Plans submittal for changes to be implemented that ensure regulatory requirements are met.
- Develops a Stormwater Application, including the SWPPP and documentation, for submittal to TDEC for approval.
- Regional ETO Staff or Permit Section Staff applies for Construction General Permit (CGP) coverage.

For projects assigned to SWPPP Consultants, prior to submittal, the Regional ETO Staff or Permit Section Staff (as assigned):

- Reviews and approves the Stormwater Application (including the SWPPP, sealed EPSC plans, and other required documentation),
- Submits the application to the regulatory agency (i.e., TDEC), and
- Files the documentation in accordance with the *Environmental Guidelines, Permits Technical Handbook*, and *Permits Toolkit*.

Obtain NPDES Coverage

The NPDES permit must be obtained from the required state and federal regulatory agencies prior to starting any construction work. Once the permit is obtained, the assigned Regional ETO Staff or Permit Section Staff (as assigned) reviews the conditions and wording for accuracy, distributes, and files the permit in accordance with the *Environmental Guidelines, Permits Technical Handbook*, and *Permits Toolkit*.

0GT1 Conduct Preliminary Geotechnical Assessment

Overview

Complete a high-level review of the project for potential/major geotechnical risks or mitigation opportunities in the project area as requested by the Strategic Transportation Investments Division (STID).

References

- [TDOT Geotechnical Guidelines](#)
- [MicroStation \(.dgn\) Design Templates](#)
- [STID Comment Resolution Form](#)
- [Federal Highway Administration \(FHWA\) Geotechnical Technical Guidance Manual](#)
- [American Association of State Highway and Transportation Officials \(AASHTO\) LRFD Bridge Design Specifications \(latest edition\)](#)

Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
Site Review Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ Complete Geotechnical Division Review	Lead Geotechnical Engineer/Geologist
Concept Report Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ Review the Concept Report	Lead Geotechnical Engineer/Geologist

Complete Geotechnical Division Review

The Lead Geotechnical Engineer/Geologist may receive a request from the STID Project Manager to complete a high-level review of the project (e.g., Google street view) for potential/major geotechnical risks or mitigation opportunities in the project area ([see OSD1](#) for related information). Using the STID Comment Resolution Form, this planning stage project review is an opportunity for the Lead Geotechnical Engineer/Geologist to offer technical input to:

- Reduce Geotechnical risks that may impact design, construction, right-of-way, environmental, and utilities (as applicable).
- Better understand design decisions that will affect final design.
- Support STID's development of the preliminary project scope, conceptual layout, and cost estimate.

To establish a general understanding of the project area, validate concept feasibility, and begin to define potential geotechnical risks, the Lead Geotechnical Engineer/Geologist references

information provided by the STID Project Manager (e.g., a project location map or .kmz file, relevant traffic and safety data, and/or project purpose and need or reason for the project) when collecting/providing any relevant project information that may include:

- Previous geotechnical/geological investigations/reports
- Previous construction plans/As-Builts
- Construction monitoring data
- Research reports
- Historical photos
- Geologic map, topographic map, soils maps, and relevant USGS maps
- Landslide/rock fall evaluations and studies

Within two weeks of receiving the request from STID, the Lead Geotechnical Engineer/Geologist provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information).

Attend Site Visit

A project site visit allows the internal divisions and external stakeholders to discuss the proposed improvement, challenges, and requests to consider as the Concept Report is drafted.

When receiving notification from the STID Project Manager (which includes the date of the visit and a packet of information), the Lead Geotechnical Engineer/Geologist reviews the site visit packet to determine if geotechnical staff needs to attend the site visit and then, if attending, prepares for the site visit. Any discussion from the site visit becomes informative for later project stages.

Review the Concept Report

Within two weeks of receiving the draft Concept Report, the lead Geotechnical Engineer/Geologist provides review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

1GT1 Develop Geotechnical Work Plan

Overview

Develop a geotechnical work plan based on field reconnaissance, study of geologic maps, and possible limited subsurface investigations.

References

- [TDOT Geotechnical Guidelines](#)
- [MicroStation \(.dgn\) Design Templates](#)
- [Federal Highway Administration \(FHWA\) Geotechnical Technical Guidance Manual](#)
- [American Association of State Highway and Transportation Officials \(AASHTO\) LRFD Bridge Design Specifications \(latest edition\)](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
Geotechnical Work Plan	<ul style="list-style-type: none">▪ Identify Project Type and Potential Mitigation Strategies▪ Develop Geotechnical Work Plan	Lead Geotechnical Engineer/Geologist

Gather Relevant Geotechnical Information

If not already gathered as part of OGT1, the Lead Geotechnical Engineer/Geologist uses the Conceptual Layout or preliminary alignment ([see OSD2](#) for related information) to gather relevant project information that may include:

- Previous geotechnical/geological investigations/reports
- Previous construction plans/As-Builts
- Construction monitoring data
- Research reports
- Historical photos
- Geologic map, topographic map, soils maps and relevant USGS maps
- Landslide/rock fall evaluations and studies
- Site visit (see below)

Complete Project-Specific Geotechnical Investigation

As needed, the Lead Geotechnical Engineer/Geologist conducts a field visit, coordinating with the Survey Lead, Roadway Design Lead, and Project Manager, to identify issues that may impact or affect the project design, construction, and/or performance. This may involve:



- Coordination with Operations and Maintenance staff to discuss maintenance history and existing conditions
- Determining site accessibility and potential traffic problems
- Identifying topographical constraints that could inhibit geotechnical investigations
- Seismic studies (including site specific analysis)
- Determine preliminary liquefaction/lateral spread potential
- Determining potential geotechnical subsurface investigation/locations that may conflict with utilities

Identify Project Type and Potential Mitigation Strategies

Depending on the nature of the project, early mitigation and associated costs are critical for project design decisions and budget considerations, both to establish a complete project context and scope. The Lead Geotechnical Engineer/Geologist:

- Develops a preliminary strategy to mitigate identified issues/risks
- Develops preliminary costs to implement mitigations

This is based on project type and considerations for:

- Extensive roadway improvement projects involving significant traffic capacity and safety improvements
- Bridge and approach projects
- Limited extent improvement projects (such as intersection improvements, state industrial access projects, or road safety audit review projects)

The *TDOT Geotechnical Guidelines* provide additional parameters for analysis based on project type. This preliminary information is included in the Geotechnical Work Plan.

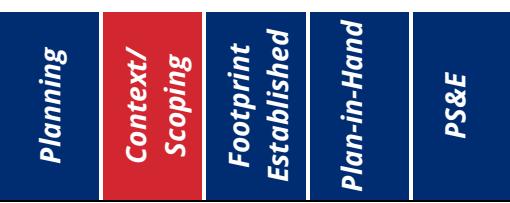
Develop Geotechnical Work Plan

The Geotechnical Work Plan documents the necessary information to establish the needed reports and complete the geotechnical design. The Lead Geotechnical Engineer/Geologist develops the following information to provide guidance on geotechnical issues:

- A brief summary of the preliminary geotechnical findings, assumptions, and possible risks
- Information needed to verify assumptions and complete the geotechnical reports and design

The *TDOT Geotechnical Guidelines* provide further details for preparing a preliminary boring layout plan and preliminary work plan requirements. Based on the site investigation, the Lead Geotechnical Engineer/Geologist may adjust this work plan based on site conditions.

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The Lead Geotechnical Engineer/Geologist provides this information to the Project Manager, which helps to inform the overall project's scope, schedule, and budget, and the Survey Lead (as necessary).

2GT1 Complete the Soils and Geology Report

Overview

Complete a Soils and Geology Report, including site exploration, laboratory testing, engineering analysis, and recommendations. Additionally, develop Geotechnical Sheets (G-sheets) and supporting geotechnical addenda for the Functional Design Plans.

References

- [TDOT Geotechnical Guidelines](#)
- MicroStation (.dgn) Design Templates
- [National Cooperative Highway Research Program \(NCHRP\)'s Manual of Subsurface Investigations](#)
- [Federal Highway Administration \(FHWA\) Geotechnical Technical Guidance Manual](#)
- American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications (latest edition)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Soils and Geology Report	<ul style="list-style-type: none">▪ <i>Conduct Site Exploration for Soils and Geology Report</i>▪ <i>Select the Appropriate Laboratory Testing Program</i>▪ <i>Develop the Soils and Geology Report</i>	Lead Geotechnical Engineer/Geologist	Roadway Design Lead
Geotechnical Sheets (G-sheets)	<ul style="list-style-type: none">▪ <i>Develop Associated Geotechnical Sheet (G-Sheets)</i>		
Supporting Geotechnical Addenda	<ul style="list-style-type: none">▪ <i>Develop Supporting Project Addenda</i>		

Conduct Site Exploration for Soils and Geology Report

The level of effort needed to characterize the project's geotechnical subsurface conditions (for the Soils and Geology Report) varies based on the project's scope and design requirements. This could include drilling, sampling, and geophysical testing. The Lead Geotechnical Engineer/Geologist determines the extent of the drilling and sampling program in coordination with the Roadway Design Lead and Project Manager, considering the:

- Depth of the proposed excavation cuts
- Height of the proposed embankment fills
- Variability of the local geological conditions

Smaller projects may only require a few test borings with a limited field investigation, whereas complex projects may require extensive drilling that could take multiple months of field testing and analysis.

Generally acceptable test borings and sampling frequency are detailed in the *TDOT Geotechnical Guidelines*, with frequencies based on proposed geometrics of the roadway cross sections.

Select the Appropriate Laboratory Testing Program

The Lead Geotechnical Engineer/Geologist determines the appropriate test methods required to attain the soil/rock parameters necessary to complete engineering analysis or recommendations. The *TDOT Geotechnical Guidelines* and other references (listed above) provide additional information.

Develop the Soils and Geology Report

The Soils and Geology Report verifies the slope design proposed in the initial roadway design (for the Line and Grade Package) and then the Functional Design Plans, considering all geotechnical elements of the roadway design (including undercutting, rock pads, slope reinforcement, geohazard mitigation, etc.). The Lead Geotechnical Engineer/Geologist informs the Project Manager and Roadway Design Lead of any project geotechnical considerations that will require bid item costs or changes in the project scope or footprint related to the report recommendations.

Developed by the Lead Geotechnical Engineer/Geologist following the elements detailed in the *TDOT Geotechnical Guidelines*, the Soils and Geology Report typically contains:

- Geologic features characterization
- Recommended slope design
- Evaluation of on-site borrow sources in the cut areas for structural fill
- Recommended shrink / swell factors
- All areas that require a “rock pad” (prior to embankment fill placement is identified and quantified)
- All areas that require “undercutting” and “backfilling” with more suitable material (to be identified, specified, and quantified)
- Presence of sinkholes, acid producing material, existing landslides, or rockfall risks
- Pavement subgrade evaluation and recommended design C.B.R. to support the project’s pavement design
- Geotechnical sheets that illustrate the recommendations for the Roadway Design Lead or Roadway Design Engineer to incorporate into the project plans

- Appendix containing all supporting information

Specific recommendations in this report typically relate project station interval segments that share proposed geometric roadway cross section characteristics, with each segment discussion to include:

- Recommended cut slope ratios and/or embankment slope ratios
- Rock pads / rock buttresses
- Undercutting and replacement of soft soils
- Mitigation of sinkholes
- Settlement issues and settlement mitigation options
- Earthwork compaction information (maximum density, shrink/swell factors)

Applying naming conventions in the *TDOT Geotechnical Guidelines*, the final Soils and Geology Report is uploaded to the project folder for distribution to the Roadway Design Lead, Pavement Design Engineer, and NEPA Lead.

Related section: [2RD1](#)

Develop Associated Geotechnical Sheet (G-Sheets)

Using the .dgn from the Line and Grade Package submitted during Stage 1, the Lead Geotechnical Engineer/Geologist develops the Geotechnical Sheets (G-Sheets), which include:

- Geotechnical notes and estimated quantities
- Boring layout
- Boring profile
- Geotechnical typical sections
- Specialty sheets (e.g., acid producing material, sinkhole treatments, rock cut treatments)
- Pay item quantities associated with construction

The Lead Geotechnical Engineer/Geologist coordinates design development directly with the Roadway Design Lead throughout this stage, with slope recommendations and updated G-sheets/CADD files linked or provided regularly throughout Stage 2.

Applying the appropriate naming conventions identified in the *TDOT Geotechnical Guidelines*, the G-sheets are uploaded to the project folder for distribution to the Roadway Design Lead, Pavement Design Engineer, and NEPA Lead and for inclusion in the Functional Design Plans and the Plan-in-Hand Plans. To increase standardization and consistency of the plans, current cell templates should be used when developing the G-sheets.

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Develop Supporting Project Addenda

As needed, the Lead Geotechnical Engineer/Geologist delivers supporting Project Addenda addressing additional issues to project/scope change. The noted memos or Addendums are uploaded to the project folder for distribution to the Roadway Design Lead and other project team members (e.g., the Structural Design Lead, Pavement Design Engineer).

2GT2 Complete Foundation Reports

Overview

Prepare foundations reports for required bridge foundations, retaining walls, noise walls, and foundations for high-mast lighting, standard lighting, signing, and signal structures. Advance the geotechnical design and draft the geotechnical special provisions to include with the Plan-in-Hand Plans finalized in Stage 3.

References

- [TDOT Geotechnical Guidelines](#)
- [MicroStation \(.dgn\) Design Templates](#)
- [National Cooperative Highway Research Program \(NCHRP\)'s Manual of Subsurface Investigations](#)
- [Federal Highway Administration \(FHWA\) Geotechnical Technical Guidance Manual](#)
- [American Association of State Highway and Transportation Officials \(AASHTO\) LRFD Bridge Design Specifications \(latest edition\)](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Retaining Wall Foundation Report	<ul style="list-style-type: none">▪ Complete and Submit Foundation Report for Retaining Wall(s)	Lead Geotechnical Engineer/Geologist	Roadway Design Lead, Structural Design Lead
Noise Wall Foundation Report	<ul style="list-style-type: none">▪ Complete and Submit Foundation Report for Noise Wall(s)		Structural Design Lead, Noise Lead
HML Foundation Report	<ul style="list-style-type: none">▪ Complete and Submit Standard Report for Signs, Lighting, ITS, and Signals and High-Mast Lighting		Lighting Design Engineer
Bridge Foundation Report	<ul style="list-style-type: none">▪ Complete and Submit Foundation Report for Bridges		Structural Design Lead

Conduct Site Exploration for Structures

It is critical to understand subsurface characteristics for all structure foundations proposed for a project. The structure foundation request(s) is to contain proposed drilling locations. These locations may need to be adjusted because of utility conflicts or the inability to access the proposed hole.

When preparing for drilling, the Lead Geotechnical Engineer/Geologist defines a logical layout for the identified subsurface exploration techniques (developed in collaboration with the

Structural Design Lead, Roadway Design Lead, Survey Lead, and Noise Lead), which often includes:

- Rock core drilling
- Soil Auguring
- SPT and Shelby Tube samples

While the drilling locations and depths performed for the site vary according to the proposed structure, soil variability, and underlying rock conditions, the boring layout is to generally comply with the *TDOT Geotechnical Guidelines* and relevant AASHTO guidelines.

Complete and Submit Foundation Report for Retaining Wall(s)

The Retaining Wall Foundation Report recommends “Acceptable Retaining Wall” types and associated contractual design requirements that the contractor uses (as applicable) when selecting the wall type, design, and installation methodology.

To initiate the process, the Roadway Design Lead refers to the Conceptual Layout from the Concept Report ([see OSD2](#) for related information) or geometric/line and grade layout from the Line and Grade Package ([see 1RD1](#) for related information) to identify potential retaining wall locations in coordination with the Structural Design Lead and the Lead Geotechnical Engineer/Geologist (regarding feasibility) and the Survey Lead (to stake out points along the retaining wall).

Once the retaining wall locations are staked ([see 2SY1](#) for related information), the Lead Geotechnical Engineer/Geologist directs the necessary subsurface investigations and prepares a report for each proposed retaining wall, considering:

- Coordination with the Structural Design Lead and Roadway Design Lead when developing recommendations and category determination ([see 3ST1](#) for related information).
- Evaluation of different wall types in accordance with the *TDOT Geotechnical Guidelines*, current industry standards, relevant AASHTO guidelines, and traffic control/phasing plans.
- Establishment of internal and external stability responsibilities via bid item descriptions and notes the contractor uses (as applicable) to estimate a bid.
- Constructability of the wall following the identified factors listed in the *TDOT Geotechnical Guidelines*, which may require coordination with other disciplines.

To include the content detailed in the *TDOT Geotechnical Guidelines*, the Retaining Wall Foundation Report provides typical recommendations for:

- Acceptable wall types in concert with the Retaining Wall Sheets (R series) with Geotechnical Design Notes and Design Parameters
- Discussion of foundation improvements
- Construction constraints, such as allowable temporary cut slopes, special drainage, or undercutting

The Lead Geotechnical Engineer/Geologist also develops associated R-sheets, in .dgn format, that generally detail design parameters, site notes, and further guidance.

Applying the appropriate naming conventions identified in the *TDOT Geotechnical Guidelines*, the Lead Geotechnical Engineer/Geologist uploads the respective Retaining Wall Foundation Report(s) and R-sheet(s) to the project folder for distribution to the Structural Design Lead and Roadway Design Lead.

Complete and Submit Foundation Report for Noise Wall(s)

Similar to the Retaining Wall Foundation Report, the Noise Wall Foundation Report details the needed geotechnical investigations and foundation recommendations for all noise walls considered reasonable and feasible from the Noise Analysis ([see 1EN1](#) and [2EN1](#) for related information).

To initiate the process, the Structural Design Lead provides a set of conceptual plans identifying potential noise wall locations in coordination with the Roadway Design Lead and Noise Lead. Once identified, the Lead Geotechnical Engineer/Geologist directs the subsurface investigations (typically one boring for each proposed noise wall post) and prepares the report for each proposed noise wall in coordination with the Structural Design Lead, considering noise wall structural design elements and associated geotechnical values.

To include the content detailed in the *TDOT Geotechnical Guidelines*, the Noise Wall Foundation Report provides typical recommendations on:

- Type of foundations (typically 2-foot drilled shaft)
- Description of the foundation bearing strata
- Elevation where rock was encountered (or refusal elevation)
- Ultimate shear strength of all materials
- Angle of internal friction of all materials
- Effective unit weight of all materials
- Modulus design values of all materials
- Side friction and base resistance values for axial capacity check
- Recommended top of rock socket depth

The Lead Geotechnical Engineer/Geologist also develops foundation detail sheets, in .dgn format, that generally details the boring layout, geotechnical notes, and boring profile sheets for the noise wall(s).

Applying the appropriate naming conventions identified in the *TDOT Geotechnical Guidelines*, the Lead Geotechnical Engineer/Geologist uploads the Noise Wall Foundation Report(s) and associated detail sheets to the project folder for distribution to the Structural Design Lead, Roadway Design Lead, and Noise Lead.

Complete and Submit Standard Report for Signs, Lighting, Signals, ITS, and High-Mast Lighting

Although design for standard signs, lighting, signal, and ITS foundations are to be performed by the contractor, the Lead Geotechnical Engineer/Geologist is typically given the opportunity to review and comment on any geotechnical issues as part of the Functional Design Plan Field Review and to ensure the standard bid item notes are included in the Plan-in-Hand Plans and Construction Documents. For high-mast lighting, the Lighting Design Engineer initiates a request for the Lead Geotechnical Engineer/Geologist to develop a High Mast Lighting (HML) Foundation Report.

Once the pole locations are staked by the Survey Lead ([see 2SY1](#) for related information), the Lead Geotechnical Engineer/Geologist develops the report in accordance with the content detailed in the *TDOT Geotechnical Guidelines*. This includes recommendations that typically include:

- Type of foundations (typically 4-foot diameter drilled shaft)
- Description of the foundation bearing strata
- Elevation where rock was encountered (or refusal elevation)
- Ultimate shear strength of all foundation materials
- Angle of internal friction of all foundation materials
- Effective unit weight of all materials
- Side friction and base resistance values for axial capacity check
- Recommended top of rock socket depth (typical minimum is a factor of drilled shaft diameter and 1.5-2.0)

The Lead Geotechnical Engineer/Geologist also develops foundation detail sheets, in .dgn format, that generally details the boring layout and geotechnical notes/parameters, boring profile sheet, and foundation detail sheets for the HML lighting foundations.

Applying the appropriate naming conventions identified in the *TDOT Geotechnical Guidelines*, the Lead Geotechnical Engineer/Geologist uploads the respective Foundation Report(s) for signs, lighting, ITS, and signal foundations or HML foundations to the project folder for distribution to the Structural Design Lead, Roadway Design Lead, and respective Design Engineer.

Complete and Submit Foundation Report for Bridges

Initiated by the Structural Design Lead using information on the Foundation Data Sheet (e.g., bridge layout, estimated scour depths) ([see 2ST2](#) for related information), the Bridge Foundation Report and modified, unsealed Foundation Data Sheet provide the requisite analysis and recommendations for bridge foundation type and parameters.

Once the proposed bridge stakeout is completed by the Survey Lead ([see 2SY1](#) for related information), the Lead Geotechnical Engineer/Geologist directs the necessary subsurface investigations and prepares a report by:

- Reviewing the Foundation Data Sheet provided by the Structural Design Lead, including the location of any proposed retaining walls (if a retaining wall(s) is included; see related task above)
- Evaluating foundation alternates and developing project-specific recommendations based on identified subsurface conditions in accordance with the *TDOT Geotechnical Guidelines* and related AASHTO guidelines
- Documenting the analysis and recommendations in the report

To include the content detailed in the *TDOT Geotechnical Guidelines*, the Bridge Foundation Report provides typical recommendations on:

- Type(s) of foundations recommended
- Elevation of foundation bearing strata
- Elevation where rock was encountered (or refusal elevation)
- Nominal bearing resistance of rock/soil
- Side friction and base resistance factors (deep foundation)
- Depth of rock socket (deep foundation)
- Lateral capacity of soil or rock (deep foundation)

The Lead Geotechnical Engineer/Geologist also modifies and attaches a revised Foundation Data Sheet(s), in .dgn format, that includes a general boring layout, boring profile, and elevation chart for each bridge.

Applying the appropriate naming conventions identified in the *TDOT Geotechnical Guidelines*, the Lead Geotechnical Engineer/Geologist uploads the respective Bridge Foundation Report(s) and

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modified Foundation Data Sheet(s) to the project folder for distribution to the Structural Design Lead, Roadway Design Lead, and Construction Engineer, who provides the report to the contractors at the time of letting the project.

4GT1 Finalize Geotechnical Plans

Overview

Compile the final Geotechnical Design Documents with any other required documentation to assist the Roadway Design Lead in compiling the Construction Documents needed to advertise and let the project.

References

- [TDOT Geotechnical Guidelines](#)
- MicroStation (.dgn) Design Templates
- [Federal Highway Administration \(FHWA\) Geotechnical Technical Guidance Manual](#)
- American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications (latest edition)
- TDOT Quality Manual

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Final Geotechnical Design Documents	<ul style="list-style-type: none">▪ <i>Finalize Geotechnical Design Documents</i>	Lead Geotechnical Engineer/Geologist	Roadway Design Lead
Final Geotechnical Special Provisions	<ul style="list-style-type: none">▪ <i>Finalize Geotechnical Special Provisions for Letting</i>		

Finalize Geotechnical Design Documents

To prepare the final Geotechnical Design Documents for the PS&E Review Meeting, the Lead Geotechnical Engineer/Geologist:

- Reviews comments from the Plan-in-Hand Field Review and addresses necessary design revisions and plan updates.
- Coordinates a QC review of the plans and resolves comments received as detailed in the *TDOT Quality Manual*.
- Prepares the plans for the PS&E Review Meeting, submitting these plans to the Roadway Design Lead for inclusion with the other design plans for review.
- Attends the PS&E Review Meeting.
- Resolves last comments from the meeting.

Once reviewed and comments are resolved, the Lead Geotechnical Engineer/Geologist:

- Assembles the final Geotechnical Design Documents for letting.

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- Submits sealed plans (as allowed in accordance with TDOT standard procedures for signing and sealing plans) and CADD files to the Roadway Design Lead for inclusion with the Construction Documents.

Finalize Geotechnical Special Provisions for Letting

As part of finalizing the Construction Documents, the Lead Geotechnical Engineer/Geologist:

- Coordinates with the Construction Engineer during Stage 3 to initially draft the project's geotechnical special provisions, assembling the final special provisions for letting in this stage.
- Conducts a QC review on the special provisions as detailed in the *TDOT Quality Manual*.
- Submits the special provisions to the Roadway Design Lead for inclusion with the Construction Documents.

0MM1 Conduct Multimodal Review

Overview

Conduct a multimodal review to ensure compliance with the *TDOT Multimodal Access Policy*, *Multimodal Scoping Manual*, *Multimodal Design Guidelines*, and Standard Drawings and to coordinate with existing and planned state and local multimodal projects.

References

- [TDOT Multimodal Access Policy](#)
- [TDOT Multimodal Scoping Manual](#)
- [TDOT Multimodal Design Guidelines, Chapter 3 - Multimodal Design](#)
- [TDOT Multimodal Priority Index Tool](#)
- [STID Comment Resolution Form](#)
- [TDOT Multimodal Standard Drawings](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Multimodal Considerations & Recommendations	<ul style="list-style-type: none">▪ <i>Conduct Multimodal Review</i>▪ <i>Develop Multimodal Considerations and Recommendations</i>		STID Project Manager, Long Range Planning, Local Programs
Concept Report Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ <i>Review the Concept Report</i>	Multimodal Lead	

Conduct Multimodal Review

The purpose of a multimodal review is to ensure compliance with the listed references and to coordinate with existing and planned state and local multimodal projects. Using the STID Comment Resolution Form, this process is initiated when the Multimodal Lead:

- Receives initial project information and a multimodal review request from the STID Project Manager. This information typically includes:
 - A project location map or .kmz file
 - Relevant traffic and safety data
 - Draft project purpose and need or reason for the project
- Reviews the information provided and requests additional information, if needed.

To evaluate the information provided and develop appropriate multimodal considerations and recommendations, the Multimodal Lead:



- Determines if the project is within a multimodal priority corridor based on the *TDOT Multimodal Priority Index Tool*.
- Identifies any overlapping or nearby TDOT multimodal projects, both existing and planned.
- Coordinates with Long Range Planning (Office of Community Transportation) and Local Programs to identify any overlapping or nearby local agency multimodal projects, both existing and planned.
- Identifies opportunities for multimodal accommodations based on the *TDOT Multimodal Scoping Manual* and opportunities for collaboration with other existing and planned state and local multimodal projects.

Within two weeks of receiving the request from STID, the Multimodal Lead provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information).

Related section: [OSD1](#)

Attend Site Visit

A project site visit allows the internal divisions and external stakeholders to discuss the proposed improvement, challenges, and requests to consider as the Concept Report is drafted.

While the Multimodal Lead provides comments (notably whether a project is a candidate for multimodal accommodations) for all projects, the Multimodal Lead only attends a site visit for projects where multimodal recommendations have been identified or are anticipated. When receiving notification from the STID Project Manager (which includes the date of the visit and a packet of information), the Multimodal Lead is to review the site visit packet to prepare for the site visit. Any discussion from the site visit becomes informative for the Draft and Final Multimodal Considerations & Recommendations deliverable.

Review the Concept Report

Within two weeks of receiving the draft Concept Report, the Multimodal Lead provides review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

Develop Multimodal Considerations & Recommendations

The primary deliverable associated with this activity is the Multimodal Considerations & Recommendations. This deliverable informs the Concept Report in the short term and the project's multimodal commitments to be confirmed during Stage 1 when finalizing the project's scope.



To complete this task, the Multimodal Lead:

- Develops Draft Multimodal Considerations & Recommendations to be coordinated with the STID Project Manager.
- Discusses with the STID Project Manager how the draft considerations and recommendations can be feasibly integrated into the project, considering the overall project scope and purpose/need.
- Modifies the Multimodal Considerations & Recommendations based on feedback from the STID Project Manager, as needed.
- Develops Final Multimodal Considerations & Recommendations to be included in the Concept Report. This includes a determination if the project complies with the TDOT Multimodal Access Policy. If the project does not comply, Multimodal Lead documents the exceptions.
 - The Multimodal Lead or STID Project Manager coordinates with the NEPA Lead, as needed, so that he/she is aware of the Final Multimodal Considerations & Recommendations and compliance documentation for the NEPA Document.
 - Stage 0 is the preferred coordination point between the STID Project Manager and the Multimodal Lead so that the Final Multimodal Considerations & Recommendations are integrated into the Conceptual Layout and documented in the Concept Report. However, if STID and Multimodal are unable to coordinate during Stage 0, the NEPA Lead requests that the Multimodal Lead review the current design and provide the Multimodal Considerations and Recommendations ([see 2EN1](#) for related information).

The Multimodal Lead sends the Draft and Final Multimodal Considerations & Recommendations to the STID Project Manager via email. The STID Project Manager is responsible for including the Final Multimodal Considerations & Recommendations in the Concept Report. The Multimodal Lead saves the Final Multimodal Considerations & Recommendations in the Multimodal Division Shared Drive.

Related section: [2EN1](#)



1PM1 Set Up Project

Overview

Confirm project assignment and begin project setup. Assess the reliability of the data used to develop project planning documents (e.g., Concept Report), consider the amount of time since collection and/or the limitations of the data, account for and resolve ambiguities.

Once the Concept Report or State Industrial Access (SIA) packet is complete, begin project setup ([see OSD4](#) for related information). Collaborate with the discipline managers and technical leads to develop preliminary project management documents and define expectations for how the project team manages risk, communicates as a team, and delivers quality.

References

- [Department Policy 301-01 Standard Procurement, Management, and Administration of Engineering and Design Related Services](#) (revisions in development)
- [Local Government Guidelines for the Management of Federal and State-funded Transportation Projects, Seventh Edition, revised March 15, 2019](#)
- [TDOT Public Involvement Plan](#)
- [Funding Request Forms](#)
- [Concept Report Template](#)
- [MS Project Schedule Template](#)
- [Project Commitment Document Template](#)
- [TDOT Quality Manual](#)
- [Risk Management Guide \(in development\)](#)
- [Risk Management Plan \(and Risk Register\) Template](#)
- [TDOT PDN Scope and Schedule Generator](#)
- [TDOT PDN SOW Front End Doc](#)
- [Appendix I: FHWA Summary of Actions in the PDN](#)

Deliverables

Deliverables^a	Tasks
Project Assignment Notice/Confirmation	<ul style="list-style-type: none"> ▪ <i>Confirm Project Assignment</i> ▪ <i>Request Shared Project Folder</i>
Draft Project Scope Preliminary Schedule Preliminary Budget Draft Project Quality Management Plan Draft Risk Management Plan Draft Risk Register Draft Project Communication Plan	<ul style="list-style-type: none"> ▪ <i>Prepare Draft Project Scope</i> ▪ <i>Prepare Preliminary Schedule</i> ▪ <i>Validate Preliminary Budget</i> ▪ <i>Prepare Draft Project Quality Management Plan</i> ▪ <i>Prepare Draft Risk Management Plan</i> ▪ <i>Prepare Draft Project Communication Plan</i>
Draft Project Commitment Document (PCD)	<ul style="list-style-type: none"> ▪ <i>Prepare Draft Project Commitment Document (PCD)</i>
Authorization of Funds	<ul style="list-style-type: none"> ▪ <i>Request & Obtain Authorization of Funds</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Confirm Project Assignment

The Project Manager confirms project assignment upon notification.

Request Shared Project Folder

The Project Manager sends a request to IT to provide administrative access to the shared project folder, then verifies Stage 0 planning documents are accessible and notifies the discipline managers.

Prepare Draft Project Scope

The purpose of developing a draft project scope in this activity is to understand the project goals and commitments, as well as what the project work includes and what it does not include. The draft also identifies opportunities for innovation and efficiencies, as well as potential risks by using information from the Concept Report ([see Appendix F](#) for an example template) and other planning documents.

The Project Manager collects and reviews available project information to understand the proposed project's footprint, conceptual design and assumptions, potential impacts to

Project Management Plan (PMP) Elements

Scope, schedule, budget, quality, risk, and communication are elements of the PMP, formalized in [2PM1](#).

Drafting a Project's Scope

Consider drafting and modifying, throughout Stage 1, the scoping document titled the *TDOT PDN_SOW Front End Doc.*

right-of-way and utilities, and major items of construction work and associated risks. Relevant sources of information may include:

- Concept Report (or SIA Packet) and its supporting appendices
- Relevant planning, traffic, multimodal, Transportation System Management and Operations (TSMO), rail studies and recommendations
- Environmental documentation, the Environmental Technical Study Area (ETSA), and anticipated permits
- Other projects along corridor or adjacent projects
- Built/natural/social environmental constraints
- Transportation plan and funding type and sources
- Proposed project delivery method (e.g., design-bid-build/DBB, design-build/DB, construction manager general contractor/CMGC)
- Stakeholder communications and agreements
 - Potential betterments, project area commitments, or future local government agreements (e.g., for signals or lighting) ([see OPEN1](#) for related information).
 - **Note:** In the case of local government participation, the Project Manager meets with and discusses project funding and local match, cash flow requirements, and local government funding approval processes. (See Local Government Guidelines for the Management of Federal and State-funded Transportation Projects).

This information informs the draft scope found in the *TDOT PDN_SOW Front End Doc* and *TDOT PDN_Scope and Schedule Generator*, the latter of which is typically generated for Stage 1 scoping activities first and then for the remainder of the project's activities in Stage 2 (when finalizing the Project Commitment Document [PCD] in [2PM2](#)).

Related section: [OSD3](#)

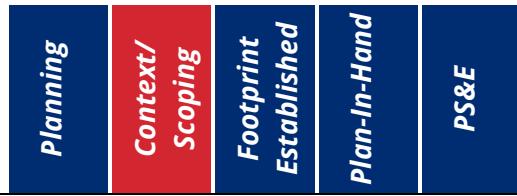
Prepare Preliminary Schedule

The purpose of developing a preliminary preconstruction schedule in this activity is to outline expectations required to meet project delivery commitments and prepare for staffing discussions with discipline managers or identified technical leads.

Using the *MS Project schedule template* or building a schedule using the *TDOT PDN_Scope and Schedule Generator*, the Project Manager creates the preliminary schedule by identifying the initial start date for project delivery and

Project Scheduling Considerations

- Modify schedule logic and durations based on project needs.
- Use working days and a holiday calendar for schedule durations.
- Add subtasks for critical path activities where specificity helps manage the process.
- When deactivating or omitting an activity or task, discuss the change with the discipline managers before making the activity/task inactive.



selected activities outlined in the PDN (e.g., 1EN1, 2RD2, 3GT1, 4ST1).

Validate Preliminary Budget

The purpose of reviewing a preliminary budget in this activity is to:

- Validate the estimate in the Concept Report and update the estimate with new project details (known at the time).
- Prepare for discussions with the discipline managers and technical leads during project setup.
- Confirm the project is approved within the current Statewide Transportation Improvement Program (STIP) or Transportation Improvement Program (TIP), as appropriate.

The preliminary budget includes preliminary engineering (PE), right-of-way (ROW), and construction estimates. It also confirms the funding sources, type, and programmed amounts allocated for the project are adequate to progress the work in the identified fiscal year. The budget will ultimately be memorialized in the Project Commitment Document, Stage 2 ([see 2PM2](#) for related information).

- **Note:** Processes and procedures for estimating costs ([see Appendix G](#) for estimating recommendations and an example template [in development]) vary based on funding type (federal, state, and/or local government funds).
- Contact the Project Management Director for preliminary budget guidance.

Related section: [OSD1](#)

Prepare Draft Project Quality Management Plan

The purpose of developing a draft project quality management plan is to establish quality control and quality assurance expectations with discipline managers and technical leads. The Project Manager is responsible for developing the project quality management plan and overseeing the project's quality process to ensure project deliverables have met the appropriate quality checks on or before each milestone.

Quality management guidance is available under the *TDOT Quality Manual* to assist the Project Manager and technical leads in defining roles and responsibilities for critical quality tasks, as well as detailing the process and checklists each discipline follows to ensure a quality deliverable.

Prepare Draft Risk Management Plan

The purpose of developing a draft risk management plan is to clarify expectations with discipline managers and technical leads early and to discuss any risks (or



opportunities/innovation) that may impact the project. Using the *Risk Register Template*, the Project Manager develops a draft risk management plan and register based on current project knowledge, the Concept Report, and/or the Initial Risk Assessment developed during the Planning stage ([see OSD3](#) for related information).

The risk management plan and its associated register are updated periodically (no less than at each design field review) to reflect updates to the initial list of project risks, updates to mitigation strategies, or added risks or opportunities discovered as the project evolves.

Risk management guidance is available under the *Risk Management Guide* (in development) to assist the Project Manager and technical leads to initially develop and continue to update the risk management plan and register.

Prepare Draft Project Communication Plan

The purpose of developing a draft *Project Communication Plan* is to begin to identify the communication needs and expectations of the project team.

The Project Communication Plan ([see Appendix C](#) for an example template), outlines several operating guidelines that describe how the project team plans to work together. These guidelines address some or all of the following:

- Team decision-making
- Team project meetings (structure, frequency, documentation, etc.)
- Communication (method, frequency, protocols, etc.)
- Team issues and conflict management
- Project status and reporting (recipient, requirements, frequency, etc.)

In addition, it establishes clear guidelines for project team members addressing the needs of external stakeholders, members of the public, and the media.

The Project Manager and designated project team members conduct proactive stakeholder engagement throughout the life of the project in accordance with the established *TDOT Public Involvement Plan (PIP)*.

Prepare Draft Project Commitment Document (PCD)

The purpose of preparing a draft *Project Commitment Document* is to align both the project team and department leadership early by defining scope, schedule, and budget.

The Project Manager works with project team during the Kickoff Meeting and Scoping Meeting to develop a project scope, inclusive of commitments, to define the project's goals, as well as to list major improvements that define the construction work to satisfy the project goals.

After Stage 1, and once the team has identified and confirmed schedule constraints and budgetary considerations, the Project Manager completes the PCD during the "Complete Project Commitment Document" process ([see Appendix A](#) for an example template and [see 2PM2](#) for related information).

Request and Obtain Authorization of Funds (PE-N and Incidentals)

Under the Federal Highway Administration (FHWA) Directive 6640.1A and as described in [Appendix I](#), TDOT may advance preliminary design activities prior to the conclusion of National Environmental Policy Act (NEPA) process. This allows preliminary design work needed to complete the Environmental Document to proceed, while also allowing TDOT to complete other activities to streamline the overall project delivery process. Authorization for this work is categorized under preliminary engineering/NEPA (PE-N) funds.

In order for the project team to request their respective TX codes, begin work, and charge their time appropriately, the Project Manager must request and obtain authorization to use PE-N funds. The Project Manager completes the funding request by using and then submitting a *Preliminary Engineering/NEPA (PE-N) Funding Request Form* to Programming.

At this time in Stage 1 or early in Stage 2, the Project Manager may also request funds to advance certain Right-of-Way (ROW) and Utility activities (typically known as ROW incidentals and Utility coordination that are further described in [2RW1](#), [2RW2](#), [3RW1](#) [through the task to review appraisal], [1UT1](#), [2UT1,3UT1](#) [through the task to submit rainbows to environmental]). The Project Manager completes the funding request by using and then submitting a *ROW Incidental and Utility Coordination Funding Request Form* to Programming.

See link in the [Reference list](#) above to download the appropriate funding request forms.

Requesting Funds by Stage

Stage 1: Request preliminary engineering/NEPA (PE-N) funds (and ROW incidentals and Utility coordination funds).

Stage 2: Request Preliminary Engineering Final Design (PE-D) funds to use after the Environmental Document is complete ([see 2EN2](#)).

Stage 2: Request ROW/Utility funds for use after the completion of the Environmental Document, utility coordination plans, and allowable right-of-way activities.

1PM2 Build Project Team

Overview

Identify project team needs, understand the roles required to deliver the project, and allow enough lead time to secure the necessary resources.

References

- [*Department Policy 301-01 Standard Procurement, Management, and Administration of Engineering and Design Related Services*](#) (revisions in development)
- [*Project Team Contact List*](#)
- [*TDOT PDN Scope and Schedule Generator*](#)
- [*TDOT PDN SOW Front End Doc*](#)

Deliverables

Deliverables ^a	Tasks
Project Team Contact List	<ul style="list-style-type: none">▪ <i>Identify Project Team Resources</i>▪ <i>Build Project Team</i>
Consultant Contract(s)	<ul style="list-style-type: none">▪ <i>Determine Type of Consultant(s)</i>▪ <i>Obtain Consultant(s)</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Identify Project Team Resources

The Project Manager coordinates with applicable discipline managers to identify the initial list of PDN activities (e.g., 1EN1, 2RD2, etc.) needed to deliver the project based on the project scope and understanding of the risks. The project team may consist solely of TDOT employees, a combination of TDOT and consultant team members, or solely consultant staff.

Build Project Team

The Project Manager, in consultation with the discipline managers and/or technical lead(s), determines if the work is performed by TDOT staff, by a consultant, or by a combination of both. Considerations for determining the type of consultant and business need to employ consultant services are outlined in *Department Policy 301-01 Standard Procurement, Management, and Administration of Engineering and Design Related Services* (revisions in development).

If one or more consultants are needed to support the disciplines, the Project Manager and the applicable discipline manager(s) determine the best method for acquiring and managing the necessary consultant resources.

Generally, consultants are assigned *both* a technical role reporting to the design lead or a discipline manager for functional direction *and* the Project Manager for project direction and contractual needs. The design lead and discipline manager clearly define the consultant's role(s) and responsibilities; then the Project Manager submits the request to hire one or more consultants to the Project Management Director for approval.

Once project team resources and stakeholders are identified, the Project Manager or designated staff member creates a project team contact list, ([see Appendix C](#) for an example template) and uploads it to the shared project folder.

Determine Type of Consultant(s) and Contract(s) Required

The Project Manager works with the respective discipline managers to determine the type of consultant(s) and consultant contract required. The timing of consultant selection and execution of each contract may vary for each discipline.

The Project Manager coordinates with Headquarters to secure consulting services throughout the selection process.

Obtain Consultant(s)

Following Department Policy 301-01 Standard Procurement, Management, and Administration of Engineering and Design Related Services, the Project Manager completes the following:

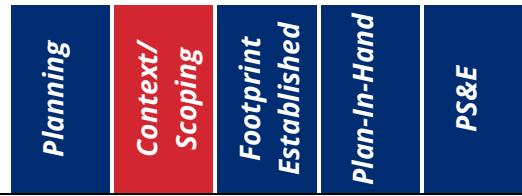
- Prepare a scope of work using the *TDOT PDN Scope and Schedule Generator*
- Request contract for on-call consultants or follow the process for selected consultants
- Prepare an Independent Cost Estimate
- Select a consultant
- Negotiate consultant documents with consultant(s)
- Request approval for consultant and associated documentation
- Obtain funding approval

Consideration for Obtaining Consultants

Securing consultants may take 4 to 6 weeks to request an on-call consultant or four to six months to complete a consultant procurement. The Project Manager should consider this timing when scheduling the kickoff and scoping meetings, Stage 1 activities, etc.

Look ahead to [2PM3](#), Conduct ROW Strategy Meeting(s), to determine if the project requires ROW Acquisition Consultant Services.

[Back to PDN Overview](#)



- Prepare and obtain contract approvals
- Execute contract
- Distribute copies of the contract (discipline managers hold the contracts)

1PM3 Hold Kickoff Meeting

Overview

Organize, lead, and facilitate the Kickoff Meeting with the project team and external stakeholders as needed. **Note:** Before the Kickoff Meeting, review any prior discussions with local stakeholders that occurred during Stage 0. While most Project Managers will hold a Kickoff Meeting, some simpler projects may commence via email or other coordination and other projects may combine the Kickoff and Scoping Meetings.

References

- [Agenda and Meeting Minutes Template](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda Meeting Materials Meeting Minutes Draft Risk Register	<ul style="list-style-type: none">▪ Set Up Meeting and Develop Agenda▪ Hold Meeting and Document/Distribute Minutes
Revised Project Management Plan	<ul style="list-style-type: none">▪ Update Project Management Plan

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

The purpose of the Kickoff Meeting is to introduce and align the project team members with a clear understanding of the project and expectations of the team members' roles, commitments, and involvement. The project team discusses the project scope (inclusive of commitments), schedule, budget, quality, risks, and communication.

Developing an Agenda

For all team meeting agendas, consider including discipline-specific discussion points and sending the agendas 2 to 3 days in advance of each meeting.

The Project Manager works with the project's Design Lead (e.g., the Roadway Design Lead, Structural Design Lead) to gather all relevant materials (e.g., the Project Management Plan, project mapping, preliminary concept designs, etc.) in the shared project folder and distributes to the meeting invitees prior to the Kickoff Meeting.

To prepare for the meeting, the Project Manager organizes this meeting and develops the agenda ([see Appendix C](#) for an example template), which typically includes:



- Team member introductions and roles on the project (the respective scope of work)
- Project overview
- Draft Project Commitment Document (PCD)
- Known measures of effectiveness (MOEs) for the project and draft purpose and need statement (see [1TO1](#) and [OSD1](#) for related information)
- Construction and maintenance input
- Draft Project Management Plan elements
 - Scope
 - Schedule
 - Cost estimate and budget
 - Project Communication Plan (determine need for a formal public involvement meeting)
 - Risk Management Plan
 - Project Quality Management Plan
- Other projects along corridor or adjacent projects
- Need for Value Engineering study

The Project Manager invites the team members and necessary stakeholders to the meeting, which may include a site visit. Depending on the project's scope, potential invitees include:

Kickoff Meeting Invitees	
Community Relations Representative Construction Manager (HQ, Region) Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead) Lead Geotechnical Engineer/Geologist Hydraulics Lead Multimodal Lead Regional Director of Project Management Project Management Director Region Maintenance Representative Regional Director Right-of-Way Lead Roadway Design Lead Roadway Engineer(s) State Railroad Coordinator/Railroad Office Designee	STID Project Manager STID Engineer Structural Design Lead Survey Lead Traffic (Signal Design Engineer, Lighting Design Engineer, ITS Design Engineer, and/or Traffic Operations Engineer) Traffic Safety TSMO Coordinator Utility Coordinator VE Program Coordinator (if applicable, see 2PM1) Stakeholders to consider: Municipality Representative, FHWA, Municipal and Rural Planning Organizations (MPO, RPO), Local Government, SIA, etc.

Note: Consultants working on the project's design phase should be selected and under contract prior to project kickoff, so that they can attend this meeting.



Hold Meeting and Document/Distribute Minutes

The Project Manager facilitates the discussions outlined in the agenda and encourages team interaction. The Project Manager (or designee):

- Presents the draft risk register (drafted in [1PM1](#) and advanced under [1PM4](#)).
- Documents comments, decisions, and actions in the meeting minutes.

The draft risk register and meeting minutes are distributed to the meeting invitees and applicable team members, then uploaded to the shared project folder. **Note:** If this is a local government project, the Local Government Representative schedules and conducts the meeting, provides agendas, keeps meeting minutes, and distributes them after the meeting. The Project Manager verifies that these tasks are completed.

Verify the ETSA

Around the time of or during the Kickoff Meeting, the project team reviews the current Environmental Technical Study Area (ETSA) to confirm the study area is sufficient to address any known modifications to the project limits or design scope (see [OSD3](#) for related information).

While further adjustments to the ETSA may be needed as the design progresses into Stage 1 or 2, the Project Manager confirms with the Environmental Technical Leads, NEPA Lead, and the Roadway Design Lead or Structural Design Lead that the ETSA is adequate for field work to begin.

Related sections: [OSD3](#), [OEN1](#), [1EN1](#)

1PM4 Conduct Initial Risk Workshop

Overview

Conduct risk analysis early in the project in preparation for the Initial Risk Workshop and the subsequent workshops to identify, minimize, and/or eliminate risks or maximize opportunities that may negatively or positively impact schedule and/or budget. Updates to the register are repeated as often as necessary throughout the project (but minimally at each design field review).

References

- [Agenda and Meeting Minutes Template](#)
- [Risk Management Guide \(in development\)](#)
- [Risk Management Plan \(and Risk Register\) Template](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda	<ul style="list-style-type: none">▪ <i>Set Up Meeting and Develop Agenda</i>
Meeting Materials	<ul style="list-style-type: none">▪ <i>Hold Meeting and Document/Distribute Minutes</i>
Meeting Minutes	
Updated Risk Register	<ul style="list-style-type: none">▪ <i>Update and Monitor Risk Register</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

The purpose of the Initial Risk Workshop is to:

- Identify risks and associated resolution strategies.
- Formalize the draft risk register to aid in tracking risk probabilities and confirming the resolution of each risk.
- Incorporate mitigation strategies into the project documents as appropriate.

The Project Manager confirms all relevant materials (e.g., the Concept Report, Project Commitment Document, current version of the Line and Grade Package/line and grade.dgn, etc.) are in the shared project folder and shares them with the meeting invitees (as needed) prior to the Initial Risk Workshop.

To prepare for the workshop, the Project Manager organizes this meeting and develops the agenda ([see Appendix C](#) for an example template). The initial Risk Workshop discussions may include:



- Overview of the project
- Draft schedule
- Draft project cost estimate
- Risk identification for preconstruction, construction, and post-construction (operations and maintenance)
- Site visit (all project team members attend one site visit)
- Initial Risk Assessment developed as part of [OSD3](#)

The Project Manager invites the project team members and necessary stakeholders to the meeting. Depending on the project's scope, potential invitees include:

Initial Risk Workshop Invitees	
Community Relations Representative Construction Manager (HQ, Region) Drainage Design Lead Estimating Representative Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead) Lead Geotechnical Engineer/Geologist Hydraulics Lead Multimodal Lead Pavement Design Lead Region Maintenance Representative Right-of-Way Lead Right-of-Way Acquisition Lead Roadway Design Lead State Railroad Coordinator/Railroad Office Designee	STID Project Manager STID Engineer Structural Design Lead Survey Lead Traffic (Signal Design Engineer, Lighting Design Engineer ITS Design Engineer, and Traffic Operations Engineer) Traffic Safety TSMO Coordinator Utility Coordinator VE Program Coordinator (if applicable, see 2PM1) FHWA (notify FHWA at a minimum if a federal-aid project) Stakeholders to consider: Municipality Representative, Municipal and Rural Planning Organizations (MPO, RPO), Local Government, Utility Owners, etc.

Hold Meeting and Document/Distribute Minutes

The Design Lead facilitates the discussion and encourages team interaction. The Project Manager:

- Leads the meeting and selects a staff member to update the draft risk register
- Documents all comments, decisions, and actions in the meeting minutes

Meeting minutes are distributed to the invitees and project team and uploaded to the shared project folder.

Back to PDN Overview	<i>Planning</i>	<i>Context/ Scoping</i>	<i>Footprint Established</i>	<i>Plan-In-Hand</i>	<i>PS&E</i>
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Update and Monitor Risk Register

The purpose of the risk register is to evaluate the effects and status of the risks as the project progresses. **Note:** This could include updating or advancing the Initial Risk Assessment document developed as part of [*OSD3*](#) or could be formalized using the risk register drafted during [*1PM1*](#).

The Project Manager, in consultation with the project team, updates the project risk register during the meeting(s). Key considerations include:

- Pre-construction phase delivery risks topics:
 - Resource (staff and funding) availability and level of experience
 - Communication
 - Political and regulatory
 - Schedule and budget expectations
 - Project related risks (e.g., technical engineering/construction, social and cultural resources, ecology, utilities, difficult and/or special ROW acquisitions (RR, TVA) and/or relocations, and other long lead items such as lengthy permit applications and time to secure needed permits)

Risks are identified and assessed relative to their impact and probability affecting the proposed budget and schedule at the time of the meeting. The Project Manager confirms assignments for team members to document and resolve risks in the risk register. Each team member informs the Project Manager (or designee) of the status of their assigned risk resolution.

End of Activity

Update the Executive Status Report and Project Commitment Document (PCD) with major risks, then as appropriate, notify the Regional Director of Project Management, Project Management Director, and Regional Director of any major risks that impact the budget or schedule.

1PM5 Hold Scoping Meeting

Overview

Organize, lead, and facilitate the project Scoping Meeting. For smaller or less complex projects, determine whether to combine this meeting with the Kickoff Meeting.

References

- [Roadway Design Value Engineering](#)
- [Agenda and Meeting Minutes Template](#)
- [Comment Resolution Form Template](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda Meeting Materials Meeting Minutes Updated Comment Resolution Form	<ul style="list-style-type: none">▪ Set Up Meeting and Develop Agenda▪ Review and Complete Comment Form▪ Compile Comments, Hold Meeting, and Document/Distribute Minutes

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

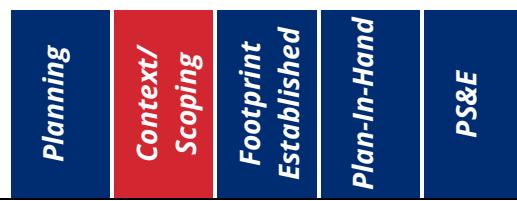
Set Up Meeting and Develop Agenda

The purpose of the Scoping Meeting is to solidify the project's scope of work, schedule, and budget (project cost) to reduce scope "creep" and rework in subsequent stages. It also informs the commitments to be memorialized in the Project Commitment Document (PCD).

Attended by a multi-discipline team, this meeting identifies any issues, opportunities, challenges, conflicts, and/or omissions in the proposed scope of work, preliminary schedule, and proposed project team scope of services to accomplish the work. Right-of-way, utilities, additional environmental technical studies, permitting and mitigation, constructability, and local jurisdiction needs and commitments are also discussed and considered.

The Project Manager organizes the meeting and develops the agenda ([see Appendix C](#) for an example template), which typically includes:

- Draft Risk Register
- Draft project scope of work
- Project-specific design criteria ([see 1RD1](#) for related information)
- Draft Project Commitment Document (PCD)



- Line and Grade .dgn review from the Line and Grade Package ([see 1RD1](#) for related information)
- Other projects along corridor or adjacent projects
- Technical leads' findings from respective Context/Scoping (Stage 1) activities (issues, challenges, opportunities), including:
 - Environmental avoidance, minimization, or mitigation needs
 - Required permits, agreements, and commitments (environmental, right-of-way, utility, local agency maintenance agreements, and public involvement/engagement)
 - Preliminary design exceptions
 - Need for formal Value Engineering study
- Construction and maintenance input
- Next iteration of the project schedule, as confirmed through the technical leads' Context/Scoping (Stage 1) activities
- Project cost estimate and budget (inclusive of preliminary engineering, utility, railroad, right-of-way, and construction estimates)
- Quality control and assurance procedures

The Project Manager invites the project team members and necessary stakeholders to the meeting. Depending on the project's scope, potential invitees include:

Scoping Meeting Invitees	
Community Relations Representative	Roadway Design Lead
Construction Manager (HQ, Region)	State Railroad Coordinator/Railroad Office Designee
Drainage Design Lead	STID Project Manager
Estimating Representative	STID Engineer
Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead)	Structural Design Lead Survey Lead Traffic (Signal Design Engineer, Lighting Design Engineer, ITS Design Engineer, Traffic Engineer, Traffic Safety)
Lead Geotechnical Engineer/Geologist	Traffic Safety
Hydraulics Lead	Transportation Planning
Multimodal Lead	TSMO Coordinator
Pavement Design Lead	Utility Coordinator
Regional Director of Project Management	VE Program Coordinator (if applicable, see 2PM1)
Region Maintenance Representative	Stakeholders to consider: Municipality Representative, FHWA, Municipal and Rural Planning Organizations (MPO, RPO), Local Government, Utility Owners, etc.
Regional Director	
Resident Engineer	
Right-of-Way Lead	

The Project Manager works with the project's Design Lead (e.g., the Roadway Design Lead, Structural Design Lead) to gather all relevant materials (e.g., concept documents, Project



Management Plan, project specific design criteria, Line and Grade Package/line and grade .dgn, *Comment Resolution Form*, etc.) in the shared project folder and distributes to the meeting invitees (as needed) prior to the Scoping Meeting.

Review and Complete Comment Form

The Project Manager (or designated team member) informs the invitees/project reviewers of the timeframe allotted for review. Reviewers document their comments on the *Comment Resolution Form* ([see Appendix D](#) for an example template) or other approved document and return it to the Project Manager and/or Roadway Design Lead prior to the meeting.

Compile Comments, Hold Meeting, and Document/Distribute Minutes

The Project Manager works with the project's Design Lead (Roadway Design Lead, Structural Design Lead, etc.) to compile the comments provided by the team and identify the responsible technical lead to review and recommend resolution of comments received.

The Project Manager facilitates the meeting and encourages team interaction, with the Design Lead leading the technical comment resolution discussions. The Project Manager selects a staff member to update the risk register and to document comments, decisions, and actions in the meeting minutes. Meeting minutes are distributed to the invitees (and other relevant project team members) and uploaded to the shared project folder.

Estimate the Project Using the Line and Grade Package

The Project Manager (in collaboration with the Design Lead) completes the Line and Grade Estimate Form in *Appendix G* [in development]. This worksheet generates an initial project estimate using known quantities in the Line and Grade Package, applying discipline recommendations from both Stage 0 and this Stage 1, and accounting for typical early estimate best practices (see [Appendix G](#) for further guidance).

In addition to the roadway quantities provided, the Project Manager and Design Lead should also account for (and quantify whenever possible):

- The number of structures (hydraulic and non-hydraulic structures) considering the span configuration and bridge length recommendations in the Concept Report ([see OST1](#) and the Project's Concept Report for related information).
- Geotechnical risks and associated design and construction mitigation options ([see OGT1](#) for related information).



- Number of proposed signals and lighting features based on documented warrants and initial or updated TSMO and ITS scope and budget ([see OT02](#) for related information).
- Multimodal recommendations that have been incorporated into the Line and Grade Package ([see OMM1](#) for related information).
- The initial ROW and utility estimate using the Line and Grade Package.
- All other items listed in the "Line and Grade Plans" column in Appendix G.

The Project Manager and Design Lead use this estimate to complete the PCD in Stage 2 ([see 2PM2](#) for related information).

Determine Need for Value Engineering

The purpose of Value Engineering (VE) in Stage 1 is to identify any recommendations and benefits early to allow sufficient time for the team to incorporate changes into the project without impacting the budget or schedule.

The Project Manager works with the Design Lead to notify the VE Program Coordinator as early as practicable regarding the project's use of federal-aid highway funding as defined and in accordance with the policy and procedures defined on the Roadway Design Value Engineering webpage.

End of Stage 1

A quality review of the deliverables for Stage 1 may include STID quantities and any items that may have changed since concept documents were completed. Ensure documents are uploaded to the shared project folder.

Design Lead/Project Manager notifies the project team that Context/Scoping Milestone is complete.

2PM1, 3PM1, 4PM1 Manage Project

Overview

Lead the project team to ensure the project remains on schedule, within allocated resources (budget and staff), and within the project scope of work. Provide project oversight through the entire design phase and proactively facilitate regular coordination between project team members to improve quality, resolve issues, and mitigate risks. **The deliverables and tasks in this activity repeat throughout Stages 2, 3, and 4.**

References

- [Department Policy 301-01 Standard Procurement, Management, and Administration of Engineering and Design Related Services](#) (revisions in development)
- [Local Government Guidelines for the Management of Federal and State-funded Transportation Projects, Seventh Edition, revised March 15, 2019](#)
- [TDOT Public Involvement Plan](#)
- [Roadway Design Value Engineering](#)
- [Funding Request Forms](#)
- [Executive Project Status Report Template](#)
- [MS Project Schedule Template](#)
- [Project Commitment Document Template](#)
- [Project Communication Plan](#)
- [TDOT Quality Manual](#)
- [Risk Management Guide \(in development\)](#)
- [Risk Management Plan \(and Risk Register\) Template](#)
- [TDOT's Cost Estimating Guidelines \(in development\)](#)

Deliverables

Deliverables ^a	Tasks
Project Management Plan Scope Schedule Budget Project Quality Management Plan	<ul style="list-style-type: none">▪ <i>Develop Project Management Plan</i><ul style="list-style-type: none">○ <i>Develop and Monitor Scope</i>○ <i>Develop and Monitor the Project Schedule</i>○ <i>Manage and Administer Budget</i>○ <i>Develop Project Quality Management Plan and Perform Quality Reviews</i>

(table continues)

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Deliverables ^a	Tasks
Project Management Plan (continued) Risk Management Plan Updated Risk Register Project Communication Plan Public Involvement Plan Team Meeting Agendas & Minutes	<ul style="list-style-type: none"> ▪ <i>Develop Project Management Plan (continued)</i> <ul style="list-style-type: none"> ○ <i>Develop Risk Management Plan and Update Risk Register</i> ○ <i>Develop and Facilitate Project Communication Plan</i>
Project Status Reports	<ul style="list-style-type: none"> ▪ <i>Report Project Status</i>
Agreements	<ul style="list-style-type: none"> ▪ <i>Finalize Local Government Agreements</i>
Letting Readiness Assessment	<ul style="list-style-type: none"> ▪ <i>Perform Letting Readiness Assessments</i>
Value Engineering Study (as applicable)	<ul style="list-style-type: none"> ▪ <i>Support Value Engineering Efforts</i>
Process Consultant Invoices Consultant Contracts and Modifications	<ul style="list-style-type: none"> ▪ <i>Manage Consultant Contracts (as applicable)</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Develop Project Management Plan

The Project Management Plan (PMP) acts as the project's "guide" for how the project team delivers the project and affirms the team's commitments related to their roles, responsibilities, and involvement. The PMP provides critical information to help new and existing project team members become acquainted with the project specifics quickly.

The Project Manager, in consultation with the discipline managers and technical leads, develops a project scope, schedule, and budget, and defines an approach to manage risk, communication, and quality. These deliverables, collectively, are considered the Project Management Plan. These documents may be developed by the TDOT Project Manager or consultant project manager as assigned and are distributed to the project team for review and acceptance after the project Scoping Meeting ([see 1PM5](#) for related information).

Develop and Monitor Scope

The Project Manager monitors project scope, inclusive of commitments, in each stage to minimize surprises that result from scope "creep", and ensure the project remains within the agreed upon project scope outlined in the Project Commitment Document.

Based on the draft project scope developed during project setup and documentation from the Scoping Meeting, the Project Manager assigns discipline managers or identified technical leads to develop their discipline's scope of work using activities outlined in the PDN. To align the

project team's understanding and reduce scope creep during project delivery, consider including the following items in the scope of work for each discipline.

- Specific activities and deliverables (what each discipline is responsible for delivering)
- Clearly written description of the tasks and subtasks to complete their responsibilities
- Comprehensive list of project unknowns, risks, and assumptions that may affect the discipline's scope of work delivered within the project's schedule and budget
- Documentation of what is not included in the scope of work

The Project Manager collects each discipline's draft scope of work, reviews, and reconciles differences, and uploads it to the shared project folder. Each team member, including consultants, references this information to better understand the expectations of each discipline's efforts and coordinates to resolve gaps and overlaps.

If issues arise that create potential changes to the project's scope, milestone delivery dates/field reviews, or programmed budget as compared to the agreed upon Project Commitment Document (PCD), the Project Manager works with technical leads to address and mitigate issues to bring the project back in line with the signed PCD ([see 2PM2](#) for completing or changing the PCD).

Develop and Monitor the Project Schedule

The Project Manager confirms the project start date and works with the project team to verify the activity linkages (predecessor and successor relationships) and time durations based on the activities, deliverables, and tasks identified in the scopes of work.

Items to consider when developing the project schedule include:

- Project milestones and associated deliverables (committed project delivery dates do not extend beyond the assigned letting date)
- Timeframes/durations (in working days) to complete identified project activities, tasks, and deliverables (reverify prior to signing the PCD)
- Sequencing of activities (successors and predecessor relationships), building off of the standard sequencing/relationships identified in the MS Project schedule template or as built using the TDOT PDN_Scope and Schedule Generator
- Adequate quality review durations
- Incorporation of key stakeholder (regulatory, agency, utility, etc.) constraints, seasonal limitations, and schedule needs
- Adequate time to obtain right-of-way, utility, and railroad agreements; third-party permits; and associated approvals

- Adequate time to complete necessary on-site or off-site environmental mitigation projects and obtain required environmental permits and approvals
- Adequate time for acquiring funding, particularly on local partnering projects
- Prerequisites or constraints associated with the use of the funding

If activity durations and/or sequencing fail to align with efficient and logical project delivery in Stage 1, the Project Manager facilitates discussions with the technical leads to address adjustments that bring the project into alignment, or schedules multidisciplinary project team meetings to assist with aligning project team members' expectations regarding deliverables, sequencing, and durations.

The Project Manager monitors the progress of each discipline's activities, throughout all stages of the project, as they inform and receive feedback from the technical leads during project team meetings. The project team meets regularly to discuss ongoing work, as well as which deliverables and tasks are coming due. It is advisable for the project team to consider a one to three-month look ahead using an up-to-date project schedule.

Particular attention is given to the identification and monitoring of the project's critical path. Based on updates to the schedule, the critical path may change throughout the project. As a result, the Project Manager regularly monitors the entire project and shares updates with the project team.

If updates to the schedule result in changes to milestone delivery dates committed to in the PCD, the Project Manager works with technical leads and discipline managers to resolve misalignments and bring the project back on schedule. If no resolution to maintain the milestone dates can be achieved, the Project Manager obtains schedule change approval as described in [2PM2](#). It is advised that the Project Manager engage the Regional Director of Project Management, Project Management Director, and Regional Director in discussions to avoid the necessity of a change request prior to initiating one.

Manage and Administer Budget

The Project Manager manages and administers project funding and costs, and assists all project team members in understanding, communicating, and mitigating budget risks and challenges that occur as the project progresses through each activity. Together, the Project Manager and project team review the estimates and explore cost savings opportunities in accordance with TDOT's Cost Estimating Guidelines ([see Appendix G](#) for an example process [in development]).

Additionally, the Project Manager has the responsibility to understand, and document prerequisites and constraints associated with the use of funds when:

- Assessing the scope of work, inclusive of commitments
- Developing the project scope, schedule, and budget
- Assessing risks

The team confirms the total project cost, which allows the Project Manager to verify the estimated construction cost, ensure it includes costs for construction management, and is in alignment with the project scope of work. The total project cost consists of a Preconstruction Cost Estimate and Construction Cost Estimate.

- **Preconstruction Cost Estimate.** Obtain and evaluate the cost estimates for preliminary engineering: third-party utilities, permits and mitigation; as well as right-of-way acquisition from the project team.
- **Construction Cost Estimate.** Review the current construction cost estimate to understand the anticipated construction costs for the project, identify gaps and overlaps, and revise the estimate as necessary.

The Project Manager and Design Lead (e.g., Roadway Design Lead, Structures Design Lead) evaluate the total project cost verifying it is within the programmed amount at each milestone throughout project delivery. In accordance with Federal Highway Administration (FHWA) Directive 6640.1A, the Project Manager requests and obtains Preliminary Engineering/Final Design (PE-D) funding to track preliminary engineering costs after the environmental document is complete.

Additionally, the Project Manager submits a Right-of-Way Acquisition and/or Utility Relocation funding request(s) to Programming for authorization to acquire necessary right-of-way after appraisals are complete ([see 3RW2](#) for related information) and utility owners are ready to be “put to work” ([see 3UT1](#) for related information).

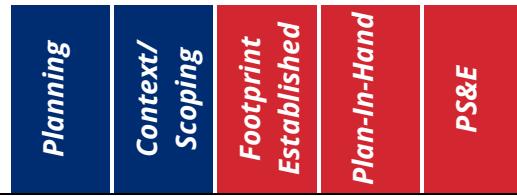
If project costs are estimated to overrun the funding/programmed amount, as committed to in the PCD, the Project Manager works with the project team to find solutions to bring the estimated costs into alignment with the PCD.

Stage 2 & 3 Funding Request Logistics

Use the *Prel Eng Funding Request Form* to request funding for Preliminary Engineering Final Design (PE-D).

Use the *ROW Acq and Utility Relo Funding Request Form* to request funding for right-of-way acquisitions and/or utility relocations.

See link in the [Reference list](#) above to download the



If no resolution to maintain the budget can be achieved, the Project Manager engages the Regional Director of Project Management, Project Management Director, and Regional Director in discussions to avoid the necessity of a change request prior to initiating one.

Develop Project Quality Management Plan and Perform Quality Reviews

The Project Manager oversees quality in accordance with the *TDOT Quality Manual* and the project's *Quality Management Plan*. The Project Manager and Design Lead's roles are to perform a quality review on project deliverables prior to the completion of each milestone, including:

- Ensure it is consistent with the project's scope (inclusive of commitments), schedule, and budget.
- Confirm that all comments from previous reviews and the risk register have been addressed or resolved.
- Ascertain the effects of any changes to legislation, policies, or TDOT standards on the delivery or documentation for the project.
- Verify that each technical lead completes their respective quality process and that the project team has implemented and documented an interdisciplinary review. (**Note:** each discipline signs their respective title sheets and sealed plans).

Related sections: [OSD2](#), [4RD1](#)

Develop Risk Management Plan and Update Risk Register

The Project Manager determines the type and frequency for conducting risk management discussions and workshops and records it in the *Risk Management Plan*. The Project Manager or designated team member organizes and facilitates risk workshops and discussions. Often risk identification can be an opportunity to look for innovative solutions resulting in a better project.

The Project Manager and designated Design Lead confirm project team members are assigned to specific project risks, monitor progress, assess impact, and close out risks upon resolution, in accordance with the *Risk Management Guide* (in development). The Project Manager or designated project team member regularly updates the risk register formalized during [1PM4](#).

Related section: [OSD3](#)

Develop and Facilitate Project Communication Plan

The Project Manager facilitates continuous communication among disciplines. This includes working with technical leads to conduct regular discipline meetings, exploring informal forms of coordination, and ensuring all pertinent technical leads have the latest updates and revisions.

The Project Manager keeps project team members informed and regularly gathers stakeholder feedback in an effort to reduce surprises and identify potential risks early.

The Project Manager revises the draft *Project Communication Plan* ([see Appendix C](#) for an example template) immediately following the Kickoff Meeting, based on project team input. Updates include:

- Meeting frequency and coordination
- Agenda format and meeting minutes
- Communicating project decisions
- Issue resolution process

The Project Manager and designated team members continue to conduct proactive stakeholder engagement throughout the life of the project as outlined in the *Project Communication Plan* and in accordance with TDOT's *Public Involvement Plan* (PIP). The development of a PIP is at the discretion of the Project Manager and may include supporting and/or leading external public involvement meetings (i.e., NEPA hearings, design public meetings, informational meetings, etc.) in coordination with assigned Public Involvement & Communication Office and NEPA Office staff.

Report Project Status

Regularly reporting project status throughout the four stages keeps TDOT leadership, team members, and stakeholders aware of project progress, provides an opportunity to solicit feedback, and helps identify issues outside the project team's control.

The Project Manager monitors and reports the status of project performance, which includes:

- Adhering to the project's scope,
- Meeting project milestones according to the agreed upon schedule,
- Accounting for expended and proposed costs within the approved budget, and
- Tracking major risks that impact schedule and budget.

An *Executive Project Status Report* template is available ([see Appendix B](#) for an example template).

Finalize Local Government Agreements

Developing local government agreements creates a partnership with external stakeholders resulting in appropriate levels of planning and budgeting for betterments ([see OSD5 Develop State Industrial Access \(SIA\) Packet](#) for related information).

Building on the discussions initiated in the Planning Stage (see [OSD1](#) for related information), the Project Manager works with the Local Programs Development Office to complete/execute any local government agreements (including maintenance agreements for signals and lighting) for local government-led projects ([see 1PM1](#) and [1PM3](#) for related information), and later stages where agreements for inclusion of work on behalf of the municipality is incorporated within the project. To create and complete agreements refer to *Local Government Guidelines for the Management of Federal and State-Funded Transportation Projects, Seventh Edition, March 15, 2019 Revisions*.

Local Government

Have local government stakeholders been contacted? Letters must be on file prior to beginning any work.

Perform Letting Readiness Assessment

Regularly preparing for letting in each stage keeps scope, schedule, and budget on track, ensures each work product is complete and meets quality standards, and proactively addresses risks as they arise.

The Project Manager assesses the readiness for letting prior to Plan-in-Hand Field Review ([3PM2](#)) and PS&E Review ([4PM2](#)) Meetings, and confirms the status of the design and schedule to complete all required permits, agreements, and certifications with the:

- Roadway Design Lead
- Structural Design Lead
- Traffic Lead
- Right-of-Way Lead
- Utility Coordinator and Railroad Coordinator
- Program Development and Scheduling Office (PDSO)
- NEPA Lead
- STIP/TIP
- Local Programs
- Environmental Permits Lead
- Headquarters Construction Office

Technical leads are responsible to notify the Project Manager if permits, agreements, or certifications are delayed, denied, or returned.

Support Value Engineering Efforts

The Project Manager and Design Lead/Manager confirm the need for a Value Engineering (VE) Analysis, then work with the VE Program Coordinator to determine the plan and schedule for

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conducting the Value Engineering analysis. The Project Manager works with the Design Lead to implement approved recommendations and associated documentation, in accordance with the *Roadway Design Value Engineering* page. The Design Lead notifies the VE Program Coordinator of changes made to the project scope during project development.

Manage Consultant Contracts and Modifications (as applicable)

The Project Manager manages professional services contracts, ensures consultant contracts comply with TDOT's contract standards, verifies the terms and conditions are met on both sides, processes invoices and contract modifications in accordance with the Department Policy 301-01 Standard Procurement, Management, and Administration of Engineering and Design Related Services. The Project Manager and discipline manager(s) annually evaluate consultants against established performance criteria.

Prepare for End of Stage 2

Compile the Project Management Plan documents and update the Project Commitment Document.

2PM2 Complete Project Commitment Document (PCD)

Overview

Complete the Project Commitment Document (PCD) to memorialize the scope of work (inclusive of commitments), schedule, budget, and quality.

References

- [Project Commitment Document \(PCD\) Template](#)

Deliverables

Deliverables ^a	Tasks
Signed Project Commitment Document (PCD) Updated Schedule	<ul style="list-style-type: none">▪ Verify Schedule▪ Verify Estimates▪ Finalize Project Commitment Document (PCD)

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Verify Schedule

The Project Manager:

- Verifies the activity linkages (predecessor and successor relationships) and time durations based on the activity's deliverables and tasks.
- Ensures consistency with the discipline's scope of work ([see 2PM1](#) task, Develop and Monitor Project Schedule, for a list of items to review).
- Updates/finalizes the project schedule to include all the team's input to date.

Verify Estimates

The Project Manager works with the appropriate design leads to verify all project cost estimates, including construction, permits/mitigation credits, utility relocations, and right-of-way cost estimates ([see Appendix G](#) for an example process [in development] and [1PM5](#) for what will likely be the estimate used for the PCD).

NOTE: Finalizing the PCD should occur after the Project Manager has been able to verify that all estimates (construction, ROW, and utilities) are complete and the project schedule is solidified with the team in Stage 2.

Finalize Project Commitment Document (PCD)

The finalized PCD ([see Appendix A](#) for an example template) represents the project team's agreement to the project's scope, schedule, and budget. As such, the Project Manager and project team must fully evaluate all modifications to the agreed upon scope, schedule, and budget when considering potential scope "creep" and risk/opportunities. The PCD is drafted during project setup, reviewed with the project team during the project Kickoff Meeting and Scoping Meeting, then finalized in Stage 2 using information verified during the Manage Project activity.

To complete the PCD, the project team agrees to the project scope of work, budget, and delivery schedule. The PCD consists of various components as outlined:

- Project Scope
 - Define the project goals
 - Develop a short work statement that expresses purpose (e.g., improve capacity by widening corridor, pavement preservation, safety)
 - Anticipate beginning and duration of construction
- Project Work Components
 - List major improvements that define the construction work to satisfy the project goals.
 - Include statements of what the project will not address or include, referred to as "does not include" statements.
- Project Delivery Type/Method
 - List the delivery method (e.g., design-bid-build/DBB, design-build/DB, and construction manager general contractor/CMGC)
- Environmental Document Type
 - Identify the class of action to be completed for the project (categorical exclusion (CE), NEPA document or Tennessee Environmental Evaluation Report (TEER)) that documents the environmental decision.
- Schedule
 - Confirm proposed letting date
 - Update the project delivery schedule
 - Provide commitment dates for key milestones
- Budget
 - Verify total project cost
 - Develop a project budget inclusive of funding requirements and total cost estimates at the time of letting (not current costs).
 - Estimates include preconstruction and construction costs to complete the project work through construction.
- Risks

- Document major risks, those with high impact and high probability, which may affect project budget and/or schedule.
- These may include project delivery or technical engineering/construction related risks.

Once finalized, the Project Manager obtains signatures from the project team, which represent a commitment to the components therein. The Project Manager also obtains signatures from the Regional Director of Project Management, Project Management Director and Regional Director representing their approval and commitment to support the team.

After the PCD is signed, the Project Manager and project team members may not deviate from the defined project scope, schedule, or budget as identified within the PCD without prior written approval by the Project Management Director and Regional Director. The Project Management Director and Regional Director, together, have final authority for any changes to the PCD through all stages of project delivery.

The Project Manager reviews the PCD at least at each milestone/field review meeting to verify the project is on the planned course. If significant changes to the project appear to warrant revisions to the scope, schedule, or budget, the Project Manager and project team notify each other as soon as practical and find solutions to maintain alignment and keep the commitments agreed to in the PCD.

If changes cannot be avoided, the Project Manager notifies the Regional Manager of Project Management, Project Management Director, and Regional Director and as soon as practical if the **budget increases by 10% or more** and/or if the **letting date is forecasted to be missed**.

Approved changes are shared with all project team members, each remains accountable for delivery of the project within parameters of the latest-approved PCD.

End of Activity

If the PCD is not completed by the end of Stage 2, notify the Regional Director of Project Management and Project Management Director.

2PM3 Conduct ROW Strategy Meeting(s)

Overview

Work with the Design Lead (e.g., the Roadway Design Lead, Structural Design Lead) and ROW Lead to organize and facilitate the Right-of-Way (ROW) Strategy Meeting(s). **The deliverables and tasks in this activity continue into Stage 3.**

References

- [*Local Government Guidelines for the Management of Federal and State-funded Transportation Projects*](#)
- [*ROW Policy & Procedures Manual*](#)
- [*Comment Resolution Form Template*](#)
- [*Appendix I: FHWA Summary of Actions in the PDN*](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda	<ul style="list-style-type: none">▪ Set Up Meeting and Develop Agenda
Meeting Materials	<ul style="list-style-type: none">▪ Hold Meeting and Document/Distribute Minutes
Meeting Minutes	<ul style="list-style-type: none">• Verify Initial ROW Requirements
Updated Risk Register	<ul style="list-style-type: none">• Identify High-Risk Parcels and Develop Mitigation Strategy
Updated Comment Resolution Form	<ul style="list-style-type: none">• Verify Initial Acquisition Schedule
	<ul style="list-style-type: none">▪ Attend ROW Site Visit and Collect Feedback

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

The purpose of the ROW Strategy Meeting(s) is to develop a strategy to:

- Optimize the right-of-way acquisition schedule and minimize project costs
- Identify design changes that minimize right-of-way impacts
- Identify critical parcels that affect the timely delivery of the project
- Develop strategies to prioritize critical parcels
- Acquire all right-of-way parcels

The Project Manager works with the ROW Lead and Design Lead (e.g., Roadway Design Lead, Structural Design Lead) to gather all relevant materials, (e.g., current design plans/Functional Design Plans for all disciplines with existing right-of-way, property ownership right-of-way estimate, *Comment Resolution Form*, etc.) and distributes to the meeting invitees (as needed) prior to the ROW Strategy Meeting.

The Project Manager informs the project reviewers of the timeframe allotted for review. Team members review documents to identify the potential right-of-way requirements and identify risks prior to the meeting.

The Project Manager organizes this meeting and develops the agenda ([see Appendix C](#) for an example template), which typically includes:

- Scope of work
- Project Commitment Document (PCD)
- Permits, agreements, and commitments (Environmental, right-of-way, Utility, and public involvement/engagement)
- Construction and maintenance input
- Risks and resolutions
- Potential design modifications to minimize risk
- Project schedule and right-of-way acquisition schedule
- Project cost estimate and budget (specifically for right-of-way)
- TDOT staff or consultant resource(s) needed for right-of-way acquisition
- Quality control and assurance
- Site visit (optional)

The Project Manager invites the project team members and necessary stakeholders to the meeting. Depending on the project's scope, potential invitees include:

ROW Strategy Meeting Invitees	
Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead) FHWA (as may be helpful to support the process) State Railroad Coordinator/Railroad Office Designee Region Construction Representative Region Maintenance Representative Resident Engineer Right-of-Way Lead	Roadway Design Lead Roadway Engineer Structural Design Lead Utility Coordinator Stakeholders to consider: Municipality Representative, FHWA, Municipal and Rural Planning Organizations (MPO, RPO), Local Government, Utility Owners, etc.

Hold Meeting and Document/Distribute Minutes

The Project Manager leads the meeting and encourages team interaction. The Project Manager selects a staff member to document comments, decisions, and actions in the meeting minutes, and update the risk register. Meeting minutes are distributed to the project team and uploaded to the shared project folder.



The Project Manager facilitates the team interaction with the Design Lead and ROW Lead to identify:

- Any priority tracts that may take longer to acquire, such as commercial properties
- Relocations
- Any tracts which are not ready to acquire

The team brainstorms design alternatives to minimize risk, develops an acquisition schedule, and reviews a preliminary right-of-way cost estimate in accordance with *ROW Policy & Procedures Manual*.

The following items are discussed during the ROW Strategy Meeting(s) and completed by the technical leads as soon as possible after the meeting.

Verify Initial ROW Requirements

- Funding sources (federal versus state)
- Number of parcels for various project alternatives
- Number of total acquisitions versus partial acquisitions
- Any/all relocations required by type (business versus non-business)

Identify High-Risk Parcels and Develop Mitigation Strategies

The Project Manager works with the ROW Lead and other applicable stakeholders and project team members to track and mitigate risks.

- High-risk parcels with a high potential to delay the project schedule may include historic properties, unwilling property owners, properties with hazardous or contaminated materials, total versus partial acquisitions, etc.
- Design alternatives that might avoid or mitigate risks, considering:
 - Can a straight ROW setback be used on this project?
 - Can the ROW be widened to one side or the other?

Related section: [2RW1](#)

The ROW Lead documents mitigation strategies, then distributes to applicable project team members and stakeholders and uploads this document to the shared project folder. The Project Manager or an assigned team member updates the risk register with right-of-way issues that could affect the project schedule or budget.

Verify Initial Acquisition Schedule

- Number of exhibits to be generated
- Parcels eligible for acquisitions

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- Prioritized order of acquisition, prioritizing those acquisitions which may take longest, such as commercial properties and relocations
- Timelines and schedules for acquisitions

Related section: [3RW1](#)

Attend ROW Site Visit and Collect Feedback

Pertinent project team members conduct a physical drive-through or virtual visit of the project site to assess possible acquisition risks for each parcel within the project limits.

2PM4 Conduct Permit Strategy Meeting(s)

Overview

Organize and facilitate the Permit Strategy Meeting. Review permits required to construct the project(s). **The deliverables and tasks in this activity continue into Stage 3.**

References

- [*Environmental Guide, Section 1, Environmental Permitting Design Process*](#)
- [*Agenda and Meeting Minutes Template*](#)
- [*Appendix I: FHWA Summary of Actions in the PDN*](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda Meeting Materials Meeting Minutes Updated Risk Register	<ul style="list-style-type: none">▪ <i>Set Up Meeting and Develop Agenda</i>▪ <i>Hold Meeting and Document/Distribute Minutes</i>
Permit Application(s)	<ul style="list-style-type: none">▪ <i>Verify Permit(s) Are Complete and Submitted</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

The purpose of this meeting is to review and resolve potential permit conflicts. The Project Manager facilitates the meeting(s) and develops the agenda(s) ([see Appendix C](#) for an example template) with the Design Lead (e.g., Roadway Design Lead) and Environmental Permit Lead. The agenda typically includes:

- Schedule for permits and agreements
- Permit conflicts
- Construction and maintenance input
- Risks and resolutions
- Quality control and assurance

The Project Manager invites the project team members and necessary stakeholders to the meeting. Depending on the project's scope, potential invitees include:

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Permit Strategy Meeting Invites

Construction Manager (HQ, Region) Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead) FHWA (as may be helpful to support the process) Permit Section or Regional ETO Staff	State Railroad Coordinator/Railroad Office Designee Region Maintenance Representative Resident Engineer Roadway Design Lead Transportation Planning
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The Project Manager works with the Design Lead (e.g., Roadway Design Lead) and Environmental Permit Lead to gather all relevant materials in the shared project folder and distribute to the meeting invitees (as needed) prior to the meeting.

Related section: [3EN2](#)

Hold Meeting and Document/Distribute Minutes

The Project Manager, in coordination with the technical leads, discusses agreements, stakeholder commitments, cost estimates and cost for credits, schedules for obtaining the permits and agreements, as well as outstanding issues. Permits and/or agreements may include environmental permits, municipal agreements, railroad encroachment agreements, utility agreements, land transfer, and conservation easement agreements.

The Project Manager facilitates the discussion and encourages team interaction. The Project Manager selects a staff member to update the risk register, and document comments, decisions, and actions in the meeting minutes. Meeting minutes are distributed to the project team and uploaded to the shared project folder.

Verify Permit(s) Are Complete and Submitted

The Project Manager works with the appropriate technical leads to verify the status of applications/permit(s). The Project Manager confirms all permit applications necessary for the project are complete and verifies they are on file and submitted to the appropriate agency.

End of Activity

Remain aware of permits with long-lead times and track them through Stages 2, 3 and 4. This is a common issue that remains on the critical path.

2PM5 Hold Functional Design Plans Field Review Meeting

Overview

Organize and facilitate the Functional Design Plans Field Review Meeting, with support from the Design Lead (e.g., the Roadway Design Lead, Structural Design Lead) to lead specific design and technical discussions to solidify the project's footprint.

References

- [Agenda and Meeting Minutes Template](#)
- [Comment Resolution Form Template](#)
- [TDOT Quality Manual](#)
- [Appendix I: FHWA Summary of Actions in the PDN](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda Meeting Materials Meeting Minutes Comment Resolution Form Updated Risk Register	<ul style="list-style-type: none">▪ Set Up Meeting and Develop Agenda▪ Review and Complete Comment Form▪ Compile Comments, Hold Meeting, and Document/Distribute Minutes

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

The Functional Design Plans Field Review ensures that the multidiscipline design and associated plans have been advanced to finalize the project's footprint and supports advancement of other disciplines' plans and related design work for similar ends.

The goal of the Review Meeting is to reduce the opportunity for scope "creep" and rework (namely of changes to the project's horizontal and vertical alignment) in the subsequent stages of delivery. It also looks to understand and resolve any issues of adherence with scope, schedule, and budget commitments established in the Project Commitment Document (PCD).

Footprint

Finalize the project footprint via a "preliminary" level of design that allows right-of-way, utilities, and permits activities to continue in confidence that the horizontal and vertical alignment will remain consistent throughout the duration of the design phase.

The team should consider the footprint to be both the extent of limits for the project improvements, but also that there may be internal footprint limits (e.g., for a wetland) where impacts may still occur and would need to be addressed.



This multi-discipline review team identifies:

- Issues, opportunities, challenges, conflicts, or omissions in the project work and plans
- ROW, utilities, mitigation, permitting, constructability, and local jurisdiction needs, or commitments
- Risk of rework during subsequent project delivery stages
- Potential obstacles during construction that lead to errors, delays, and/or overruns

The Project Manager coordinates with the Design Lead (e.g., Roadway Design Lead, Structural Design Lead) to confirm all disciplines have completed quality checks and the Functional Plans will be ready for a multi-disciplinary review. Then the Project Manager organizes the meeting and develops the agenda ([see Appendix C](#) for an example template) in coordination with the Design Lead ([see 2RD1](#) for related information). Agenda items typically include:

- Project scope of work (defining project work components)
- Project-specific design criteria and design exceptions
- Functional Design Plan review by discipline ([see 2RD1](#) for related information)
- Identification of design conflicts among disciplines
- Permits, agreements, and commitments (environmental mitigation and permits, right-of-way, utility, and public involvement/engagement)
- Quantity pay items and updated cost estimate
- Construction and maintenance input
- Risks and resolutions
- Constructability and biddability
 - Construction phasing
 - Staging areas
 - Location and placement of equipment
 - Temporary shoring
 - Traffic control requirements
 - Availability of resources
 - Methods of construction
- Review results from Value Engineering Study (if conducted)
- Project schedule
- Overall project cost estimate and budget (Inclusive of preliminary engineering, utility, railroad, right-of-way, and construction estimates)
- Quality assurance and control
- Site visit (optional)

The Project Manager invites the project team members and necessary stakeholders to the meeting. Depending on the project's scope, potential invitees include:

Functional Design Plans Field Review Meeting Invitees	
Bid Analysis / Estimating Representative Community Relations Representative Construction Manager (HQ, Region) Drainage Design Lead Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead) FHWA (for a Risk-Based Involvement project) Lead Geotechnical Engineer/Geologist Hydraulics Lead Multimodal Lead Pavement Design Lead Right-of-Way Lead Roadway Design Lead Roadway Engineer	Resident Engineer Region Maintenance Representative State Railroad Coordinator/Railroad Office Designee Structural Design Lead Traffic (Signal Design Engineer, Lighting Design Engineer, ITS Design Engineer, and Traffic Operations Engineer) Traffic Safety TSMO Coordinator Utility Coordinator VE Program Coordinator (if applicable, see 2PM1) Stakeholders to consider: Municipality Representative, FHWA (if not a Risk-Based Involvement Project), Municipal and Rural Planning Organizations (MPO, RPO), Local Government, Utility Owners, etc.

The Project Manager works with the Design Lead to gather all relevant materials (e.g., Functional Design Plans, estimates, *Comment Resolution Form*, etc.) in the shared project folder and distributes to the meeting invitees (as needed) prior to the Functional Design Plans Field Review Meeting.

Review and Complete Comment Form

The Project Manager (or designee) informs the invitees/project reviewers of the timeframe allotted for review. Reviewers document their comments on the *Comment Resolution Form* ([see Appendix D](#) for an example template) or other approved document and return it to the Project Manager and/or Roadway Design Lead prior to the meeting.

Compile Comments, Hold Meeting, and Document/Distribute Minutes

The Project Manager works with the Design Lead to compile the comments provided by the team and identify the responsible disciplines to review and recommend resolution of comments received ([see 2RD1](#) for related information).

The Project Manager facilitates the discussion and encourages team interaction, with the Design Lead leading the technical comment resolution discussions. The Project Manager selects a staff member to update the risk register and to document comments, decisions, and actions

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in the meeting minutes. Meeting minutes are distributed to the project team and uploaded to the shared project folder.

After the meeting, the Design Lead compiles a comprehensive list of review comments, distributing the comments to the invitees and uploading the comments to the shared project folder ([see 2RD1](#) for related information).

End of Stage 2

Confirm ROW acquisition/Utility relocation funds and PE-D funds are authorized for use after the Environmental Document is complete.

The Design Lead notifies the project team that the Footprint Established Milestone is complete **after** all Functional Design Plans Field Review comments affecting the project's footprint have been resolved and the plans updated ([see 2RD1](#) for related information).

3PM2 Hold Plan-in-Hand Field Review Meeting

Overview

Organize and facilitate the Plan-in-Hand Field Review Meeting with support from the Design Lead (e.g., the Roadway Design Lead, Structural Design Lead) to lead specific design and technical discussions to produce a complete design.

References

- [Agenda and Meeting Minutes Template](#)
- [Comment Resolution Form Template](#)
- [TDOT Quality Manual](#)
- [Appendix I: FHWA Summary of Actions in the PDN](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda Meeting Materials Meeting Minutes Updated Comment Resolution Form Updated Risk Register	<ul style="list-style-type: none">▪ <i>Set Up Meeting and Develop Agenda</i>▪ <i>Review and Complete Comment Form</i>▪ <i>Compile Comments, Hold Meeting, and Document/Distribute Minutes</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

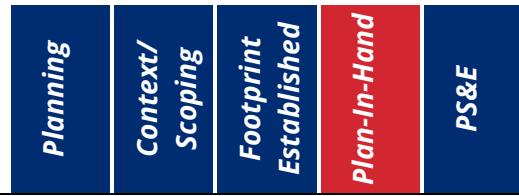
The Plan-in-Hand Field Review Meeting ensures that a multidiscipline design and associated plan set are complete well in advance of letting.

Prior to coordinating the meeting, the Project Manager determines the need for an additional constructability review depending on the complexity of the project or significant changes identified since the Functional Design Plans Field Review Meeting ([see 2PM5](#) for related information), when the Project Manager initially checked for constructability.

Related sections: [3RD1](#)

The goal of this review meeting is to collaboratively:

- Review the complete design, which includes compiled plans, specifications, and estimates from all impacted disciplines.
- Confirm that all previous comments from past field reviews have been addressed and closed.



- Discuss comments provided from the team's interdisciplinary and constructability review of the plans, agreements, special provisions, quantities, and cost estimate developed during this stage.
- Identify issues, challenges, conflicts, or omissions in the project plans to ensure a biddable and constructable project.

The Project Manager coordinates with the Design Lead (e.g., Roadway Design Lead, Structural Design Lead) to confirm all disciplines have completed quality checks and the Functional Plans will be ready for a multi-disciplinary review. Then the Project Manager organizes the meeting and develops the agenda ([see Appendix C](#) for an example template) in coordination with the Design Lead ([see 3RD1](#) for related information).

Agenda items typically include:

- Project scope of work (defining project work components)
- Project-specific design criteria and design exceptions
- Plan-in-Hand review, including plans and specification/special provisions by discipline
- Identification of design conflicts among disciplines
- Construction and maintenance input
- Quantity pay items and updated cost estimate
- Permits, agreements, and commitments (environmental mitigation and permits, right-of-way, utility, and public involvement/engagement)
- Risks and resolutions
- Project schedule
- Overall project cost estimate and budget (inclusive of preliminary engineering, utility, railroad, right-of-way, and construction estimates)
- Quality assurance and control

The Project Manager invites the project team members and necessary stakeholders to the meeting. Depending on the project's scope, potential invitees include:

Plan-in-Hand Field Review Meeting Invitees	
Bid Analysis / Estimating Representative Community Relations Representative Construction Manager (HQ, Region) Drainage Design Lead Environmental Leads (NEPA Lead, Environmental Mitigation Lead, Mitigation Designer, Environmental Technical Leads, Environmental Permit Lead) FHWA (for Risk-Based Involvement project) Lead Geotechnical Engineer/Geologist Hydraulics Lead Multimodal Lead Pavement Design Lead Regional Director of Project Management Region Maintenance Representative Resident Engineer	Right-of-Way Lead Roadway Design Lead State Railroad Coordinator/Railroad Office Designee Structural Design Lead Traffic Operations (Signal Design Engineer, Lighting Design Engineer, ITS Design Engineer, and Traffic Engineer) Traffic Safety TSMO Coordinator Utility Coordinator VE Program Coordinator (if applicable, see 2PM1) Stakeholders to consider: Municipality Representative, FHWA (if not a Risk-Based Involvement Project), Municipal and Rural Planning Organizations (MPO, RPO), Local Government, Utility Owners, etc.

The Project Manager works with the Design Lead(s) to gather all relevant materials (e.g., Plan-in-Hand plans, quantities and estimates, specifications/special provisions, *Comment Resolution Form*, etc.) in the shared project folder and distributes to the meeting invitees (as needed) prior to the Plan-in-Hand Field Review Meeting.

Review and Complete Comment Form

The Project Manager (or designee) informs the project reviewers of the timeframe allotted for review. Reviewers document their comments on the comment resolution form ([see Appendix D](#) for an example template) or other approved document and return it to the Project Manager prior to the meeting.

Compile Comments, Hold Meeting, and Document/Distribute Minutes

The Project Manager works with the Design Lead to compile the comments provided by the team and identify the responsible disciplines to review and recommend resolution of comments received ([see 3RD1](#) for related information).

The Project Manager facilitates the discussion and encourages team interaction. The Project Manager selects a staff member to update the risk register, and document comments, decisions, and actions in the meeting minutes. Meeting minutes are distributed to the meeting invitees and applicable project team members and uploaded to the shared project folder.

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The Design Lead assists in leading specific design and technical discussions. After the meeting, the Design Lead compiles a comprehensive list of review comments, distributes the comments to the invitees and uploads them to the shared project folder ([see 3RD1](#) for related information).

4PM2 Hold PS&E Review Meeting

Overview

Organize and facilitate the Plans, Specifications, and Estimates (PS&E) Review Meeting and ensure all comments have been resolved so that the PS&E Plans (i.e., the Construction Documents) are ready to be advertised.

References

- Contractor Letting Files*
- [*Right-of-Way Division* for Acquisition Office and Procedures](#)
- [*Roadway Design Division* for Roadway Design Standards, Manuals, Process Guides,](#)
- [*TDOT Letting Checklist*](#)
- [*Utilities Office* for Utilities Forms and Resources, Accommodating Utilities](#)
- [*Bid Analysis & Estimating Office* for Construction, Price Information, and Roadway Design Links](#)
- [*Agenda and Meeting Minutes Template*](#)
- [*Comment Resolution Form Template*](#)
- [*TDOT Quality Manual*](#)
- [*Appendix I: FHWA Summary of Actions in the PDN*](#)

Deliverables

Deliverables ^a	Tasks
Meeting Agenda Meeting Materials Meeting Minutes Updated Comment Resolution Form Updated Risk Register	<ul style="list-style-type: none">▪ <i>Set Up Meeting and Develop Agenda</i>▪ <i>Hold Meeting and Finalize Project Documentation</i>

^aThe Project Manager is the Activity Leader responsible for completing the listed deliverables.

Set Up Meeting and Develop Agenda

The purpose of the PS&E Review Meeting is to:

- Review and ensure that the final set of Construction Documents, including the plans, specifications, and estimates for all disciplines, is consistent with the Project Commitment Document (PCD), specifically the intended scope and budget.
- Confirm that all environmental, right-of-way, utility, and railroad permits, agreements, and related documentation are complete **or** will be completed on schedule **prior to** the Construction Document turn-in.

- **Note:** Often holding the PS&E Review Meeting **prior to** receipt of all environmental, right-of-way, utility, and railroad permits, agreements, and related documentation benefits the schedule. In these instances, the review meeting serves, in part, as a status update verifying that all non-design documentation is still on schedule for turn in.
- Verify from the technical leads that all post-meeting comments from the Plan-in-Hand Review Meeting have been addressed/fully resolved and implemented, as appropriate, into the final Construction Documents.
- Prepare the contractual documents for letting.

The Project Manager organizes the meeting and develops the agenda ([see Appendix C](#) for an example template) in coordination with the Design Lead (e.g., Roadway Design Lead, Structural Design Lead) ([see 4RD1](#) for related information). Agenda items typically include:

- Verification that all previous review comments have been addressed and incorporated and that the plans and specifications/special provisions are finalized and ready for turn in ([see 4RD1](#) for related information)
- Outstanding issues (risks, commitments, mitigation)
- Project cost estimate finalization

The Project Manager invites the following (as appropriate based on the comments received) to the PS&E Review Meeting:

PS&E Review Meeting Invitees	
Construction Manager (HQ, Region) Project Management Director Regional Director of Project Management Regional Director Right-of-Way Lead Roadway Design Lead	Structural Design Lead Traffic (Signal Design Engineer, Lighting Design Engineer, ITS Design Engineer, and Traffic Engineer) Traffic Safety Utility Coordinator & Design Lead Utility Owners (as needed) FHWA (for a Risk-Based Involvement project or as needed for projects not under a Risk-Based Involvement)

Review and Complete Comment Form

The Project Manager informs the invitees of the timeframe allocated for this final review. The intent of this last review is only to verify that previous comments on the Plan-in-Hand Plans have been addressed in the revised Construction Documents. A reviewer provides any last comments on the *Comment Resolution Form* ([see Appendix D](#) for an example template) or other approved document and returns it to the Project Manager prior to the meeting.

Compile Comments, Hold Meeting, and Finalize Project Documentation

The Project Manager works with the Design Lead to compile the final comments provided by the team and to identify the responsible discipline to review and recommend resolution of comments received (see [4RD1](#) for related information).

The Project Manager, in coordination with the Design Lead, holds the PS&E Review Meeting with the Regional Director of Project Management, Project Management Director, and Regional Director. The Design Lead and/or technical leads update the plans and provide a response to each comment, if applicable at this late stage of review. The Project Manager verifies that all comments are resolved, distributes the meeting minutes to the project team, and uploads the minutes to the shared project folder.

The Design Lead compiles all discipline input and uploads the final set of Construction Documents to the shared project folder for advertising and letting ([see 4RD1](#) for related information). The Project Manager then confirms the following to ensure the Construction Documents are complete ([see 5CN1](#) for related information).

End of Stage 4

The Project Manager notifies the project team when the Contract Letting Milestone is complete.

The Project Manager notifies team members assigned of construction and post-construction support responsibilities.

- Are all water quality permits complete/ready or are there no water quality permits on the project?
- Are the design plans, including structures and utilities plans (as applicable), uploaded to the shared project folder?
- Is this a chapter 86 project?
- Have all special provisions (including, as applicable, SP105C, SP107C, and SP725) been coordinated or uploaded to the shared project folder?
- Are all geotechnical reports uploaded to the shared project folder?
- Is the Transportation Management Plan (TMP) signed? Has the TMP been uploaded to the shared project folder?

The Project Manager should be prepared to discuss the answers to these questions (or if an item is *not applicable* for the project) as part of the first letting meeting in 5CN1.

2PV1 Provide Pavement Design

Overview

Complete the project's pavement design and associated tasks to support advancement of other disciplines' plans and related design work.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT Roadway Design Documents](#)
- [TDOT Quality Assurance/Quality Control](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Pavement Design	▪ <i>Provide Pavement Design</i>	Pavement Designer	Roadway Design Lead, Roadway Design Engineer

Provide Pavement Design

A critical element in defining the project footprint is an established pavement structural design that considers:

- Traffic loading
- Soil characteristics
- Material availability
- Construction consideration/constructability
- Past performance/quality
- Engineering judgement
- Current TDOT policy

Initiated when receiving a Pavement Design Request Form and related information from the Roadway Design Lead or Project Manager, the Pavement Designer (TDOT HQ Design Division: Pavement Design Section) evaluates the structural capacity and life-cycle cost to complete the project's pavement design.

After the pavement design is complete, perform a quality control review as detailed in the *TDOT Quality Manual*.

Once the design is provided for the Functional Design Plans, the Pavement Designer continues to support the Roadway Design Lead and Project Manager throughout the remainder of Stages

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3 and 4 to confirm the original pavement recommendations, provide any needed approvals for changes to the design, and/or submit any updated pavement designs (if needed) in accordance with the *TDOT Roadway Design Guidelines*.

Related section: [2RD1](#)

0RD1 Provide Roadway Desktop Review

Overview

Complete a high-level review of major roadway assumptions or design options as requested by the Strategic Transportation Investments Division (STID).

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT Instructional Bulletins](#)
- American Association of State Highway Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets*
- AASHTO Roadside Design Guide*
- STID Comment Resolution Form*
- [Federal Highway Administration \(FHWA\) 10 Controlling Design Criteria](#)
- [TDOT Roadway Design Documents](#)

Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
Site Review Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ Complete Roadway Division Review	
Concept Report Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ Review the Concept Report	Regional Roadway Engineer

Complete Roadway Division Review

A regional Roadway Engineer may receive a request from the STID Project Manager to complete a high-level review (e.g., Google street view) of major roadway assumptions, potential fatal flaws, deviations from standards, or design options in the project area ([see OSD1](#) for related information). Using the STID Comment Resolution Form, this planning stage project review is an opportunity for the Roadway Engineer to offer technical input to:

- Reduce project risks that may impact design, construction, right-of-way, environmental, and utilities (as applicable).
- Better understand and direct conceptual design decisions that will affect final design.
- Support STID's development of the preliminary project scope, conceptual layout, and cost estimate.

To establish a general understanding of the project area and validate the feasibility of the conceptual design, the Roadway Engineer references the information provided by the STID



Project Manager (e.g., a project location map or .kmz file, relevant traffic and safety data, and/or project purpose and need or reason for the project) when collecting/providing any relevant project information that may include:

- Previous construction plans/As-Builts in or around the project area
- Public input received (complaints, issues identified along the corridor, etc.)
- Understanding of the corridor/project area from past reports, studies, or historical photos

Within two weeks of receiving the request from STID, the Roadway Engineer provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information).

Attend Site Visit

A project site visit allows the internal divisions and external stakeholders to discuss the proposed improvement, challenges, and requests to consider as the Concept Report is drafted.

When receiving notification from the STID Project Manager (which includes the date of review and a packet of information), the Roadway Engineer reviews the site visit packet to determine if Roadway staff needs to attend the site visit and then, if attending, prepares for the site visit. Any discussion from the site visit becomes informative for later project stages.

Review the Concept Report

Within two weeks of receiving the draft Concept Report, the Roadway Engineer provides review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

1RD1 Initiate Roadway Design

Overview

Ensure that the roadway design is consistent with the conceptual layout developed as part of the Concept Report and represents sound roadway design principles and practices.

References

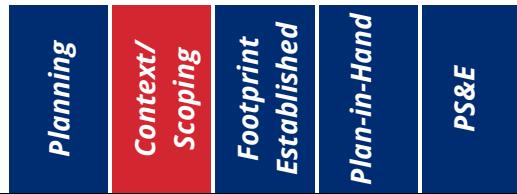
- [TDOT Roadway Design Guidelines](#)
- [TDOT Instructional Bulletins](#)
- [American Association of State Highway Transportation Officials \(AASHTO\) A Policy on Geometric Design of Highways and Streets](#)
- [AASHTO Roadside Design Guide](#)
- [Federal Highway Administration \(FHWA\) 10 Controlling Design Criteria](#)
- [TDOT Standard Design and Survey CADD Files and Documents](#)
- [TDOT Standard Drawings](#)
- [TDOT Standard Specifications for Road and Bridge Construction](#)
- [TDOT Roadway Design Documents](#)
- [TDOT Roadway Design Checklists](#)
- [Work Zone Significance Determination Form](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Project-Specific Design Criteria Document	<ul style="list-style-type: none">▪ Establish Project-Specific Design Criteria	Roadway Design Lead	CE Manager 2
Work Zone Significance Determination	<ul style="list-style-type: none">▪ Determine Work Zone Significance	Roadway Design Engineer	Traffic Operations Engineer, Regional Traffic Engineer
Line and Grade Package (Initial Roadway Plans)	<ul style="list-style-type: none">▪ Develop Line, Grade, and Cross Sections (Line and Grade Package)		Roadway Design Engineer
Updated Preliminary Project Estimate	<ul style="list-style-type: none">▪ Lead the Line and Grade Package Field Review	Roadway Design Lead	Project Manager

Establish Project-Specific Design Criteria

Considering that every project is unique, but every project also requires consistent application of established design criteria, the Roadway Design Lead drafts a project-specific design criteria document, following guidance from AASHTO's *A Policy on Geometric Design of Highways and Streets*, TDOT's *Roadway Design Guidelines*, and FHWA's *Controlling Design Criteria*. The document establishes the following criteria for all roadways within the project limits:



- Design speed
- Lane and shoulder widths
- Minimum horizontal curve radius and degree of vertical curvature (K-values)
- Maximum grade
- Maximum superelevation rate
- Sight distance (e.g., stopping sight distance, intersection sight distance, passing sight distance)
- Cross slope
- Vertical clearance
- Design loading structural capacity
- Design vehicle

The document also defines additional standards and relevant project data that typically includes:

- Clear zone requirements
- Existing and future traffic volumes developed in coordination with STID Project Manager and Traffic Operations Engineer ([see OSD1](#) and [1TO1](#) for related information)
- Functional classification and access management requirements
- Type of terrain
- Potential design exceptions or waivers from TDOT standards, which are formalized during the development of the Line and Grade Package and Functional Design Plans (see 2RD1 for related information)

Once drafted, the Roadway Design Lead submits the document to the CE Manager 2 (or equivalent for a consultant-led design), who completes a quality control (QC) review as detailed in the *TDOT Quality Manual*, to ensure appropriate references are used and values for each element are correct.

Once comments are resolved, the Roadway Design Lead uploads the document to the project folder. This document becomes the key reference to develop the Line and Grade Package in this Stage 1 and then advance the Functional Design Plans in Stage 2.

Determine Work Zone Significance

The work zone significance determination is completed as the project footprint (developed via the Line and Grade Package) is established to manage work zone impacts from the project and help determine mitigation strategies to consider in the project's Transportation Management Plan (TMP).

With support/oversight from the Traffic Operations Engineer and/or Regional Traffic Engineer, the preparer (typically a Roadway Design Engineer) completes the Work Zone Significance Determination Form to classify all operations (highway construction projects, utility projects, maintenance work, right-of-way use permits, etc.) as significant, non-significant, or exempt. ([See 1TO1](#) for related information on classifications and associated requirements and documents.)

Once ready for submittal, the Roadway Design Lead signs the form, uploading the form to the project folder. If the Roadway Design Lead is a consultant, he/she submits the form to the assigned TDOT Design Manager for signature and distribution within TDOT.

Develop Line, Grade, and Cross Sections (Line and Grade Package)

Certain disciplines, such as Environmental, Geotechnical, and Multimodal, typically begin their work using the Conceptual Layout ([see OSD2](#) and [OSD3](#) for related information). However, other disciplines (e.g., Traffic Operations, Structures, Right-of-Way/ROW, and Hydraulics) require electronic design files that define the basic roadway alignment and footprint to begin their respective preliminary designs.

Using the final survey files and digital terrain model (DTM) provided by the Survey Lead ([see 1SY1](#) for related information) and incorporating any preliminary information provided by the NEPA Lead, Environmental Technical Lead(s), Structural Design Lead, or Lead Geotechnical Engineer (see respective Stage 0 and Stage 1 activities), the Roadway Design Lead or Engineer (as assigned) develops the horizontal and vertical alignments and roadway footprint by:

- Setting the horizontal alignment for mainline, ramps (if applicable), sidewalks, multimodal infrastructure (as verified with the Multimodal Lead using the recommendation developed under [OMM1](#)), and sideroads (if applicable).
- Setting the vertical alignment for mainline, ramps (if applicable), and sideroads (if applicable).
- Establishing cross sections of mainline, ramps (if applicable), and sideroads (if applicable).
- Setting driveway profiles for key driveways to assess property access.
- Creating the initial, proposed TIN file and displaying present and proposed contours.
- Establishing preliminary/proposed right-of-way limits and easement locations documented in a completed ROW acquisition table submitted with the Line and Grade Package.
- Incorporating certain environmental resource shapefiles or locations details (e.g., for ecological features such as streams, ephemerals, and wetlands streams or for historic or archaeological resources) in the Line and Grade Package and labeling the environmental features on the plans ([see 1EN1](#) for related information).

- Coordinating with the NEPA Lead and Environmental Technical Leads to document efforts where the design avoids or minimizes impacts to potential resources when developing the Line and Grade Package (or subsequent Functional Design Plans) ([see 1EN1](#) for related information).
 - Note: The Roadway Design Lead should continue to document design modifications that avoid or minimize impacts for use by the NEPA Lead and Environmental Technical Leads when completing their agency coordination (e.g., SHPO, USFWS).
 - Note: The Roadway Design Lead should also document any design changes that reduce or alter impacts to all ecological features (e.g., streams, ephemerals, and wetlands) in the ETSA for use by the Environmental Permit Lead and Environmental Mitigation Lead ([see 2EN3](#) and [2EN4](#) for related information).
- Incorporating all other elements listed in the Roadway Line and Grade Design Checklist.

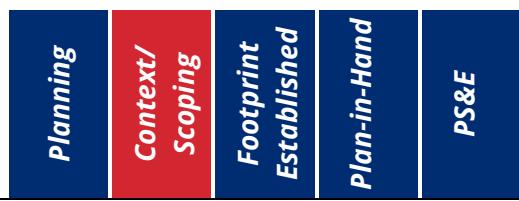
To do this, the designer references TDOT's *Roadway Design Guidelines*, TDOT's *Standard Drawings*, TDOT's *Roadway Design Checklists*, and AASHTO's *A Policy on Geometric Design of Highways and Streets*, following the Conceptual Layout (including the alignments and typical sections) in the Concept Report (if developed), to create the initial Line and Grade Package.

To finalize the package, the Roadway Design Lead creates/oversees development of a package/zip folder containing the following information:

- Title sheet .pdf
- Survey and proposed alignment, contours, and cross section .dgn files
- TIN file
- GPK file
- KMZ file
- All other necessary MicroStation, GEOPAK, and Microsoft files
- A .pdf of the proposed alignment as a roll plot (or sheets), profile, and cross sections
- All other elements listed in the Roadway Line and Grade Design Checklist

Included with the Line and Grade Package, the Roadway Design Lead submits quantities for major roadway items (see [Appendix G](#) and the Line and Grade Design Checklist [In development] for additional guidance on items to quantify).

Coupled with other discipline input, the Roadway Design Lead and Project Manager use this information to validate the initial assumptions and costs from the preliminary project estimate in the Concept Report and then to establish the first formal project estimate for the Project Commitment Document (PCD) ([see 1PM5](#) and [2PM2](#) for related information).



The Roadway Design Lead coordinates a QC review on the design as detailed in the *TDOT Quality Manual*. Once comments are resolved, the Roadway Design Lead uploads the package to the project folder and sends an email notification to the Project Manager and project team members that the package is ready to review/use. If the Roadway Design Lead is a consultant, he/she submits the package to the assigned TDOT Design Manager for distribution within TDOT.

The initial Line and Grade Package is used by the following disciplines to prepare for the Scoping Meeting ([see 1PM5](#)) and to advance their respective activities in Stage 2:

- The Hydraulic Lead and Structural Design Lead use the package to confirm the proposed grade and begin their respective layouts ([see 2ST1](#) and [2ST2](#) for related information).
- Traffic Operations uses the package to prepare a preliminary signal layout (including pole locations and additional turn lane recommendations at major intersections), lighting layout (including pole locations and photometric plans), and ITS/TSMO layout (including device and conduit locations) for inclusion in the Functional Design Plans ([see 2TO1](#) for related information).
- The Multimodal Lead and Lead Geotechnical Engineer use the information to confirm the findings from their initial reviews and further advance their early work completed for the Concept Report.
- The NEPA Lead and Environmental Technical Lead help inform resource impact avoidance or minimization strategies that could alter the design based on known resources in the ETSA ([see 1EN1](#) for related information).
- The Environmental Permit Lead and Environmental Mitigation Lead references/reviews the package to help advance the project's permit application(s) and mitigation design ([see 2EN3](#) and [2EN4](#) for related information).
- The Regional ROW Appraiser 4/Regional ROW Office (i.e., the project-assigned ROW Lead) uses the information to initiate title searches and begin to confirm right-of-way impacts, identify possible relocations, and determine loss-of-access tracts ([see 2RW1](#) for related information).
- The Transportation Project Specialist Senior (i.e., the project-assigned Utility Coordinator) uses the information to confirm utility impacts, identify possible relocations, and begin to coordinate the Utility Coordination Plans with the Roadway Design Lead ([see 2UT1](#) for related information).

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Compile the Line and Grade Package and Participate in the Field Review

The Line and Grade Package Field Review ensures that the roadway design plans have advanced to set the horizontal and vertical alignments and roadway footprint in compliance with current TDOT, AASHTO, and FHWA guidance, policies, and procedures.

In advance of the meeting, the Roadway Design Lead compiles and notifies the team that the Line and Grade Package is available for download in the project folder. If the Roadway Design Lead is a consultant, he/she submits the package to the assigned TDOT Design Manager for distribution/notification within TDOT.

In coordination with the Project Manager, the Roadway Design Lead leads the technical discussions, and after the meeting, the Roadway Lead compiles a comprehensive list of review comments and meeting minutes (if applicable), distributing each document to the attendees, and uploading these documents to the project folder ([see 1PM5](#) for related information).

2RD1 Develop Functional Design Plans

Overview

Complete the project's Functional Design Plans and associated roadway tasks to set the project footprint, define the data to be incorporated into the environmental document, and support advancement of other disciplines' plans and related design work for similar ends.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT Environmental Permit Sketch Guide](#)
- [TDOT Instructional Bulletins](#)
- [American Association of State Highway Transportation Officials \(AASHTO\) A Policy on Geometric Design of Highways and Streets](#)
- [AASHTO Roadside Design Guide](#)
- [Federal Highway Administration \(FHWA\) 10 Controlling Design Criteria](#)
- [TDOT Standard Design and Survey CADD Files and Documents](#)
- [TDOT Standard Drawings](#)
- [TDOT Standard Specifications for Road and Bridge Construction](#)
- [TDOT Design Exception Request Form](#)
- [FHWA Design Exception Process/FAQ](#)
- [TDOT Roadway Design Documents](#)
- [TDOT Roadway Design Checklists](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Utility Impact/Conflict Matrix	▪ <i>Develop a Utility Impact/Conflict Matrix</i>	Roadway Design Lead	Roadway Design Engineer, Utility Coordinator, Various Technical Leads
Test Hole List	▪ <i>Identify Initial Subsurface Utility Engineering (SUE) Needs</i>	Roadway Design Lead/Engineer	Pavement Designer
Pavement Design Request Form (and associated information)	▪ <i>Request Pavement Design</i>	Roadway Design Lead/Engineer	
Design Exception Request Form	▪ <i>Document Design Exceptions and Waivers</i>	Roadway Design Lead/Engineer	
Design Waiver Request Form			



Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Internal Deconfliction Meeting Minutes	▪ <i>Incorporate SUE Data and Lead Internal Design Deconfliction Meetings</i>	Roadway Design Lead	Utilities Coordinator
Utility Coordination Plans	▪ <i>Develop Utility Coordination Plans</i>	Roadway Design Lead/Engineer	Utility Design Engineer, Utility Coordinator
Permit Application Design Plans/Sketches	▪ <i>Develop Design and Sketches for Permit Applications</i>		Environmental Permit Lead
Functional Design Plans	▪ <i>Develop the Functional Design Plans</i>	Roadway Design Lead	Roadway Design Engineer; Various Technical Leads
Compiled Review Comments & Meeting Minutes	▪ <i>Participate Compile the Functional Design Plans and Participate Field Review</i>		Project Manager
Updated Functional Design Plans	▪ <i>Revise and Submit Updated Functional Design Plans</i>	Roadway Design Lead	

Develop a Utility Impact/Conflict Matrix

Based on the complexity of the project and potential utility impacts, the Roadway Design Lead, in collaboration with the Utility Coordinator, may develop a project-specific Utility Impact/Conflict Matrix for internal coordination and external reference ([see 2UT1](#) for related information). This matrix minimally documents:

- Utility name and contact information
- Location of potential conflict based on the current version of the Roadway plans
 - Note: The matrix is a living/working document that the Roadway Design Lead updates as the design advances in coordination with the Utility Coordinator.
- Type of aboveground and underground utility and infrastructure in conflict (hydrant, manhole, conduit, stormwater/sewer, etc.)
- Proposed disposition (protect in place, relocate, adjust to grade, remove, abandon, etc.)
- Additional actions needed

The Roadway Design Lead develops and files the Utility Impact/Conflict Matrix in the project folder, notifying the project team that this is a living/working file and is available for reference. The project team uses this list to:

- Identify all utilities and related owners on the project
- Further understand and eliminate known conflicts
- Proactively direct relocation strategies

Identify Initial Subsurface Utility Engineering (SUE) Needs

Accurate subsurface utility exploration (SUE) data can minimize utility conflicts and avoid unnecessary costs and delays when advancing design and relocating utilities. As soon as possible in Stage 2, the Roadway Design Lead (or assigned Roadway Design Engineer):

- Performs a utility conflict analysis to identify potential subsurface conflicts with proposed design elements.
- Coordinates with the Structural Design Lead, Hydraulic Lead, Roadway Drainage Designer, and Signal/Lighting/ITS Design Engineers to determine their anticipated subsurface components to further refine preliminary utility conflicts.
- In collaboration with the Utility Coordinator,
 - Identifies utility owners within the project limits and inventories utility facilities to identify those that are costly to relocate or have long design and construction durations ([see 1UT1](#) and [2UT1](#) for related information).
 - Develops a list of potential utility conflicts (e.g., the Utility Impact/Conflict Matrix described previously).

The Roadway Design Lead, Project Manager, and Utility Coordinator then determine appropriate SUE test hole locations at conflict points to verify anticipated conflicts. The project team then coordinates with the Survey Lead to complete the more in-depth quality level of surveys for utility depiction (scheduled strategically based on when information is needed):

- SUE Quality Level B: Information obtained via surface geophysical methods (marking its horizontal position on the ground) determines presence and designates approximate horizontal position of subsurface utility.
 - This effort is best completed during the initial survey efforts ([see 1SY1](#)) or soon after the Line and Grade Package has identified specific areas of impact, likely early in Stage 2 as the other disciplines are developing their respective designs.
- SUE Quality Level A: Obtaining precise utility horizontal and vertical location by physical exposure/potholing and subsequent measurement of the subsurface utility, usually at a specific point.
 - This effort is best completed/coordinated to identify utility conflicts of concern during Stage 2 (when developing the Functional Design Plans), but can also be advanced early in Stage 3 (right after the Functional Design Plan Field Review).
 - Specific pothole location data are presented on individual data sheets that include type, size, and depth to utility.

Based on the available SUE data, the Roadway Design Lead and Utility Coordinator use the information to inform the ensuing deconfliction meetings and respective roadway design plans and Utility Coordination Plans to eliminate conflicts and proactively direct relocation strategies.

Request Pavement Design

A critical element in defining the project footprint is an established pavement structural design that considers the items listed in 2PV1. To initiate a request for pavement design, the Roadway Design Lead submits a Pavement Design Request Form to TDOT.PavementDesign@tn.gov (see TDOT *Roadway Design Guidelines* and [2PV1](#) for related information). The Roadway Design Lead includes the following information with the request:

- Title sheet
- Traffic information, including average daily traffic (ADT) and average daily loading (ADL)
- Soils and geology report, as available at the time of the request (see [2GT1](#) for related information)
- Typical sections
- Present and proposed layout sheets
- Cross sections
- Traffic phasing (including locations of temporary run-arounds or use of shoulders)

If the Roadway Design Lead is a consultant, he/she sends the request to the TDOT Design Manager, who submits the Pavement Design Request Form and related information to the Pavement Designer (TDOT HQ Design Division: Pavement Design Section).

Document Design Exceptions and Waivers

Despite the range of flexibility for the controlling elements of a design, there are situations in which accepted design criteria (established per 1RD1) are not applicable or where design exceptions or waivers are needed for circumstances in the field that cannot reasonably be met within the project footprint. When appropriate, the design exception or waiver process allows use of criteria or standards other than the accepted/established values. Design exceptions or waivers can be opportunities to add design practicality or value and are not necessarily considered violations of TDOT policy.

To identify and document potential exceptions or waivers, the Roadway Design Lead completes a Design Exception or Design Waiver Request Form (described further in TDOT's *Roadway Design Guidelines*), considering:

- The design exception process requires formal approval for exceptions relating to the 10 controlling design criteria listed in TDOT's *Roadway Design Guidelines* and as defined by FHWA.
- The design waiver process requires approval for variances from the TDOT Standard Drawings.
- The Roadway Design Lead documents all relevant information for the request, including the:
 - Project data sheet
 - Roadway geometric design data sheet
 - Geometric design controlling criteria
 - Bridge design features (if applicable)
 - Standard Plan deviation (if applicable)
 - Crash history summary report
 - Guidance justification checklist

The Roadway Design Lead submits the letter, checklist, and location of the design plans (i.e., plan sheets, location map, and other related information) to the Regional Director of Project Development for review, who reviews the package for accuracy and completeness.

- Written comments and associated documents are provided to the Roadway Design Lead (for action) and the Project Manager (for information).
- If deemed necessary, a follow-up meeting ensures clarity of comments and responses.

Once comments have been addressed and the form is recommended for approval, the Regional Director of Project Development forwards the Request Form to the Roadway Design Division Director, who either provides final approval or forwards to FHWA (as applicable and likely for roadways on the Appalachian Development Highway System or for FHWA Projects of Division Interest [PODI]) for final approval. The approved Request Form is uploaded to the project folder.

If either Request Form is completed by a consultant, then he/she completes the form and sends to the assigned TDOT Design Manager, who sends it to the appropriate parties for review and approval.

Incorporate SUE Data and Lead Internal Design Deconfliction Meetings

Based on the available SUE data, the Roadway Design Lead and Utility Coordinator use the data/information to lead the necessary deconfliction meetings, and as soon as the SUE data is received, the Roadway Design Lead reviews and distributes the information to the project team

for discussion during the Internal Design Utility Deconfliction Meetings ([see 2UT1](#) for related information) or as part of the periodic team meetings.

The purpose of these internal deconfliction meetings is to discuss and resolve utility conflicts early in the design development process (i.e., this Stage 2). Prior to the meeting, the Roadway Design Lead coordinates with the Project Manager and Utility Coordinator on a meeting agenda and then sends to all attendees the:

- Agenda,
- Updated project plans/files, and
- The updated Utility Impact/Conflict Matrix.

Meeting topics typically include:

- Project scope
- Design and construction schedule
- Constructability issues
- Utility outage windows and limitations
- Utility conflicts and strategies to relocate or mitigate noted conflicts.
 - Note: If the decision is to mitigate certain conflicts, the Roadway Design Lead engages the design team using industry utility avoidance methodologies, working with the Utility Coordinator to receive approval for the relocations from the utility owner.

For the meeting and after, the Roadway Design Lead:

- Leads the meeting;
- Distributes and uploads to the project folder the meeting notes/minutes that document all decisions, discussion points, and action items; and
- Schedules follow-up meetings, as needed.

Develop Utility Coordination Plans

TDOT is required, by law, to send complete Utility Coordination Plans to all known utility owners impacted by the project, allowing each owner 120 days to respond with:

- A set of relocations plans
- Schedule of calendar days to relocate
- Estimate of relocation costs

Building from the utility design and coordination efforts to this point, the Roadway Design Lead or Roadway Design Engineer (as assigned) develops a .pdf and .dgn set or “snapshot” of the plans with a “Utility Coordination Plan Phase” stamp, sending these plans to the Utility



Coordinator. These plans are ultimately provided to the utility owners or their designated design representatives to initiate their relocation design.

The Utility Coordination Plans are to consist of:

- Title sheet, plan and profile sheets, typical sections, and cross section sheets
- SUE Quality Level C: Representation of known (surveyed) utilities
- Traffic control sheets (if available)
- Drainage sheets, including storm drain system and culvert crossing locations
- Structure sheets, including retaining wall sheets that depict location and type of retaining walls and bridge foundation and utility impacts with foundations
- Signal and lighting poles, cabinets, and electrical circuit locations
- Signing sheets
- Stream and wetland mitigation design and clearly marked resource areas not to be used for utility relocations ([see 2EN3 and 2EN4](#) for related information) (if available and as applicable)
- Proposed cut and fill lines
- Present and proposed right-of-way linework
- Any underground improvements that have a potential to impact the utility relocation design

Once the plans have been drafted, the Roadway Design Lead coordinates a QC review on the exhibits, and once comments are resolved, the Roadway Design Lead uploads the plans to the project folder, sending the package of plans to the Utility Coordinator. (The TDOT Design Manager completes this step if the Roadway Design Lead is a consultant.)

Note: Revisions to the design may require that the Roadway Design Lead update and resubmit the Utility Coordination Plans. At the request of the utility owner and as approved by TDOT, this may add days (but no more than 45 days) to the utility owner's response time. The Roadway Design Lead should discuss schedule impacts with the Project Manager and Utility Coordinator before proceeding with any design changes.

Related section: [3UT1](#)

Develop Design and Sketches for Permit Applications

The time it takes to obtain certain permits prior to letting often requires the team to advance its application submittal as soon as possible. However, the process is complicated by the level of design/detail required by regulatory agencies to consider an application complete.

As discussed during the ongoing Permit Strategy Meetings ([see 2PM4](#) for related information), once the plans are developed far enough to present to the regulatory agencies (as part of a permit application), but as soon as possible (during development of the Functional Design Plans or right after the Functional Design Plans Field Review), the Roadway Design Lead or Roadway Design Engineer (as assigned) generates a “snapshot” set of plans with a “Permit Application Plans” stamp on all sheets.

These plans may include, as coordinated with the Environmental Permit Lead and Environmental Mitigation Lead, a:

- Title sheet
- Project commitments and environmental notes
- Present and proposed layouts
- Roadway and sideroad profiles
- Haul road layouts and profiles
- Drainage maps and culvert cross sections
- Erosion prevention and sediment control (EPSC) plans
- Bridge preliminary plans
- Sinkhole remediation plans
- Location(s) of existing environmental features, proposed impacts to these environmental features, and environmental mitigation plans
- Natural stream design plans
- Proposed right-of-way, easement, and slope lines

Areas of impacts to consider, as identified by the Environmental Mitigation Lead and Environmental Permit Lead during their respective assessments ([see 2EN3](#) and [2EN4](#) for related information), could include:

- Bridges and bridge piers
- Culverts
- Stream relocations
- Permanent and temporary wetland impacts
- Placement of riprap
- Sinkhole remediation measures
- Canopy loss
- Riparian zone encroachment
- Installation of riparian zone buffers
- Temporary stream diversions

- EPSC measures

Once the plans have been drafted, the Roadway Design Lead coordinates a QC review on the exhibits, and once comments are resolved, the Roadway Design Lead uploads the plans to the project folder, sending a cover letter via email informing the Environmental Permit Lead of the submittal. (The TDOT Design Manager completes this step if the Roadway Design Lead is a consultant).

In addition to the plans, the Roadway Design Lead or Roadway Design Engineer (as assigned) creates certain permit sketches, as requested by the Environmental Permit Lead, as part of the Permit Assessment ([see 2EN3](#) for related information). Developed in accordance with TDOT's *Environmental Permit Sketch Guide*, the permit sketches consist of maps and drawings on 8 ½" x 11" sheets depicting individual impact locations. Once a QC review is completed and comments resolved, the Roadway Design Lead sends the permit sketches directly to the Environmental Permit Lead and Environmental Mitigation Lead for review/markup and eventual inclusion with the permit application(s). (The TDOT Design Manager completes this step if the Roadway Design Lead is a consultant.)

Related sections: [1SY1](#), [2EN3](#), [2EN4](#), [3EN2](#), [3UT1](#)

Develop Conceptual Traffic Control Strategies

To determine the conservative extents of potential work zone impact management strategies, the Roadway Design Engineer develops conceptual strategies or Temporary Traffic Control (TTC) concepts in accordance with the *Work Zone Safety and Mobility Manual*. This information helps establish potential impacts to the project footprint and needed right-of-way to accommodate traffic control. This detail also becomes foundational for the ensuing TTC plans and TMP ([see 2TO1](#) and [3TO1](#) for related information).

To do this, the Roadway Design Engineer:

- Reviews the line and grade .dgn in the Line and Grade Package and the layout sketch developed as part of [OT01](#).
- Develops conceptual TTC strategies only to a level of design that identifies/defines potential extents that will increase or modify the project footprint and/or require additional right-of-way to accommodate temporary construction easements, staging ingress and egress, bypass roadways, or other temporary construction operational impacts.
- Coordinates a QC review of any concepts as detailed in the *TDOT Quality Manual*.

Once reviewed, the Roadway Design Engineer provides the information and any CADD files (if available) to the Roadway Design Lead for inclusion with the Functional Design Plans.

Throughout this stage, any design effort is continually coordinated with the Roadway Design Lead and Traffic Operations Engineer via updated sheets and CADD files provided regularly for collaboration and further development of the strategies.

Develop the Functional Design Plans

The Functional Design Plans are a collaborative set of designs and a cost estimate that incorporates input from all project disciplines. The goal for the Functional Design Plans is to solidify the project footprint via a “preliminary” level of design that allows environmental, right-of-way, utilities, and permits activities to move forward in confidence that the horizontal and vertical alignment will remain consistent throughout the duration of the design phase.

If design changes alter the project footprint (horizontal and vertical) or modify a design feature or scope element that will change an impact to an environmental resource(s) after the Environmental Document is approved, additional studies, documentation, and coordination with the regulatory agencies may be required, and the Environmental Document may need to be re-evaluated so that construction funding is obligated prior to letting the project.

The project team, led by the NEPA Lead, Roadway Design Lead, and Project Manager, should regularly discuss impacts and consequences of potential design changes as the Functional Design Plans and Plan-in-Hand Plans (see [3RD1](#)) are advanced in order to discuss the risk to the project schedule in completing a NEPA re-evaluation.

In coordination with the Project Manager, the Roadway Design Lead directs this multidiscipline effort, coordinating as needed with all other disciplines to develop the preliminary design in accordance with TDOT’s *Roadway Design Guidelines*, TDOT’s *Roadway Design Checklists* and TDOT’s *Standard Design and Survey CADD Files and Documents*.

To complete the Functional Design Plans, the Roadway Design Lead, with support from his/her Roadway Design Engineer(s), minimally:

- Revises the title sheet and updates the plan, profile sheets, and cross section sheets from the Line and Grade Package.
- Incorporates geotechnical recommendations for slopes into the design plan, profile, and cross section sheets.



- Refines the typical sections that now includes the project's pavement design.
- Develops conceptual traffic control strategies/TTC concepts with input from Traffic Operations ([see 2TO1](#) and the associated task above for related information).
- Drafts the preliminary pavement and intersection marking design (e.g., striping, stop bars and crosswalks) that define curb ramp/sidewalk widths, signal head placement/pole foundations, lane layout, and pavement messages.
- Includes preliminary placement of roadway safety features (e.g., barrier, guardrail, attenuators, crash cushions).
- Develops a preliminary drainage design that depicts the horizontal and limited profile layouts for features such as storm drains, pipe culverts, drop inlets, catch basins, headwall and wingwall extents (for box culvert or pipe culverts), and detention/retention basin locations.
- Develops preliminary erosion prevention and sediment control (EPSC) design to only a level that identifies any outfall locations, stream diversion locations, and major devices that could impact right-of-way or require temporary construction easements.
- Includes existing easements and establishes any right-of-way, permanent easements, slope easements, and temporary construction easements to be documented in the ROW Acquisition Exhibits ([see 3RD1](#) for related information).
- Incorporates environmental recommendations for avoidance and minimization of impacts to identified environmental resources, which includes labeling of the environmental features on the plans.
 - Note: The Roadway Design Lead should continue to document design modifications that avoid or minimize impacted resources for use by the NEPA Lead and Environmental Technical Leads when documenting impacts and completing agency coordination (e.g., SHPO, USFWS).
 - Note: The Roadway Design Lead should also document any design changes that reduce or alter impacts to ecological features (e.g., streams, ephemerals, and wetlands) in the ETSA for use by the Environmental Permit Lead and Environmental Mitigation Lead ([see 2EN3](#) and [2EN4](#) for related information).
- Creates pay item quantities associated with construction and generates an updated cost estimate.
- Evaluates the roadway design to determine if any incompatibilities exist with other discipline's designs.
- Incorporates all other elements listed in the Roadway Functional Design Checklist.

The Roadway Design Lead also evaluates the design for locations where retaining walls may be a cost-effective solution to reduce impacts. Any assessment involves discussions with the

Hydraulic Lead, Lead Geotechnical Engineer, Structural Design Lead, Utility Coordinator, NEPA Lead, and ROW Lead.

As detailed in the *TDOT Quality Manual*, the Roadway Design Lead coordinates a QC review on the design, plan sheets, and quantities, and once comments are resolved, the Roadway Design Lead notifies the Project Manager to schedule the Functional Design Plans Field Review.

Coordinate Geotechnical Analysis for Noise and Retaining Walls

It is critical to understand subsurface characteristics for all noise and retaining wall locations proposed for a project. Integral to developing the associated geotechnical reports, the Roadway Design Lead (in discussions with the Structural Design Lead and Lead Geotechnical Engineer) coordinates borings via a request letter and MicroStation files of the proposed wall layouts.

The request letter and layouts are compiled and submitted to the Lead Geotechnical Engineer/Geotechnical Engineering Section at TDOT.Geotech@tn.gov. The Roadway Design Lead copies the Regional Survey Office and Survey Lead on the submittal for the purpose of staking the points in the field ([see 2SY1](#) for related information).

Compile the Functional Design Plans and Participate in the Field Review

The Functional Design Plans Field Review ensures that the multidiscipline design and associated plans have been advanced to establish the project's footprint in compliance with current TDOT, AASHTO, and FHWA guidance, policies, and procedures.

In advance of the meeting, the Roadway Design Lead compiles and notifies the team that a set of project plans/sheets and estimate from all disciplines is available for download in the project folder. If the Roadway Design Lead is a consultant, he/she submits the package to the assigned TDOT Design Manager for distribution/notification within TDOT.

While the Project Manager facilitates the meeting, the Roadway Design Lead supports by leading the technical discussions, and after the meeting, the Roadway Lead compiles a comprehensive list of review comments and meeting minutes, distributing each document to the attendees, and uploading these documents to the project folder.

The field review may also involve an in-person site visit (which is recommended) to ensure the Functional Design Plans are complete and existing site elements have been addressed in the plans. What may be a combined field review and site review, the Roadway Design Lead:

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- Distributes plans and questions in advance of the site review.
- Meets onsite to verify that existing site conditions are addressed in the plans.
- Compiles a comprehensive list of review comments and meeting minutes.

The Roadway Design Lead distributes the review comments and meeting minutes to site review attendees and uploads each to the project folder.

Revise and Submit Updated Functional Design Plans

For the purposes of establishing the project footprint, this task is not complete (and the footprint is not established) until **after** all field review comments on the Functional Design Plans have been resolved and the plans updated and resubmitted. Refer to the TDOT's *Roadway Design Guidelines* for additional information.

2RD2 Conduct Design Public Meeting

Overview

Determine whether a Design Public Meeting is required for the project in accordance with TDOT's *Public Involvement Plan*. If needed, lead the meeting as part of Stage 2 and as the Functional Design Plans are being developed. **Note:** The Design Public Meeting is not the same as a public hearing process, which may be required as part of completing the NEPA action in accordance with the *Environmental Procedures Manual*.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT Public Involvement Plan](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Public Meeting Plans, Displays and Handouts	<ul style="list-style-type: none">▪ Prepare for the Design Public Meeting	Roadway Design Lead	Design Engineer, Project Manager, Other Technical Staff
Public Meeting Transcript	<ul style="list-style-type: none">▪ Hold the Design Public Meeting▪ Process the Design Public Meeting Transcript	Roadway Design Lead	Design Engineer, Project Manager, Project Development Director

Prepare for the Design Public Meeting

The *TDOT Roadway Design Guidelines* provides guidance related to public meetings on necessary forms, presentations, and other communications to be coordinated with the Community Relations Division.

In preparation for the meeting, the Roadway Design Lead, in coordination with the Project Manager and assigned Community Relations Division staff:

- Determines a tentative location and date for the meeting.
- Confirms the attendance of a court reporter and TDOT Divisions who are needed at the meeting.
- Completes the required Public Meeting Notice Request and Public Meeting Checklist, sending both to the Community Relations Division a minimum of 8 weeks in advance of the meeting date. **Note:** these items are completed by the TDOT Design Manager if the Roadway Design Lead is a consultant. If a Public Hearing is needed, the Public Meeting



Notice Request and Public Meeting Checklist are to be completed a minimum of 10 weeks in advance of the meeting date.

Typically, the Roadway Design Lead then prepares the following to present at the meeting:

- Design Public Meeting Plans: Full and half-size sets of plans are printed and available during the meeting to describe the relevant items from the current version of the Functional Design Plans (see the TDOT's *Roadway Design Guidelines* and 2RD1 for related information).
- Displays: The proposed project layout, including proposed right-of-way and easements, are printed and available during the meeting on roll-plot displays over an aerial background.
- A formal presentation (e.g., PowerPoint, Prezi) of relevant project details, design options, etc.
- Handouts, signs, and any other materials developed, printed, and available at the meeting.

The Roadway Design Lead coordinates a QC review of these items prior to publication. Once comments are resolved, the Roadway Design Lead uploads the completed package containing the Design Public Meeting Plans and Displays in the project folder. (The TDOT Design Manager completes this step if the Roadway Design Lead is a consultant.)

Hold Design Public Meeting

During the meeting, the Roadway Design Lead, in coordination with the Project Manager and assigned Community Relations Division staff, leads a presentation explaining the

- Project's purpose and need
- Major proposed design elements (including termini, alignment, typical sections, etc.)
- Proposed design, right-of-way acquisition, and construction schedule(s)

Members of the project team, including design, right-of-way, and environmental (e.g., the NEPA Lead or relevant Environmental Technical Leads dependent on resource impacts), are also present to answer questions. A court reporter and comment cards are available to meeting attendees to provide comments.

Process Design Public Meeting Transcript

Following the meeting, the Roadway Design Lead, in coordination with the Project Manager and assigned Community Relations Division staff:

- Reviews the meeting transcript, determines what actions (if any) need to be taken, and provides responses to all comments.
- Sends a letter, including the transcript and responses to the Project Development Director for a QC review and approval. The Director then forwards to the Roadway Design Director

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Planning

*Context/
Scoping*

*Footprint
Established*

Plan-in-Hand

PS&E

for approval. If the Roadway Design Lead is a consultant, he/she sends the letter to the TDOT Design Manager to be forwarded to appropriate parties.

- Distributes the final approved letter to the project team and uploads to the project folder.
- Immediately coordinates any design changes because of comment/input received during the Design Public Meeting with the project team.

3RD1 Complete Plan-in-Hand Design

Overview

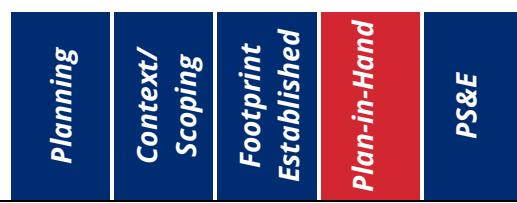
Complete the project's Plan-in-Hand design and the associated roadway tasks (i.e., all design complete) to facilitate a multidiscipline plan set review of the entire design at the conclusion of the stage. To be completed at any time during this stage, develop the ROW acquisition exhibits, advance the Utility Coordination Plans, coordinate the permit application design/sketches, and finalize the Transportation Management Plan (TMP).

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT Instructional Bulletins](#)
- [American Association of State Highway Transportation Officials \(AASHTO\) A Policy on Geometric Design of Highways and Streets](#)
- [AASHTO Roadside Design Guide](#)
- [TDOT Standard Design and Survey CADD Files and Documents](#)
- [TDOT Standard Drawings](#)
- [TDOT Standard Specifications for Road and Bridge Construction](#)
- [TDOT Roadway Design Checklists](#)
- [TDOT Quality Manual](#)
- [TDOT Roadway Design Documents](#)
- [TDOT Environmental Permitting Design Process](#)
- [Construction Special Provisions](#)
- [Special Provisions Order Form](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
ROW Acquisition Exhibits	<ul style="list-style-type: none">▪ Develop ROW Acquisition Exhibits	Roadway Design Lead	Roadway Design Engineer, ROW Lead
Final TMP (including TTC Plans and coordinated SP108B)	<ul style="list-style-type: none">▪ Finalize the TMP & Complete the Temporary Traffic Control Plans		Roadway Design Engineer, Traffic Operations Engineer, Construction Engineer
Special Provisions Order Form	<ul style="list-style-type: none">▪ Complete the Plan-in-Hand Plans		All impacted design leads, Construction Engineer
Plan-in-Hand Plans	<ul style="list-style-type: none">▪ Complete the Plan-in-Hand Plans		Roadway Design Engineer
Compiled Review Comments & Review Meeting Minutes	<ul style="list-style-type: none">▪ Compile the Plan-in-Hand Plans and Participate in the Field Review		Project Manager



Develop ROW Acquisition Exhibits

The amount of time needed to complete the right-of-way acquisition process varies significantly from project to project. Factors affecting this duration often include the number of:

- Tracts the project requires
- Commercial properties
- Extent of the business and residential relocations

The Roadway Design Lead or Roadway Design Engineer (as assigned) develops exhibits and related plans (with the goal of having 80% to 90% of the tracts finalized as part of the submittal) that the assigned ROW Lead references to complete the right-of-way acquisition process ([see Appendix H](#) for an example exhibit). To begin the acquisition process as early as possible, these exhibits are completed once the footprint is established, and the amount of right-of-way required is defined in the Line and Grade Package (for accelerated projects involving limited other-discipline input or a need for additional right-of-way) or the Functional Design Plans (more likely based on the level of discipline input required to set the footprint).

These exhibits include:

- Tract owner information, including name, deed book, and page.
- Total tract area, area to be acquired (both right-of-way and easements), and area to remain after acquisition.
- Tract exhibits showing the present layout and proposed right-of-way and easement lines for each tract.
 - One exhibit is to be displayed using the design plans and survey.
 - The other is to be displayed using an aerial background.
- Bearings/distances, stations/offsets, and right-of-way markers.
- Legal descriptions (as coordinated with the ROW Lead to ensure that appropriate boilerplate language is included with different acquisition types) for any right-of-way, permanent easements, slope easements, and temporary construction easements.
- Driveways and driveway profiles.

During the Right-of-Way/ROW Strategy Meeting ([see 2PM3](#) for related information), the Project Manager, Roadway Design Lead, and ROW Lead tailor a project-specific strategy to:

- Optimize the right-of-way acquisition schedule and minimize project costs.
- Identify design changes that minimize right-of-way impacts.
- Identify critical tracts that may take longer to acquire, such as commercial properties and relocations, and identify any tracts which are not yet ready to be acquired.

- Develop mitigation strategies to prioritize both the critical tracts, in addition to all other right-of-way tracts needed to complete the project.

Once the exhibits have been drafted, the Roadway Design Lead coordinates a QC review on the exhibits, and once comments are resolved, the Roadway Design Lead uploads each package of exhibits to the project folder with a cover letter detailing any tracts not included in the submittal and a list of the agreed to priority tracts. The cover letter is sent by email to the ROW Lead and assigned staff at the Right-of-Way Division, notifying them of the submittal. (The TDOT Design Manager completes this step if the Roadway Design Lead is a consultant.)

Over the course of the project, it may become necessary to revise the plans and exhibits due to negotiations with property owners during the acquisition process or because of an addition of an uneconomic remnant. If that is the case, the Roadway Design Lead revises the tract exhibits based on the Revision Request Forms received from the ROW Lead. The revised exhibits include revision notes detailing the changes. The Roadway Design Lead uploads the revised tract exhibits to the project folder with a revision letter. The revision letter is sent via email to the ROW Lead and assigned staff from the Right-of-Way Division, notifying them of the submittal.

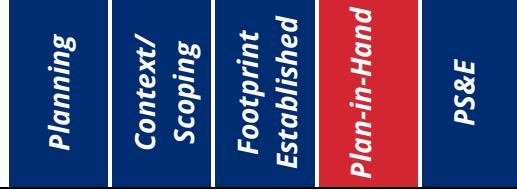
Revised right-of-way plans will impact other disciplines' design work—the extent of which is dependent on the change and the discipline. In coordination with the Project Manager, the Roadway Design Lead is responsible for communicating all revisions to the effected disciplines, either via a formal meeting or informal means that reach all parties impacted.

Finalize the TMP & Complete the Temporary Traffic Control Plans

For both significant and non-significant projects, the Roadway Design Engineer, in coordination with the Traffic Operations Engineer, finalizes the TMP in accordance with the *Work Zone Safety and Mobility Manual*. The final TMP and related TTC plans memorialize the relevant project information regarding the:

- Project background,
- Anticipated challenges, and
- Engineering judgement used in developing the work zone impact management strategies.

To prepare the associated TTC plans (included as part of the TMP), the Roadway Design Engineer completes the conceptual TTC plans in accordance with *Work Zone Safety and Mobility Manual* and *TDOT Standard Drawings*, coordinating a QC review of the plans once complete.



Once the plans have been reviewed, the Roadway Design Engineer submits the plans and CADD files to the Roadway Design Lead for inclusion with the Plan-in-Hand Plans.

The Roadway Design Lead or Engineer includes the latest version of the TTC plans with the TMP for a final compliance review and finalization ([see 3TO1](#) for related information). Once the TMP is signed, the Roadway Design Lead or Engineer uploads the documents to the project folder.

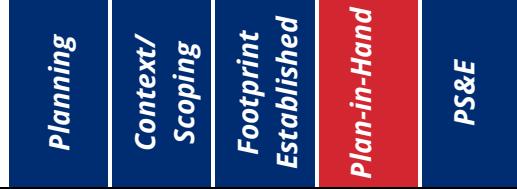
Complete the Plan-in-Hand Plans

The Plan-in-Hand Plans are a coordinated set of design plans and a cost estimate that represents a **complete design** from all project disciplines. The goal for the Plan-in-Hand Plans is to present a complete design that includes compiled plans, specifications, and estimates and to ensure that all previous comments from past field reviews have been addressed and closed.

In coordination with the Project Manager, the Roadway Design Lead directs the multidiscipline design effort and coordinates with the other disciplines to develop the plans according to TDOT's *Roadway Design Guidelines* and TDOT's *Standard Design*, TDOT's *Roadway Design Checklists and Survey CADD Files and Documents*.

To complete the Plan-in-Hand Plans, the Roadway Design Lead, with support from his/her Roadway Design Engineer(s):

- Refines and completes the roadway design based on comments received from the Functional Design Plans Field Review Meeting.
- Verifies geotechnical recommendations for slopes and walls are in the design, plan, profile, cross section, and retaining wall sheets.
- Finalizes the title sheet, plan and profile sheets, and cross section sheets.
- Finalizes the typical sections.
- Finalizes the TTC plans and coordinates with the Construction Engineer to ensure project-specific traffic control limitations/restrictions and liquidated damages are referenced in SP108B.
- Finalizes the pavement marking and signing (signing and striping) plans.
- Finalizes the drainage design plans.
- Finalizes the EPSC plans and any landscape and aesthetic plans.
- Incorporates/confirms inclusion of all environmental resource boundary identifiers into the design.
- Finalizes the roadway design of retaining walls and sheets in coordination with the Hydraulic Lead, Lead Geotechnical Engineer, Structural Design Lead, Utility Coordinator, and ROW Lead.



- Evaluates the roadway design to determine if any incompatibilities exist with other discipline's designs.
- Incorporates all other elements listed in the Roadway Plan-in-Hand Design Checklist.
- Finalizes pay item quantities associated with construction and generates an updated cost estimate.
- Coordinates with the Construction Engineer to create the project's roadway special provisions, including submittal of the [Special Provision Order Form](#).

As detailed in the *TDOT Quality Manual*, the Roadway Design Lead coordinates a QC review on the design, plan sheets, quantities, and specifications. Once comments are resolved, the Roadway Design Lead notifies the Project Manager to schedule the Plan-in-Hand Field Review Meeting. When coordinating the meeting time, the Roadway Design Lead confirms with the Project Manager that the project team has enough time for a thorough review of the plans, specifications, and estimate.

Compile the Plan-in-Hand Plans and Participate in the Field Review

The Plan-in-Hand Field Review ensures that a multidiscipline design and associated plan set are complete well in advance of letting, all in compliance with current TDOT guidance, policies, and procedures.

In advance of the meeting, the Roadway Design Lead compiles and notifies the team that a set of project plans, specifications, and estimate from all disciplines is available for download from the project folder. If the Roadway Design Lead is a consultant, he/she submits the package to the assigned TDOT Design Manager for distribution/notification within TDOT.

While the Project Manager facilitates the meeting, the Roadway Design Lead supports by leading the technical discussions, and after the meeting, the Roadway Lead compiles a comprehensive list of review comments and meeting minutes, distributing each document to the attendees, and uploading the documents to the project folder.

4RD1 Finalize Construction Documents

Overview

Compile the final set of design documents/plans, specifications, and the estimate (i.e., the PS&E package) to advertise and let the project.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT Instructional Bulletins](#)
- [TDOT Standard Design and Survey CADD Files and Documents](#)
- [TDOT Standard Drawings](#)
- [TDOT Standard Specifications for Road and Bridge Construction](#)
- [TDOT Roadway Design Checklists](#)
- [TDOT Quality Manual](#)
- [TDOT Roadway Design Documents](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Draft Final Roadway Plans	▪ <i>Finalize the Roadway Plans for the PS&E Review Meeting</i>	Roadway Design Lead	Design Engineer
Final Construction Plans for Letting (Compiled and Sealed)	▪ <i>Compile the Final Construction Documents</i>	Roadway Design Lead	Structural Design Lead, Hydraulic Lead, Roadway Drainage Designer, and Signal/ Lighting/ITS Design Engineer

Finalize the Roadway Plans for the PS&E Review Meeting

The PS&E Review Meeting ensures that all comments from the Plan-in-Hand Field Review Meeting have been addressed for Construction Document turn-in for letting.

To prepare the roadway plans for the PS&E Review Meeting, the Roadway Design Lead:

- Reviews comments from the Plan-in-Hand Field Review Meeting (or previous field review meeting) and addresses necessary design revisions to update the roadway plans.
- Incorporates all other elements listed in the Roadway PS&E Design Checklist.
- Updates/finalizes the specifications (including all related special provisions) and roadway quantities and cost estimate.
- Creates a .pdf of the files using the naming convention described in Chapter 1 of TDOT's *Roadway Design Guidelines*.
- Coordinates a QC of the roadway plans and resolves comments received as detailed in the *TDOT Quality Manual*.

In advance of the meeting and in accordance with the submittal package content and project folder submittal requirements detailed in TDOT's *Roadway Design Guidelines*, the Roadway Design Lead compiles and notifies the team that a conformed set of project plans, specifications, and estimates from all disciplines is available for download from the project folder. While the Project Manager facilitates the meeting, the Roadway Design Lead supports by confirming all technical comments have been resolved and the plans are ready for turn in.

Compile the Final Construction Documents

To complete the last quality checks and package the Construction Documents for turn in, the Roadway Design Lead:

- Resolves any last roadway comments from the PS&E Review Meeting, if applicable at this late stage of review.
- Seals the roadway Construction Documents, including the plans, specifications, and estimate, in accordance with Chapter 1 of TDOT's *Roadway Design Guidelines*.
- Creates a .zip of the roadway files using the naming convention described in Chapter 1 of TDOT's *Roadway Design Guidelines*.
- Compiles a final set of Construction Documents, including the sealed documents from all impacted disciplines, in the order listed in TDOT's *Roadway Design Guidelines*.
 - This final package compilation includes checks on sheet numbering, .pdf page orientation and sheet size, and indexing following Chapter 1 of TDOT's *Roadway Design Guidelines*.
 - As determined by the Project Manager and Design Lead, initial sealing of the Construction Documents could occur **before** the PS&E Review Meeting.
- Uploads the final Construction Document package to the project folder, notifying the Regional Director of Project Development that the package is available for a final review.

The Regional Director of Project Development provides a quality assurance review of the package to confirm it is ready for turn in.

Once complete, the Roadway Design Lead:

- Confirms the approved final set of Construction Documents has been uploaded to the project folder.
- Emails a submittal letter, estimate documents, and notification to those identified on the email distribution list included in Chapter 1 of the TDOT's *Roadway Design Guidelines*.
- Includes a copy of the email in the project folder to document the submittal of the construction estimate and that the PS&E package is ready for advertisement and letting.

If the Roadway Design Lead is a consultant, he/she submits the final package and supporting documents to the assigned TDOT Design Manager for distribution/notification within TDOT.

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The Roadway Design Lead coordinates, as necessary, with the Project Manager and Construction Division to ensure the package is advertised and let. This includes sealing the entire PS&E package before the advertisement date.

Related section: [3UT1](#)

2RW1 Initiate ROW Pre-Acquisition Activities

Overview

Complete a right-of-way cost estimate, initiate title searches, and potentially advance Preliminary Group Inspection (PGI) field work (as property is identified) based on the Line and Grade Package and recommendations from the ROW Strategy Meetings ([see 2PM3](#) for related information).

References

- [ROW Policy & Procedures Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
ROW Form 44	▪ <i>Prepare Right-of-Way Estimate</i>	Regional ROW Appraiser 4	HQ Appraisal
ROW Form 49 (Title Report)	▪ <i>Perform Title Searches</i>	Regional or HQ Staff	Regional ROW Engineer
ROW Form 4	▪ <i>Initiate Private Property Owner Utility Adjustment</i>	Assigned ROW Agent	Review Appraiser

Prepare Right-of-Way Estimate

After the receipt of the Line and Grade Package, the Regional Right-of-Way (ROW) Appraiser 4 (or designee):

- Reviews the Line and Grade Package to determine the type of properties affected by the project and researches the market for data of comparable sales.
- Applies market-derived values to each tract's land acquisitions and inspects each tract to determine if additional values for improvements, incidentals, damages, relocations, and other factors may be appropriate.
- Submits the appraisal cost estimate to the Regional ROW Manager, who combines it with the utility and railroad estimates ([see 2UT1](#) for related information) and submits the Form 44 for ROW funding.

The Regional ROW Appraiser 4 also ensures that the right-of-way cost estimate is maintained in IRIS, which generates the Form 44. Once generated, the document is automatically stored in

IRIS. Additionally, the Regional ROW Appraiser 4 sends an electronic copy to the Project Manager and Program Development and Administrative Division.

Related section: [1RD1](#)

Perform Title Searches

Title searches are necessary to ensure that TDOT is acquiring property rights from the appropriate person, free and clear of any title defects.

To initiate and complete this process:

- The Regional ROW Manager (or ROW Agent Supervisor as supported by TDOT headquarters) assigns the title searches to regional staff or contracts to an approved consultant.
- The assigned staff searches the public records to identify conveyance documents, indicating current ownership of the properties needed for the project.
 - Note: Public records searches may also identify if liens or clouds on title indicate that someone else is entitled to some of the proceeds from the sale of the property or if additional effort may be needed to obtain clear title.
- The assigned staff obtains copies of all pertinent documents identified in the public records search, attaching this information to the completed ROW Form 49 (Title Report).
- Upon submitting the ROW Form 49, the Regional ROW Agent assigns review responsibilities to an in-house title reviewer (typically completed by the Regional ROW Engineer).
- The Regional ROW Engineer completes a Right-of-Way Plan/Title check in accordance with Chapter VI of the *ROW Policy and Procedures Manual*.
- The reviewer returns the check to the Roadway Design Lead (if corrections are needed) and the Regional Administrative Assistant, who uploads the completed title report to IRIS.

Title reports are maintained in the IRIS database in the appropriate project file, as well as in the regional project files.

Initiate Private Property Owner Utility Adjustment

When a privately owned utility (well, septic system, water lines, etc.) is impacted, TDOT allocates funds to replace the function of the impacted utility. The assigned ROW Agent would identify these impacts using the Line and Grade Package (early in Stage 2) that has a completed survey fully incorporated or an advanced copy of the Functional Design Plans (near the end of Stage 2).

In the case of septic systems, the assigned ROW Agent:

- Consults with local health department/Tennessee Department of Environment and Conservation (TDEC) personnel to determine if suitable soils exist to repair or replace the impacted system.



- If a septic system cannot be repaired or replaced, the ROW Supervisor requests a plan revision and notifies the Review Appraiser.
- Obtains estimates from qualified contractors to repair or replace the impacted utility. These estimates are used in completing ROW Form 14.
- Attaches ROW Form 14 and supporting documentation to the appraisal for inclusion in the approved offer.

The assigned ROW Agent is responsible for obtaining estimates, completing the ROW Form 14, and ensuring that each is uploaded to IRIS and added to the tract file. It is the Review Appraiser's responsibility to ensure that the utility adjustment costs become part of the approved offer.

Initiate PGI Field Work

The Regional ROW Appraiser 4 coordinates the field inspection on which the Preliminary Group Inspection (PGI) Report is based, discussing the logistics and timing of the inspection with the project team to coordinate efforts that may impact multiple disciplines. The primary purpose of this effort is to:

- Identify appraisal problems.
- Determine the type of report to be requested.
- Establish real vs. personal property inventory.
- Advise in the selection of consultant fee appraisers.

This task could be initiated during Stage 2 or early in Stage 3, depending on:

- Project and acquisition complexity
- Likelihood of changes to the project footprint originally proposed in the Line and Grade Package
- Further discussion of design progression that would impact the overall right-of-way
- The advancement for a full PGI report to be developed soon after this field work for consistency

To determine the most appropriate time to start this field work, the Regional ROW Appraiser 4 and Regional Relocation Chief coordinate this task with the Project Manager and Roadway Design Lead as part of scoping the project ([see 1PM1](#) for related information).

Upon receipt of the Line and Grade Package (early in Stage 2) that has a completed survey fully incorporated or using an advanced copy of the Functional Design Plans (near the end of Stage 2), the Regional ROW Appraiser 4:



- Coordinates with, at a minimum, the ROW engineering and acquisition/relocation personnel to review the plans and perform a field inspection of the project.
- Works with the acquisition/relocation representative to identify relocations and determines the inventory of real vs. personal property.
 - Real property is valued by the Appraiser, while personal property is moved under the relocation assistance program.

This field inspection team identifies privately owned utilities that may be impacted by the project.

There are numerous other determinations made as a result of the PGI that are the responsibility of the Regional ROW Appraiser 4, which involve little, if any, consultation with the other participants in the field inspection. These items are captured later with the final PGI Report.

As the responsibility of the Regional ROW Appraiser 4, the resulting output from this task are notes, marked-up plans, photos, etc. that are used in the subsequent task of preparing the final PGI Report.

2RW2 Execute ROW Proposal

Overview

Execute the agreement between TDOT and all local governmental bodies having jurisdiction over the land impacted by a project on a state route. This activity is not applicable for projects on City or County roads.

References

- [ROW Policy & Procedures Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
ROW Proposal/Resolution	<ul style="list-style-type: none">▪ Prepare/Submit ROW Proposal▪ Receive ROW Proposal and Distribute for Execution	Regional ROW Supervisor	HQ ROW Supervisor

Prepare/Submit ROW Proposal

Developed in accordance with the *ROW Policy & Procedures Manual*, the ROW Proposal outlines roles and responsibilities of TDOT's Regional Offices and local governments relative to TDOT projects, including land transfer, zoning enforcement limitations, maintenance requirements, traffic control requirements, and remnant roadways. This task outlines the roles of the regional ROW staff and local personnel in preparing and (partially) executing a proposal.

Upon receiving Authorization for Incidentals or ROW authorization (whichever comes first), the Regional ROW Supervisor:

- Generates the appropriate proposal (City/County/Metro Memphis/Metro Nashville) and necessary resolutions required by the project.
- Circulates the proposal for execution by the appropriate local governmental officials.
- Sends the partially executed proposal and resolutions to Headquarters for review.
- Retains a copy of the partially executed proposal until the document is fully executed.

Receive ROW Proposal and Distribute for Execution

Once the partially executed (by local officials) proposal is received, the HQ ROW Supervisor circulates the proposal for legal review and signature by the Commissioner.

- Copies of the fully executed proposal are distributed to the Regional Office, who then forwards a copy to the appropriate local governmental body.

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- The fully executed proposal is scanned and uploaded under the project in IRIS.

The Headquarters ROW Office maintains the hard copy of the executed ROW Proposal and ensures that a scanned copy is maintained in the electronic project records contained in IRIS, with notification of the executed Proposal being provided to the Project Manager.

3RW1 Complete Appraisal and Initiate Acquisition

Overview

Finalize the PGI Report (and complete field work if still needed), complete appraisals, appraisal reviews, and prepare a written offer of just compensation for the acquisition of needed property rights to complete the project. Update the Project Manager and project team (as applicable) on the status of the following tasks through regular team meetings or reoccurring ROW Strategy Meetings ([see 2PM3](#) for related information).

References

- [ROW Policy & Procedures Manual](#)

Deliverables

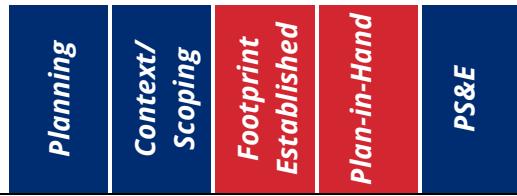
Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
PGI Report	▪ <i>Produce Preliminary Group Inspection (PGI) Report</i>	Regional ROW Appraiser 4	Tennessee Department of Environment and Conservation personnel, Review Appraiser
Work Order	▪ <i>Employ Fee Appraiser</i>	HQ Appraisal Transportation Manager	HQ Admin Staff
Market Data Brochure	▪ <i>Appraise Property</i>	Assigned Appraiser	
Appraisal Report	▪ <i>Appraise Property</i>	Fee Appraiser	ROW Agent and Regional ROW Appraiser 4
ROW Form 2/Appraisal Review	▪ <i>Review Appraisals</i>	Review Appraiser	Regional ROW Appraiser 4, HQ Appraisal

Produce Preliminary Group Inspection (PGI) Report

As the culmination of the data gathered from the PGI field work (either in Stage 2 or early Stage 3), the PGI Report is used primarily for the purpose of contracting for appraisals.

Developed by the Regional ROW Appraiser 4 in accordance with the *ROW Policy & Procedures Manual*, the PGI Report:

- Lists all tracts on which there is an acquisition.
- Indicates the type of appraisal report for each tract: formal or formal part affected.
- Identifies tracts that will not need an appraisal report and can be valued via an appraisal waiver or Nominal Payment Parcel (NPP).



- Identifies tracts considered relocations under the guidelines of the relocation assistance program.
- Sequences occupied tracts.
- Includes guidance to the appraiser regarding special circumstances, such as larger parcel questions or real vs. personal property issues.
- Indicates tracts that will be combined due to common ownership.
- Estimates appraisal fee.
- Identifies potential utility adjustments.
- Identifies necessary plan revisions.

The Regional ROW Appraiser 4 generates the PGI Report from data input in IRIS for review by the HQ Appraisal Services Manager as part of the “Employ Fee Appraiser” task and for information to the Project Manager and project team. The Regional ROW Appraiser 4 corrects any errors or adjusts the report based on comments received. Once generated and fully executed, the document is automatically stored in IRIS and then used to initiate appraisal contracts.

Employ Fee Appraiser

Appraisers are selected from TDOT’s “panel” of pre-qualified real estate appraisers under continuous contract with TDOT. The HQ Appraisal Services Manager, in collaboration with the Regional ROW Appraiser 4:

- Reviews the PGI Report and identifies potential appraisers from the “panel” for the appraisal assignment.
- Prepares an estimate of appraisal costs for the project.
- Solicits proposed work orders from the appraisers identified for the project.
 - Note: If the proposed work orders are within the project estimates, the ROW Director executes the work order.
- Processes the appraisals work orders, which are maintained in hard copy form in the HQ ROW Office and electronically in the IRIS database under continuous contracts.

Additionally, assignment data is entered into IRIS at the project level.

Stake ROW

ROW staking extends over the length of the project to represent the location of the existing ROW and the extremities of the acquisition areas, making it simpler for the appraiser, landowner, agent, etc. to visualize the project's impact.

Upon receipt of the Functional Design Plans, the Regional ROW Manager (or designee):

- Requests that the Survey Lead stake the ROW ([see 2SY1](#) for related information). Generally, this would be at the time the PGI Report is submitted to HQ and as close to when the Appraiser's inspection is being completed.
- Once complete, verifies the staking in the field.

Appraise Property

The appraisal of property is the first part of the valuation process that ultimately determines the approved offer. Except for uncomplicated, low-value acquisitions, appraisals are performed almost exclusively by contracted appraisal personnel.

To do this, the assigned Appraiser:

- Notifies impacted landowners that the Appraiser has been employed by TDOT to appraise their property for the project.
- Offers the landowner the opportunity to accompany them on the inspection of the property.
- Prepares and submits a market data brochure indicating comparable sales ("comps") that are expected to be used in completing the assigned appraisals.
- Completes the Appraisal Report and submits it to the Regional ROW Office (typically the Review Appraiser) for transmittal to the Review Appraiser.

The Staff Review Appraiser (or TDOT designee) uploads the appraisal into IRIS upon receipt and circulates copies to the main tract file and Review Appraiser. The landowner's copy (including comparable sales used in determining value) is set aside for the negotiator's file.

If an appraisal extension is needed within six months of the Construction Document turn-in, the Regional ROW Office (typically the Regional ROW Appraiser 4), Project Manager, and HQ Appraisal Manager discuss any schedule impacts for delayed turn-in.

Review Appraisals

The appraisal review process ensures that all appraisal products are written in compliance with applicable laws, rules, procedures, standards, and guidelines. It also determines if the appraisal provides a sound basis for a fair market value determination.

As part of his/her review, the Review Appraiser:

- Performs a desk audit of the appraisal and a field inspection of the parcel.
- Works with the Appraiser to obtain additional information, correct errors, and provide further explanation, when necessary.
- In consideration of the appraiser's determination of damages, determines if the remainder property qualifies as an uneconomic remainder and prepares ROW Form 2 accordingly.

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- Produces an appraisal review document and an approved offer (on ROW Form 2).

Hard copies of the appraisal review and approved offer are maintained at the regional level in the tract file. These forms are generated from data input into IRIS, and when generated in that manner, an editable word document (.doc file) is saved in IRIS. The Review Appraiser is responsible to sign and save the document in a non-editable form.

3RW2 Prepare and Submit ROW Certification

Overview

Submit the ROW Certification affirming that the land rights necessary for the construction of a project have been obtained in adherence to the State and Federal rules and regulations governing acquisition and relocation.

References

- [ROW Policy & Procedures Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Recorded Deed/Order of Possession	<ul style="list-style-type: none">▪ Perform/Finish Acquiring Property▪ Perform/Finish ROW Relocation	ROW Agent	Regional ROW Manager
ROW Form 10 (Project Certification Data)	<ul style="list-style-type: none">▪ Perform/Finish ROW Relocation▪ Review ROW Acquisition Process, Verify/Update Schedule, and Issue ROW Certification	Regional ROW Manager (or designee)	
ROW Certification			
Public Interest Justification Letter	<ul style="list-style-type: none">▪ Review ROW Acquisition Process, Verify/Update Schedule, and Issue ROW Certification	HQ Acquisition Manager	Regional ROW Manager (or designee)

Perform/Finish Acquiring Property

The construction of most TDOT projects requires the acquisition of various property rights, in addition to the property already held by the State. These may include:

- Fee ownership
- Permanent usage easements (e.g., slope or drainage)
- Temporary usage easements (e.g., construction)
- Air rights
- Access rights

The regional ROW staff is generally responsible for acquisition of these property rights, although there are times when the ROW Headquarters staff, or a fee consultant leads the acquisition process.

The assigned ROW Agent makes an offer to acquire necessary property rights from the owner. The offer includes the:

- Itemized written offer (17b)
- ROW Acquisition Exhibits ([see 3RD1](#) for related information), including:
 - Legal descriptions
 - Tract map
- Appraisal
- Acquisition brochure
- Seller's acknowledgment of sales price (30a)

After the written offer is made, the ROW Agent negotiates the tract with the landowner. This process includes allowing the landowner time to consider the offer, answering questions that arise about the acquisition/offer, and considering any counteroffers.

Successful negotiations conclude with a signed option. Unsuccessful negotiations are transmitted to the Attorney General's office for condemnation proceedings.

- Optioned tracts are closed (deed, releases, etc.)
- Condemned tracts get an order of possession.

The Regional ROW Office (typically the responsibility of the Regional ROW Manager) records the fully executed deeds in the Register of Deeds office in the county where the project takes place. Likewise, orders of possession are maintained in the court of appropriate jurisdiction. Copies of the fully executed deeds, closing documents, and orders of possession are maintained in the Regional and Headquarters ROW offices, as well as digitally in IRIS.

Related section: [2EN2](#)

Perform/Finish ROW Relocation

The acquisition of necessary property rights at times results in the displacement of a residence, business, farm, non-profit organization, or personal property. The relocation assistance program exists to mitigate impacts of this displacement.

The assigned ROW Agent:

- Conducts preliminary interviews with those being displaced to determine their relocation needs and the benefits for which they are eligible.
- Confirms the Acquisition Stage Relocation Plan (ASRP) has been completed in accordance with Chapter IX of the *ROW Policy & Procedures Manual*.
- Obtains estimates and conducts market studies to determine specific relocation benefits to be offered.
- Makes a relocation offer and establishes eligibility.

- Obtains possession of the underlying tract, after which the displacee has 90 days to relocate.

The Regional ROW Office verifies that all moves are completed and that the needed properties are vacated. This information is reported on ROW Form 10 (Project Certification Data).

Validated by the assigned ROW Agent, the paperwork resulting from relocation activities is maintained in the Regional ROW Office with digital copies uploaded to IRIS.

Review ROW Acquisition Process, Verify/Update Schedule, and Issue ROW Certification

When a project appears in the current letting, the TDOT Headquarters Acquisition Manager reviews the project file to verify that all ROW activities are completed, the process has been followed, and the schedule is still valid to issue a ROW certification so that the project can advance to the construction phase.

To do this, the Headquarters Acquisition Manager:

- Requests ROW Form 10 from the Regional ROW Office for all projects which required the acquisition of property rights.
 - Form 10 provides a project summary of the acquisition and relocation status of all project tracts.
- Reviews the digital files in IRIS (if the Form 10 indicated that ROW acquisition and relocation activities have concluded) to verify that a fully executed and recorded deed, an order of possession, or a right of entry are included for each tract.

When all tracts have been verified as acquired, relocations completed, or it has been determined that no additional ROW was needed for the project, the Headquarters Acquisition Manager certifies that the ROW is available for the project prior to letting. If certification is made without rights to occupy and use of all necessary ROW, the Headquarters Acquisition Manager prepares a letter outlining why moving forward with the project is in the best interest of the public (i.e., a public interest justification [PIJ]). The *ROW Policy & Procedures Manual* details further requirements for the certification and PIJ process.

The Headquarters Acquisition Manager maintains electronic copies of certification documents, and projects with ROW acquisition are also stored under that project in IRIS. Additionally, electronic copies are sent to the Program Development and Administrative Division, Regional ROW Manager, and Project Manager.

0SD1 Initiate Concept Report and Request Funding

Overview

Initiate development of the Concept Report by requesting required funding and data. Once traffic and safety data are finalized, initiate coordination with assigned Division staff to gather information and kickoff project-specific reviews to inform the subsequent Site Visit.

References

- STID Funding Request Form
- STID Task Profile Request Form
- Funding Request How-To
- Traffic Request Form
- Crash Data Request Form
- Environmental Technical Study Area (ETSA) Guide

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
Crash Data Request Form	▪ Request and Finalize Safety Data	STID Project Manager	
Crash Packet		STID Safety Data Manager	
Location Map (or kmz file of project location)	▪ Request and Finalize Traffic Data ▪ Request and Finalize Safety Data ▪ Request Preliminary Survey Data	STID Project Engineer/CADD Tech	STID Project Manager
TX Request Document	▪ Request Project Number, PIN, and Task Profile Numbers	STID Project Manager	STID Project Initiation Section
Traffic Request Form	▪ Request and Finalize Traffic Data		STID Traffic Manager

^aUnless noted, all references to the STID Project Manager and STID Project Engineer may be completed by a Consultant.

Request and Finalize Safety Data

Safety data associated with the project location is required for Highway Safety Improvement Program (HSIP)-funded projects to develop the Road Safety Audit (RSA). For this request, the Strategic Transportation Investments Division (STID) Project Manager:

- Completes the Crash Data Request Form to include the requested information
- Provides a map of the project location (typically a screenshot of the area with notes), .kmz files, or any additional files
- Submits the request to the STID Safety Data Manager

The STID Safety Data Manager provides the Crash Packet, which includes a crash summary and listings, crash rate sheet, and HSIP qualification, via email. The STID Project Manager reviews

the Crash Packet, files the information in the project folder, and notifies the Concept Report Team of the available information.

Request Project Number, PIN, and Task Profile Numbers

Requesting project authorizations (project numbers, funding, and Edison coding) allows for expenditures to occur when developing the Concept Report. The STID Project Manager (TDOT STID Project Manager/staff only) coordinates with the STID Project Initiation Section through email using the STID Funding Request Form with a Location Map, initial Signed Crash Packet (HSIP Projects), and draft Scope of Work.

Once funding has been authorized, the STID Task Profile (TX) Form is used by the STID Project Initiation Section to formally request the TX number for Edison. The STID Project Initiation Section notifies the STID Project Manager through email of the requested information. The STID Project Manager then notifies the STID Project Engineer and STID Project Engineer Supervisor (the Concept Report Team) of the project information so that the Team can begin work on the Concept Report.

Coordinate with Long Range Planning

Coordination with Long Range Planning informs the Concept Report Team of any past studies or long-range plans that could provide a project history and past analysis to determine project need, improvement alternatives, and initial cost. This information may also be helpful when initiating Division involvement as part of a project review request (see below).

To initiate this request, the STID Project Manager emails the Regional Office of Community Transportation (OCT) representative to send past studies, reports, or plans within the project area. Additionally, the STID Project Manager works with the OCT to initiate coordination with the local officials and/or regional agencies (RPO/MPO) with interest in the project.

Upon receipt of the information, the STID Project Manager files the studies, reports, and/or plans within the project folder for the team to reference when developing the Concept Report.

Request and Finalize Traffic Data

The required traffic data for the Concept Report analysis encompasses base year (5 year) and design year (20 year) traffic projections, and depending on the project type and need, intersection turning movement count (TMC). For this request, the STID Project Manager:

- Completes the STID Traffic Request Form to include the requested information



- Provides a map of the project location (typically a screenshot of the area with notes), .kmz files, or any additional files with the request
- Submits the request to the STID Traffic Manager

To develop and finalize the required traffic information and details for the Concept Report analysis, the STID Traffic Manager:

- Develops or coordinates the development of the requested traffic forecast internally for each project request. This includes base year (5 year) and design year (20 year) traffic projections
- Signs the Traffic Request Form and sends the data back to the requestor

The STID Project Manager reviews the traffic packet and notifies the STID Traffic Manager of any questions or concerns. Upon receipt of final data from the STID Traffic Manager, the STID Project Manager reviews the data, files the information in the project folder, and notifies the Concept Report Team of the available information. The Concept Report Team uses this information to develop the preliminary purpose and need and conduct future traffic analysis, such as modeling and signal warrants.

Related section: [1RD1](#)

Request Preliminary Survey Data

For some projects that lack terrain data or are in constrained areas (geographical, environmental, right-of-way, or utility limitations) without statewide aerial LiDAR that may require more in-depth design to determine feasibility, the STID Project Manager may request early, preliminary survey data. This task is not intended for full survey activities to occur, but rather to support the conceptual design in certain instances.

For this request, the STID Project Manager (TDOT STID Project Manager/staff only):

- Verifies funding is available for this task to occur
- Discusses the request with the Regional Survey Manager to determine scope and schedules prior to submitting the official request
- Emails the Regional Survey Manager with the request that includes a project location map (typically a screenshot of the area with notes), .kmz files, or any additional files needed for the survey

The STID Project Manager notifies the Concept Report Team upon receipt of the survey data ([see OSY1](#) for related information) for use when developing the concept design, filing the data in the project folder.

Initiate Division Reviews

Early coordination with assigned Division staff is critical to drive an informative site visit and establish project-specific recommendations/considerations for the Concept Report. This input also supports the Concept Report Team when:

- Developing the preliminary purpose and need
- Determining the feasibility of various improvement alternatives and the eventual conceptual layout
- Developing a more accurate initial cost estimate

While each project is unique and may require different levels of engagement from different Divisions, typically the STID Project Manager emails the following Divisions to inform them that a Concept Report is in development and to request any past studies, reports, or plans within the project area. Additionally, each request is unique to the Division based on what information is requested, how STID uses the information, and some additional items that supplement the overall process.

- Environmental (also [see OEN1](#)): To initiate the review, the STID Project Manager emails an Environmental Desktop Review Form request to TDOT.ENV.SpecialProjects@tn.gov
 - *What is requested:* Data related to known environmental resources and constraints and documentation of overall environmental challenges and features, including extent of implications/consequences if an identified resource to be impacted
 - *How it is used:* To develop the preliminary purpose and need and conceptual layout/alignment
 - *Additional Items:* Begins the coordination process on the Environmental Technical Study Area (ETSA) in accordance with the *Environmental Technical Study Area (ETSA) Guide*
- Geotechnical (also [see OGT1](#)):
 - *What is requested:* High-level review (e.g., Google street view) for potential/major geotechnical risks or mitigation opportunities in the project area
 - *How it is used:* To develop the project's scope, cost estimate, and reduce future geotechnical risks
 - *Additional considerations:* To allow Geotechnical staff an early review of the project during the planning stage
- Multimodal (also [see OMM1](#)):
 - *What is requested:* Identification if the project is within a multimodal priority corridor and/or opportunities for multimodal accommodations.
 - *How it is used:* To develop the project's scope and cost estimate.
 - *Additional Considerations:* To confirm any known local agency/municipality multimodal (bicycle and pedestrian) plans or preferences.
- Railroad (also [see OUT1](#)):

- *What is requested:* Railroad involvement/infrastructure in the project area.
- *How it is used:* To develop the project's scope and cost estimate.
- *Additional Considerations:* To develop additional coordination needs with the Railroad(s) moving forward
- Roadway (also [see ORD1](#)):
 - *What is requested:* High-level review (e.g., Google street view) for major roadway considerations or design options in the project area
 - *How it is used:* To develop the project's scope, cost estimate, and reduce future roadway risks
 - *Additional considerations:* To allow Roadway staff an early review of the project during the planning stage so that they better understand the project's concepts and provide input on the roadway design options and/or assumptions to inform the conceptual layout
- Structures/Hydraulics (also [see OST1](#)):
 - *What is requested:* Preferred bridge type and configuration and a list of hydraulic crossings meeting the established hydraulic criteria
 - *How it is used:* To develop the project's scope and cost estimate
 - *Additional considerations:* To discuss unique structural situations and potential design options that may impact the initial recommendations
- Traffic Operations (also [see OTO1](#) and [OTO2](#)):
 - *What is requested:* Existing transportation systems management and operations (TSMO) (including signal, lighting, and Intelligent Transportation Systems (ITS)) infrastructure inventories and potential future system needs
 - *How it is used:* To develop the project's scope and cost estimate
 - *Additional items:* To vet innovative concepts or alternatives against realistic data or application

Additional participants could include the following Divisions/staff, with the following focus during their respective review:

- Construction staff, considering constructability and if/how the project could be built
- Regional traffic staff, considering maintenance of traffic (MOT) and potential closures
- Regional Project Development/design staff to allow for an early design review and a focus on design considerations with the conceptual layout
- Regional Operations staff, considering corridor or project location history and existing construction or maintenance difficulties/issues
- Survey, considering initial survey requests noted in the previous task

To initiate this coordination, the STID Project Manager sends the following project details to the assigned Division staff:

- A project location map or .kmz file
- Relevant traffic and safety data

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- Preliminary purpose and need (or reason for the project) and known measures of effectiveness (MOEs)
- A customizable STID Comment Resolution Form (in .docx format)

Upon receipt of information from the Division staff, the STID Project Manager files the studies, comments, reports, and/or plans within the project folder for the Team to reference when developing the Concept Report. The information received is also used to develop the Divisional Review Summaries and related Site Visit Packet.

Related section: [ORD1](#)

0SD2 Develop Conceptual Layout and Complete Site Visit

Overview

Develop the conceptual layout and complete the site visit.

References

- STID Concept Report Manual (in development)
- [Concept Report Template](#)
- STID Road Safety Audit (RSA) Manual
- [TDOT Highway System Access Manual \(HSAM\)](#)
- STID Site Visit Coordination List
- FHWA/TDOT Interstate Access Request (IAR) Standard Operating Procedure (SOP)
- TDOT Quality Manual
- STID Comment Resolution Form

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
IIE Analysis and Summary Form	<ul style="list-style-type: none">▪ Conduct Intersection and Interchange Evaluation (IIE)		STID Project Manager
HCS Signal Warrant Output	<ul style="list-style-type: none">▪ Complete Conceptual Signal Warrants		
Conceptual Layout	<ul style="list-style-type: none">▪ Develop Draft Conceptual Layouts/Crash Figures for Site Visit	STID Project Engineer	CADD Tech and STID Project Engineer Supervisor
Division Review Summaries	<ul style="list-style-type: none">▪ Compile Initial Divisional Reviews for Site Visit		Division Leads
Site Visit Packet	<ul style="list-style-type: none">▪ Prepare Site Visit Packet and Lead Site Visit		STID Project Manager
Compiled Site Visit Comments			
IAR Documentation with letter from the STID Director	<ul style="list-style-type: none">▪ Initiate IAR Concept Coordination with FHWA▪ Develop, Compile, and Distribute the Draft Concept Report	STID Project Manager	STID Director

^a Unless noted, all references to the STID Project Manager and STID Project Engineer may be completed by a Consultant.

Conduct Intersection and Interchange Evaluation (IIE)

Although not needed for every project, an Intersection and Interchange Evaluation (IIE) may be necessary to determine conceptual options that will proceed forward. To complete this evaluation, the STID Project Engineer:

- Uses the TDOT IIE Screening Tool in conjunction with Federal Highway Administration (FHWA) Capacity Analysis for Planning of Junctions (CAP-X) Tool for a Stage 1 Scoping as noted in the *Highway System Access Manual (HSAM)*.
- Discusses the results with the STID Project Manager.

- Advances the alternatives to the Stage 2 Selection Form, which summarizes the intersection/interchange options that could proceed forward for additional analysis.

The summary form is provided to the STID Project Manager for review and approval if the options are approved to proceed. The team then discusses options with TDOT Leadership when alternatives involve complex intersection/interchange design.

The STID Project Manager finalizes the IIE Analysis by signing and dating the form, which is attached to the Concept Report and filed in the project folder.

Complete Conceptual Signal Warrants

For projects containing non-signalized intersections, the team considers Turning Movement Counts (TMC) to determine if the intersection could be signalized. To complete this task, the STID Project Engineer:

- Uses the signal warrant analysis software, in adherence with the Manual on Uniform Traffic Control Devices (MUTCD), to determine if signal warrants are met.
- Discusses conceptual warrants with the STID Project Manager.

The STID Project Manager reviews the signal warrant outputs and determines if additional consultation with the State Traffic Engineer is needed. Traditionally, if warrant 1 is met, no consultation is needed. The STID Project Manager consults with the State Traffic Engineer if any signal warrant 2-9 are met. The STID Project Manager files the conceptual warrants/HCS Signal Warrant Output in the project file. The Concept Report Team uses the information for the development of the Concept Report, and this recommendation is carried through the project development process.

Develop Draft Conceptual Layouts/Crash Figures for Site Visit

Certain projects may require draft conceptual layouts, such as in constrained conditions or for a complex widening project, where a conceptual layout may be beneficial for the site visit. These layouts are not intended to be fully detailed, but rather provide a corridor of potential improvements to assess potential impacts. Crash figures and diagrams are required for projects, prior to the site visit, for both Road Safety Audits and Concept Report. Crash figures are developed in accordance with the Road Safety Audit Manual for all types of project reports.

The STID Project Engineer, with support from the CADD Tech and using Microstation software, develops the conceptual layouts consisting of:

- Aerial imagery

- Parcel lines
- Labels (such as the roadway, streams, environmental features, lane widths, bridge information)
- Centerlines
- Proposed outside edge of pavement lines
- Corridor offset lines

The focus of the conceptual layout should be on developing a conservative horizontal layout to identify and initially evaluate potential project impacts and risks (e.g., impacts to critical, sensitive environmental features; loss of access or extensive impacts to right-of-way; conflicts with known, major utilities; access and incident management issues; degrading of project-established measures of effectiveness [MOEs]). On certain projects and in a limited capacity, the STID Project Engineer may need to evaluate a preliminary vertical layout. At whatever level of detail completed, the engineering advanced for the conceptual layout should not inhibit the project team from making enhancements, refinements, or changes in scope as the project progresses through Stage 1 and beyond. The STID Project Engineer Supervisor completes a quality control (QC) check of the layouts, with the STID Project Manager or Consultant Manager providing a high-level review of the final layouts using the quality process outlined in the *TDOT Quality Manual*.

After review is completed and comments resolved, the STID Project Engineer ensures the layouts have been filed appropriately in the project folder for future use in the Site Visit Packet. For project that may require the acquisition of right-of-way (ROW) for corridor type projects (non-bridge), the STID Project Manager may provide an advanced/early draft of the conceptual layout to the HQ Chief Appraiser to inform the high-level, right-of-way cost estimate included with the Concept Report. The STID Project Manager coordinates with the Chief Appraiser on advancement of the concept for an accurate estimate compared to the timing and ROW staff resources needed to complete the estimate to not delay Concept Report finalization.

Compile Initial Divisional Reviews for Site Visit

Based on those listed on the STID Site Visit Coordination List (as relevant for the study), the various Division leads provide a “desktop” type review of constraints, known commitments, conflicts, political items, and recommendations that are then summarized in the site visit packet. The STID Project Manager coordinates any findings and/or recommendations from the Divisional reviews with the Concept Report Team prior to the site visit, all to ensure any recommendations are feasible and meet the need of the project. The STID Project Engineer summarizes the Initial Divisional Reviews in a Word format for use in the Site Visit Packet, notifying the STID Project Manager when complete. The compiled divisional reviews are filed in the project folder for use in the Site Visit Packet.

Prepare Site Visit Packet and Lead Site Visit

Building on the work previously completed, a project site visit allows the internal TDOT team and external stakeholders to discuss the proposed improvement, challenges, and requests to consider. Some of the work completed at the site visit is to take/confirm measurements, document the site via pictures or video, check any additional environmental features, visibly locate existing utilities, discuss the project with local officials, and solicit local and/or regional feedback. As part of early coordination with any local officials and the Local Programs Development Office, the STID Project Manager should discuss the need for and process to execute ensuing maintenance agreements for infrastructure improvements such as lighting and signals.

Before each site visit, a site visit packet is created to solicit additional comments from stakeholders and other interested parties on the project. To compile this site visit packet, the STID Project Engineer includes:

- Initial Divisional review summary developed from the above task
- Draft conceptual layouts (if required)
- Crash figures
- Existing bridge details (if a Bridge Concept Report)
- Traffic packet
- Crash packet
- Site Visit Sign-In Sheet

The STID Project Engineer develops a summary sheet, outlining the project information and potential improvements for discussion at the site. All documents are compiled in pdf, with STID Project Engineer Supervisor completing a QC check before the packet is sent out.

Once the review comments are resolved and the packet is converted to a pdf, the STID Project Manager sets the site visit date, coordinating with TDOT and external stakeholders, and distributes the site visit packet to those on the STID Site Visit Coordination List and any additional stakeholders.

The STID Project Manager attends the site visit and introduces the project. If a Consultant Team has been hired by STID, the STID Project Manager introduces the Consultant Team to lead the site visit, otherwise the STID Project Manager leads the meeting.

The STID Project Manager assigns STID team member(s) to take notes with the STID Project Engineer drafting minutes of the site visit. The STID Project Manager distributes the meeting minutes to all attendees and files the document in the project folder that will also be used as an appendix to the Concept Report.

Initiate IAR Concept Coordination with FHWA

When a Concept Report requires an Interstate Access Request (IAR), early coordination with FHWA is required as the approving authority of IAR documents as detailed in the *FHWA/TDOT Interstate Access Request (IAR) Standard Operating Procedure (SOP)*. This step also provides an opportunity for early comments on the proposed concept.

The STID Project Engineer creates a draft conceptual interchange improvement on aerial imagery, showing lane details and dimensions, with multiple sheets and a roll plot pdf of the overall concept (if more than one sheet is needed).

Prior to engaging FHWA, Divisional leadership and potentially TDOT leadership reviews the concept to ensure full support. Only the TDOT STID Project Manager or TDOT staff member (namely the STID Project Engineer if TDOT staff) communicates with FHWA, notifying them in advance of a concept and requesting early coordination review when distributing the concept material.

0SD3 Develop Draft Concept Report

Overview

Draft and review the Concept Report and associated deliverables.

References

- STID Concept Report Manual (in development)
- [Concept Report Template](#)
- TDOT Quality Manual
- STID Comment Resolution Form

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
Draft Concept Report	▪ Develop, Compile, and Distribute the Draft Concept Report		STID Project Engineer
STID Internal Review Form	▪ Develop, Compile, and Distribute the Draft Concept Report	STID Project Manager	STID Project Engineer Supervisor
IAR Documentation with letter from the STID Director	▪ Initiate IAR Concept Coordination with FHWA ▪ Develop, Compile, and Distribute the Draft Concept Report		STID Director
Draft ETSA layout(s)	▪ Develop Environmental Technical Study Area (ETSA)	STID Project Engineer	STID Project Manager; CADD Tech

^a Unless noted, all references to the STID Project Manager and STID Project Engineer may be completed by a Consultant.

Develop, Compile, and Distribute the Draft Concept Report

Using the Concept Report Template, the STID Project Engineer (or STID Project Manager) completes the required actions on the checklist (saving a copy of the draft checklist to the project file) and then compiles the applicable information (data, reports, emails, etc.) to create the draft Concept Report. This report includes the following information previously developed:

- The Road Safety Audit in accordance with the *Road Safety Audit Manual*
- Technical Report, Bridge Transportation Investment Report, and/or other engineering study developed in accordance with the *STID Concept Report Manual* (in development)
- A conceptual cost estimate developed using the TDOT Cost Estimating Tool, with the draft Concept Report being sent to utility, railroad, and right-of-way discipline/Division staff to develop associated estimates to be incorporated into the Final Concept Report

After the STID Project Engineer Supervisor completes a QC check of the Concept Report, the STID Project Manager conducts a final review to ensure all components of the document are accounted for and that the document adheres to the correct format. The draft Concept Report is filed in the project folder.

Prior to distribution, the STID Project Manager ensures the termini in the document matches what Programming has on record. If the termini do not match, the STID Project Manager contacts the Program Manager to correct any discrepancy.

After this, the STID Project Manager:

- Distributes the .pdf document or file share link via email to internal and external reviewers included under [OSD1](#) following the pre-determined review list for each project type. The STID Project Manager notes at least a two-week turnaround time for review (noting a longer review time based on concept complexity or other extenuating circumstances that limit review turnaround).
- Compiles all comments received and revises the Concept Report based on comments from the internal (e.g., Divisions) and external reviewers.
 - The STID Project Manager should check the respective “no comments received” box on the Concept Report Form if no comments are received from a specific Division.
- Creates a STID Internal Review Form to begin the STID internal routing of the document.

For Interstate Access Requests (IARs), the STID Project Manager notifies FHWA of the draft document and submits, via email, the full IAR document, with a memo requesting draft review and comments. The STID Project Manager files any correspondence and the memo in the project folder.

Once the review is complete, the STID Project Manager files comments, as submitted, in the project folder for the Concept Report Team to respond to as they work to finalize the document.

Develop Environmental Technical Study Area (ETSA)

Developed in collaboration with the NEPA Lead and Environmental Technical Leads (as applicable), the purpose of the Environmental Technical Study Area (ETSA) is to provide a base project footprint for the environmental team to:

- Begin scoping the project.
- Identify avoidance opportunities.
- Initiate the environmental technical studies early in Stage 1.

The STID Project Engineer, with support from the CADD Tech:

- Develops the ETSA figures in accordance with the *Environmental Technical Study Area (ETSA) Guide*.
- Requests that the STID Project Engineer Supervisor complete a QC check of the ETSA layout(s).
- Includes the ETSA into the draft Concept Report for comment from the team, including the NEPA Lead and Environmental Technical Leads.

0SD4 Finalize Concept Report

Overview

Finalize the Concept Report, including all associated deliverables.

References

- STID Concept Report Manual (in development)
- [Concept Report Template](#)
- STID Road Safety Audit (RSA) Manual
- [TDOT Highway System Access Manual \(HSAM\)](#)
- Environmental Technical Study Area (ETSA) Guide
- STID Concept Report Distribution List
- FHWA/TDOT Interstate Access Request (IAR) Standard Operating Procedure (SOP)
- TDOT Quality Manual

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
Initial Risk Assessment using the Risk Assessment Form	<ul style="list-style-type: none">▪ Prepare Initial Risk Assessment	STID Project Engineer	Concept Report Team
Final Conceptual Layouts	<ul style="list-style-type: none">▪ Finalize Conceptual Layouts		STID Project Manager
Final ETSA Layouts	<ul style="list-style-type: none">▪ Develop Environmental Technical Study Area (ETSA)		Environmental Lead; CADD Tech
Final Concept Report	<ul style="list-style-type: none">▪ Address Comments and Finalize Concept Report▪ Request for Concept Report Signature(s) and Distribution		STID Project Manager
	<ul style="list-style-type: none">▪ Address Comments and Finalize the Concept Report		STID Director
RSA No Plans	<ul style="list-style-type: none">▪ Develop RSA No Plans Document	STID Project Engineer	STID Project Manager

^a Unless noted, all references to the STID Project Manager and STID Project Engineer may be completed by a Consultant.

Prepare Initial Risk Assessment

Early identification and assessment of risks could have significant influence on the project scope, budget, and schedule and becomes the initial assessment used in later stages of the project.

Utilizing the Risk Assessment Form to document any known or potential risks, the Concept Report Team rates each risk based on judgement and what factors it can impact, notifying the

STID Project Manager when the Initial Risk Assessment is complete. The STID Project Manager reviews the Initial Risk Assessment and files within the project folder for later distribution with the final Concept Report.

Finalize Conceptual Layouts

Based on comments from review of the draft conceptual layouts, the STID Project Engineer incorporates, and resolves noted comments, discussing major comments with the STID Project Manager that pertain to project scope changes. The STID Project Engineer Supervisor completes a quality control (QC) check of the final layout, with the STID Project Manager or Consultant Manager providing a high-level review the final layouts using the quality process outlined in the *TDOT Quality Manual*.

After review is completed and comments resolved, the STID Project Engineer files the final conceptual layouts in the project folder to be included in the final Concept Report.

Related sections: [1EN1](#), [0MM1](#), [1RD1](#)

Finalize Environmental Technical Study Area (ETSA)

Developed in collaboration with the NEPA Lead and Environmental Technical Leads (as applicable) in earlier tasks, the STID Project Engineer, with support from the CADD Tech resolves the comments received and finalizes the ETSA in collaboration with the NEPA Lead and Environmental Technical Leads. The STID Project Engineer files the ETSA figures in the project folder to be included in the Final Concept Report.

Address Comments and Finalize the Concept Report

Referencing the draft review comments, the STID Project Engineer resolves the noted comments and incorporates agreed to changes into the Concept Report, discussing major comments with the STID Project Manager that pertain to project scope changes.

The STID Project Engineer compiles the final report using the Concept Report Template. This report includes the final conceptual and ETSA layouts and final cost estimate (including any ROW and utility estimates; [see OUT1](#) for related information). The STID Project Engineer (or Project Manager) updates or completes the required actions on the Action Checklist (saving a copy of the final checklist to the project file) and then compiles the applicable information (data, reports, emails, etc.) to finalize the Concept Report. The STID Project Engineer Supervisor conducts a final QC check and notifies the STID Project Manager that the final Concept Report

and completed Action Item checklist have been filed in the project folder. The STID Project Manager then submits the document to the STID Assistant Director for final review.

For Interstate Access Requests (IARs), the STID Project Manager notifies FHWA of the final document and submits, via email, the full IAR Document, with a memo requesting final review and approval in accordance with the *FHWA/TDOT Interstate Access Request (IAR) Standard Operating Procedure (SOP)*. The STID Project Manager files any correspondence and the memo in the project folder.

Request for Concept Report Signature(s) and Distribution

Upon approval from the STID Assistant Director, the STID Project Manager (TDOT STID Project Manager/staff only) submits the final Concept Report to the STID Director for review and signature. The STID Project Manager also forwards the Concept Report for any additional signatures, once the STID Assistant Director has approved. Additional signatures are needed for Bridge Transportation Investment Reports, which includes the STID Director, Structures Director, Regional Project Development Director, Bureau Chief of Engineering, and Bureau Chief of Planning. The STID Project Manager files the executed, final Concept Report, along with each signature request, in the project folder.

Upon gaining the required signatures, the STID Project Manager updates the status by inserting the distribution date, uploading the document, and marking the document complete in the project management software for all Concept Reports developed by STID. The STID Project Manager then uploads the document, with the .dgn, ETSA, .kmz, and report files to the project folder, distributing the final report via email or providing a file share link of the report to those on the STID Concept Report Distribution List. The STID Project Manager files the distribution email within the project folder.

Develop RSA No Plans Document

Upon the signed approval of the Road Safety Audit (RSA) that does not require design work, the STID Project Engineer creates a No Plans Packet for advancement to construction letting, following the *Road Safety Audit (RSA) Manual*. Once QC reviewed/verified (for quantities, item numbers, etc.) by the STID Project Engineer and STID Project Engineer Supervisor, the STID Project Manager reviews the No Plans Document and distributes the document to the TDOT Construction Division for advertisement in the determined letting month.

0SD5 Develop State Industrial Access (SIA) Packet

Overview

Consider and approve “Industrial Highway” applications and finalize a State Industrial Access (SIA) Packet with consideration for project eligibility, economic criteria, physical constraints, and available funding.

References

- [State Industrial Access Program Website](#)
- [State Industrial Access \(SIA\) Application Packet](#)
- [SIA Packet Template](#)
- [TDOT Quality Manual](#)
- [Local Programs Development Office \(LPDO\)](#)
- [Local Agency Guidelines Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Concept Layout, Cost Estimate, and ETSA	<ul style="list-style-type: none">▪ Develop Conceptual Layout, Cost Estimate, and Environmental Technical Study Area (ETSA)	STID Project Engineer	CADD Tech, STID Project Engineer Supervisor, STID Project Manager
Benefit-Cost Results	<ul style="list-style-type: none">▪ Conduct Benefit-Cost Analysis	Economic Development Manager	Economic Development Coordinator
Letter(s) of Approval	<ul style="list-style-type: none">▪ Develop Letter(s) of Approval	STID Administrative Assistant	Economic Development Manager
Final SIA Packet	<ul style="list-style-type: none">▪ Finalize the SIA Packet		

Receive Draft Application or Initial Request

The Industrial Highway Act of 1959 (T.C.A. 54-5-403) authorizes TDOT to contract with cities and counties for the development of “Industrial Highways” to provide access to industrial areas and to facilitate development and expansion of industry within Tennessee. TDOT implements the Industrial Highway Act through TDOT’s State Industrial Access (SIA) Program.

To initiate the SIA process, an industry partner, local government, or the Tennessee Department of Economic and Community Development contacts TDOT, typically through the Economic Development Coordinator or Economic Development Manager. The Economic Development Manager reviews the request and determines if the request is eligible for funding based upon the type of industry and what is allowed by state law.

Once the determination is made, the Economic Development Coordinator and Manager begin the process of coordinating a site visit with the STID Project Engineer, Regional Roadway Design, and Regional Traffic Operations. The Economic Development Manager creates a project file with the information received from the applicant and initiates discussions with the STID Project Engineer regarding potential layout options and assumptions for creating the cost estimate. This also may be the time to initiate preliminary benefit-cost analysis if the information is available (see task below for more details).

Lead Site Visit

Given the quick turnaround to finalize a SIA packet, a formal site visit ([see OSD2](#) for related information) is typically not possible; however, a review of the site characteristics is helpful in developing the concept layout, ETSA, and SIA packet. The Economic Development Coordinator or the Economic Development Manager sets the site visit date, coordinating with TDOT attendees and external stakeholders, and distributes available information regarding the potential industry (site plan, traffic impact studies, road improvement requests, etc.) in advance of the site visit.

All TDOT attendees are to take notes, with the Economic Development Manager drafting minutes from the site visit. The Economic Development Manager distributes the meeting minutes to all attendees, and the Administrative Assistant files the document in the project folder.

If the team notes that additional technical input is needed to complete the conceptual layout or SIA packet, the Economic Development Coordinator or Manager contacts the respective Division (e.g., Structures/Hydraulics, Geotechnical, Multimodal, Railroad). OSD1 outlines the process for contacting and requesting informal input from a Division.

Related, the Economic Development Coordinator or Manager may also document compliance justifications in lieu of formal discipline coordination. This is based on timing to advance the project but should not be a substitute for additional verification with the affected discipline/team member or sound engineering judgment. An example of this could be the SIA project does not require multimodal accommodations and is exempt from the *TDOT Multimodal Access Policy*. The Economic Development Coordinator or Manager includes all compliance determinations and justifications in the written summary portion of the SIA Packet.

Develop Conceptual Layout, Cost Estimate, and Environmental Technical Study Area (ETSA)

Each of the following are critical elements to define the project limits, identify funding needs, and complete the SIA Packet.

Conceptual Layout

The STID Project Engineer, with support from a CADD Tech and using Microstation software, develops the conceptual layouts consisting of:

- Aerial imagery
- Parcel lines
- Labels (such as the roadway, streams, environmental features, lane widths, bridge information)
- Centerlines
- Proposed outside edge of pavement lines
- Corridor offset lines

The STID Project Engineer Supervisor completes a quality control (QC) check of the layouts, with the STID Project Manager providing a high-level review of the final layouts using the quality process outlined in the *TDOT Quality Manual*.

Cost Estimate

The STID Project Engineer develops a conceptual cost estimate using the TDOT Cost Estimating Tool. This estimate is used for the benefit-cost analysis and serves as the first project estimate.

ETSA

An ETSA provides a base project footprint for the NEPA Lead and Environmental Technical Leads to:

- Begin scoping the project
- Identify avoidance opportunities
- Initiate the environmental technical studies early in Stage 1

To develop this study area, the STID Project Engineer, with support from the CADD Tech:

- Develops and finalizes the ETSA figures in accordance with the *Environmental Technical Study Area (ETSA) Guide*
- Requests that the STID Project Engineer Supervisor completes a QC check of the ETSA layouts



- Resolves the comments received and finalizes the ETSA in collaboration with the NEPA Lead and Environmental Technical Leads

Finalization of Layout, Estimate, and ETSA

After all reviews are completed and comments resolved, the STID Project Engineer files the conceptual layouts, cost estimate, and ETSA in the functional project folder for inclusion in the SIA packet. The STID Project Engineer emails a .pdf of the conceptual layouts, cost estimate, and ETSA to the Economic Development Coordinator, Manager, and Administrative Assistant.

Conduct Benefit-Cost Analysis

To validate funding eligibility for proposed roadway improvements, the Economic Development Manager utilizes industry data (capital investments, job information, tax abatements) to develop a benefit-cost analysis using the SIA Benefit-Cost tool and the cost estimate provided by the STID Project Engineer.

The Economic Development Manager provides the information to the Economic Development Coordinator for review, resolves comments received, and files the analysis results within the project folder.

Develop Letter(s) of Approval

The letter(s) of approval formalizes TDOT's commitment to complete the project. Once the benefit-cost is approved by the Economic Development Coordinator, the Economic Development Manager, with support from the Administrative Assistant, prepares letter(s) of approval from the TDOT and Economic and Community Development Commissioner(s) for the project.

Finalize the SIA Packet

The SIA packet documents all information developed in support of the project as listed in the SIA Packet Form. To finalize the packet, the Economic Development Manager uses the SIA Packet Template and ensures the packet includes the following items:

- Project write up
- Signed SIA application by the Local Government(s)
- Resolution from the Local Government(s)
- Industry Site Plan(s)
- Conceptual Layout and Cost Estimate

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The completed SIA packet, benefit-cost analysis, and any approval letter(s) are sent to the STID Director for approval and then to the Executive Assistant for the Chief Engineer's review. The unsigned approval letter(s) are then executed by the TDOT and Economic and Community Development Commissioners.

The signed approval letter(s), as part of the SIA packet, are distributed via email, which initiates the Local Programs Development Office to send out the contract and notify the Project Management Director to begin subsequent project setup ([see 1PM1](#) for related information) and Stage 1 activities.

0ST1 Develop Structures Recommendations

Overview

Investigate proposed bridge and culvert locations and provide structure type and size recommendations to the Strategic Transportation Investments Division (STID) for incorporation into the Concept Report.

References

- [Design Procedures for Hydraulic Structures](#)
- [Tennessee Structures Memoranda \(offline\)](#)
- [STID Comment Resolution Form](#)

Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
Site Review Comments (including Structural Recommendations) using the STID Comment Resolution Form	<ul style="list-style-type: none">▪ <i>Recommend Structure Type for the Concept Report</i>	Director of Structures
Site Review Comments (including Hydraulic Recommendations) using the STID Comment Resolution Form	<ul style="list-style-type: none">▪ <i>Provide Hydraulic Recommendations for the Concept Report</i>	State Hydraulic Engineer or Hydraulic Regional Manager (as assigned)
Concept Report Comments using the STID Comment Resolution Form	<ul style="list-style-type: none">▪ <i>Review Concept Report</i>	Director of Structures
Concept Report Comments using the STID Comment Resolution Form		State Hydraulic Engineer or Hydraulic Regional Manager (as assigned)

Recommend Structure Type for the Concept Report

The Structures Division assists STID in developing the Concept Report, using the STID Comment Resolution Form to review all proposed bridge locations and advise on preferred bridge type and configuration. To initiate the process for a non-hydraulic structure recommendation, the Director of Structures receives an email from the STID Project Manager that includes a project location map or .kmz file depicting all proposed non-hydraulic crossings.

For each identified location, the Director or designee:

- Examines any existing bridge inspection reports
- Reviews proposed typical section and requirements for traffic control
- Provides a recommendation for span configuration, bridge length, beam type, and out-to-out width

Within two weeks of receiving the request from STID, the assigned staff provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information). The response should include a structural recommendation, which typically consists of a bridge size and basic span arrangement. Additionally, potential hydraulic issues, such as longitudinal encroachments, navigation clearances, structures in potential floodplain, or grade changes, if applicable, are also noted in the response.

Related section: [OSD1](#)

Provide Hydraulic Recommendations for the Concept Report

A structure is considered a hydraulic crossing if the 50-year (2%) flow is 500 cubic feet per second (cfs) or higher. Culverts with flow below 500 cfs are the responsibility of Roadway Design. The Structural Design Lead handles bridges with no hydraulic crossing or bridges that have a flow below 500 cfs.

To initiate the process for a hydraulic recommendation, the State Hydraulic Engineer or assigned Hydraulic Regional Manager receives an email from the STID Project Manager that includes a project location map or .kmz file and list of crossings that meet the hydraulic criterion.

For each identified hydraulic crossing, the State Hydraulic Engineer or assigned Hydraulic Regional Manager uses the STID Comment Resolution Form and:

- Gathers data on the location from existing information sources, such as:
 - TDOT bridge inspection reports
 - Federal Emergency Management Agency (FEMA) Flood Insurance Studies (FIS)
 - Tennessee Valley Authority (TVA)
 - Army Corps of Engineers (USACE)
 - United States Coast Guard (USCG)
 - Others, as available
- Initiates basic coordination with USCG or TVA if waterway is navigable. Due to timelines at these federal agencies, this is often ongoing well into the design phase and generally begins by determining basic requirements during this planning stage.
- Reviews existing bridge reports for long-term issues, such as:
 - Scour
 - Stream migration
- Reviews for offset issues due to TVA or USACE reservoirs and provides offset elevations.



- Provides a recommendation for span configuration and bridge length and any necessary grade changes (see below).

Within two weeks of receiving the request from STID, the assigned staff provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information). The response should include a recommendation, which typically consists of a bridge size and basic span arrangement. Additionally, potential hydraulic issues, such as longitudinal encroachments, navigation clearances, structures in potential floodplain, or grade changes, if applicable, are also noted in the response.

Related section: [OSD1](#)

Attend Site Visit

A project site visit allows the internal divisions and external stakeholders to discuss the proposed improvement, challenges, and requests to consider as the Concept Report is drafted. While assigned structures staff provides comments for all projects, structures staff only attends a site visit for projects where there is a structure of concern or complex structural issues.

When receiving notification from the STID Project Manager (which includes the date of the visit and a packet of information), the assigned structures staff reviews the site visit packet to prepare for the site visit. Any discussion from the site visit becomes informative for the recommendations and to advance the design in Stage 1 and beyond.

Review the Concept Report

Within two weeks of receiving the draft Concept Report, the structural and hydraulics lead (as applicable) provides review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

1ST1 Complete Existing and No Structure Modeling

Overview

Complete existing and no structure modeling to inform the hydraulic design and grade selection.

References

- [*Design Procedures for Hydraulic Structures*](#)
- Tennessee Structures Memoranda* (offline)
- TDOT Quality Manual*

Deliverables

None.

Hydraulically Model Existing and No Structure Conditions

In accordance with the *Design Procedures for Hydraulic Structures*, the Hydraulic Lead references the final digital terrain model (DTM) developed by the Survey Lead and advances the following during this initial stage:

- Gather/confirm previously collected data ([see OST1](#) for related information) on the crossings from existing information sources, such as:
 - TDOT bridge inspection reports
 - Federal Emergency Management Agency (FEMA) Flood Insurance Studies (FIS)
 - Tennessee Valley Authority (TVA)
 - Army Corps of Engineers (USACE)
 - United States Coast Guard (USCG)
 - Others as available
- Determine flood flows through structure using USGS Stream Stats, USGS stream gage, any previous flood studies by FEMA or others, or more detailed methods.
- Create the existing structure hydraulic model in 1D or 2D modeling software.
- Create the No Bridge hydraulic model in 1D or 2D modeling software.

The assigned Hydraulic Supervisor provides a quality control (QC) review of the models, and once comments are resolved as detailed in the *TDOT Quality Manual*, the Hydraulic Lead uses this for future discussions regarding the hydraulic design and grade selection, updating the Project Manager, Roadway Design Lead, and Structural Design Lead as the model is developed.

2ST1 Complete Hydraulic Design

Overview

Choose the preliminary structure types/sizes and provide the project team with an initial assessment on the acceptability of the horizontal and vertical alignment provided in the initial line and grade .dgn (as part of the Line and Grade Package). Choose the most appropriate structure based on in-depth hydraulic modeling and provide final hydraulic design information to the project team and other stakeholders. **Note: proposed structures may change SIGNIFICANTLY from the initial assessment to the final hydraulic design completed in this stage.**

References

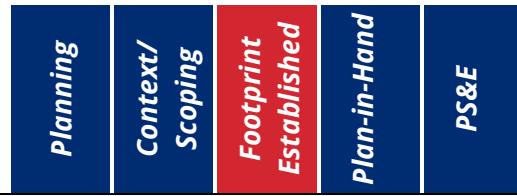
- [Design Procedures for Hydraulic Structures](#)
- Tennessee Structures Memoranda (offline)
- TDOT Quality Manual

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Initial Hydraulic Grade Assessment Letter	<ul style="list-style-type: none">▪ Verify Proposed Grade and Estimate Hydraulic Structure Sizes	Hydraulic Lead	Assigned Hydraulic Supervisor
Draft Hydraulic Layout (aka Sketch (only if bridge))	<ul style="list-style-type: none">▪ Develop Draft Hydraulic Layout		Assigned Hydraulic Supervisor CADD Technician
Sealed Hydraulic Design File	<ul style="list-style-type: none">▪ Hydraulically Model the Proposed Conditions, Evaluate Proposals, and Select Appropriate Structure		Hydraulic Regional Manager and/or State Hydraulic Engineer
Sealed Hydraulic Layout	<ul style="list-style-type: none">▪ Finalize Hydraulic Layout		Hydraulic Regional Manager and/or State Hydraulic Engineer CADD Technician
Final Hydraulic Letter	<ul style="list-style-type: none">▪ Finalize Hydraulic Design Information		Hydraulic Regional Manager and/or State Hydraulic Engineer

Verify Proposed Grade and Estimate Hydraulic Structure Sizes

Any structure with the 2% Annual Exceedance Probability (AEP) flow of 500 cfs or higher requires a detailed hydraulic study by the Hydraulic Design Section. Culverts with flow below 500 cfs are the responsibility of Roadway Design. The Structural Design Lead handles bridges with no hydraulic crossing or bridges that have a flow below 500 cfs. For each project with an identified hydraulic crossing, the Hydraulic Lead:



- Reviews the final Conceptual Layout in the Concept Report, final digital terrain model (DTM) from the Survey Lead, the line and grade .dgn in the Line and Grade Package, and any other relevant information received from the project team.
- References the existing structure hydraulic model and No Bridge hydraulic model developed in Stage 1 ([see 1ST1](#) for related information).
- Initiates/continues coordination with USCG or TVA if waterway is navigable or FEMA and the local community if the project is in a community participating in the National Flood Insurance Program (NFIP) and will need a conditional letter of map revision (CLOMR). Due to timelines at these federal agencies, this is often ongoing throughout the design phase.
- Reviews existing bridge reports for long-term issues, such as:
 - Scour
 - Stream migration
- Reviews for offset issues due to TVA or USACE reservoirs and provides offset elevations.
- Provides a preliminary estimate of span and bridge length and any necessary grade changes needed to accommodate the structure.
- Coordinates the hydraulic details (e.g., preliminary structural elevations) with the Roadway Design Lead as design is further developed in this Stage 2.

The Hydraulic Lead completes the Initial Hydraulic Grade Assessment Letter for review by the assigned Hydraulic Supervisor. Notes on the letter outline any potential hydraulic issues or required outside agency coordination, including:

- Longitudinal encroachments
- Navigation clearances
- Structures in potential FEMA floodplain
- Grade changes

Once complete, the Hydraulic Lead files a copy of the letter in the Hydraulic Design File (sealed later in this stage), which is uploaded to the project folder upon project completion. The Hydraulic Lead sends the letter to the Roadway Design Lead, Structural Design Lead, Project Manager, and other relevant project team members via email.

Develop Draft Hydraulic Layout

Prior to finalizing the Initial Hydraulic Grade Assessment Letter and for each identified bridge crossing, the Hydraulic Lead:

- Completes as much of the CADD Request Form as possible by referencing the:
 - Estimated bridge length and span arrangement
 - Final Conceptual Layout in the Concept Report
 - The line and grade .dgn (in coordination with the Roadway Design Lead)
 - Final digital terrain model (DTM) from the Survey Lead

- Any other relevant information received from the project team
- Submits the form via email to the assigned CADD supervisor responsible for the region.
- Reviews the returned Draft Hydraulic Layout for accuracy.

Once the CADD drawings are returned and reviewed, the drawings are attached to the project's Initial Hydraulic Grade Assessment Letter and sent to the Roadway Design Lead, Structural Design Lead, and other relevant project team members.

The Draft Hydraulic Layout is considered a draft at this point and is subject to change until the final/sealed Hydraulic Layout is completed.

Related section: [1RD1](#)

Hydraulically Model Proposed Conditions, Evaluate Proposals, and Select Appropriate Structure

In accordance with the *Design Procedures for Hydraulic Structures*, the Hydraulic Lead references the final digital terrain model (DTM) from the Survey Lead, the line and grade .dgn in the Line and Grade Package from the Roadway Design Lead, and the existing structure hydraulic model and No Bridge hydraulic model developed in Stage 1 (see 1ST1 for related information), all to advance the following for each hydraulic crossing location:

- Create proposed hydraulic alternatives in 1D or 2D modeling software.
- Calculate ultimate scour for selected structure (N/A for 4-sided box culverts or streams with bedrock channels or bedrock very near the stream bed).
- Design deck drains if selected structure is a bridge (N/A for all culverts).
- Continue coordination with USCG or TVA if waterway is navigable or FEMA and the local community if the project is in a community participating in the National Flood Insurance Program (NFIP) and will need a CLOMR.
- Continue coordination with TVA or USACE regarding reservoir and offset requirements.
- Compile Hydraulic Design File consisting of all project correspondence, including:
 - Final Hydraulic Letter and Layout
 - Maps
 - Pictures
 - Summary
 - Analysis of the hydraulic crossings on the project

Finalize Hydraulic Layout

Prior to finalizing the Final Hydraulic Letter and for each identified bridge crossing, the Hydraulic Lead:



- Completes a CADD Request Form using the information from the selected structure, including scour and deck drains to update/replace the Draft Hydraulic Layout with the Hydraulic Layout.
- Submits the form via email to the assigned CADD supervisor responsible for the region.
- Reviews and revises the Hydraulic Layout received from the assigned CADD technician as needed.
- Coordinates the hydraulic details (e.g., preliminary structural elevations) with the Roadway Design Lead as the Functional Design Plans are being developed.

Once the CADD drawings are returned, reviewed, and sealed (by the State Hydraulic Engineer or Hydraulic Regional Manager, depending on the level of project complexity), the Hydraulic Lead attaches the Final Hydraulic Layout to the project's Final Hydraulic Letter.

Finalize Hydraulic Design Information

For each project with an identified hydraulic crossing, the Hydraulic Lead provides the Roadway Design Lead, Structural Design Lead, and other project team members a structure type with a hydraulic opening sufficient to comply with TDOT policy and applicable federal and state regulations.

To complete this task, the Hydraulic Lead:

- Writes the Final Hydraulic Letter, providing the relevant hydraulic information for the selected hydraulic crossings.
- Submits the letter to the State Hydraulic Engineer for review and signature (if needed).
- Resolves any comments and signs the letter.

Notes on the Final Hydraulic Letter outline any potential hydraulic issues or continued need for outside agency coordination.

The Hydraulic Lead completes the Hydraulic Design File to include the Final Hydraulic Letter and Final Hydraulic Layout, which is reviewed/QC'd and sealed by the State Hydraulic Engineer or Hydraulic Regional Manager (depending on the level of project complexity) and then uploaded to the project folder. The Hydraulic Lead sends notification of this upload to the Project Manager, Roadway Design Lead, Structural Design Lead, and other relevant project team members via email.

While this activity completes the project's hydraulic design, ongoing agency coordination may still be required, including:

- Obtaining a Coast Guard Permit
- Coordinating FEMA issues

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- Coordinating offset requirements

The Hydraulic Lead continues to support the project team, including the Roadway Design Lead, Structural Design Lead, and other project team members, as necessary, throughout the remainder of Stages 3 and 4.

2ST2 Develop Preliminary Bridge Plans

Overview

Review all projects with proposed non-hydraulics structures/crossings to evaluate clearances of the assumed structures for the proposed geometry. Develop preliminary bridge layout(s) for inclusion with the Functional Design Plans.

References

- American Association of State Highway and Transportation Officials (AASHTO) LRFD Bridge Design Specifications
- AASHTO Guide Specifications for LRFD Seismic Bridge Design
- Tennessee Structures Memoranda (offline)
- [TDOT Structural Design Guidelines](#)
- [TDOT Geotechnical Guidelines](#)
- TDOT Quality Manual

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Grade Approval Letter and Draft Bridge Layout	<ul style="list-style-type: none">▪ Review Proposed Grade and Alignment for Non-Hydraulic Crossings	Structural Design Lead	
Bridge Preliminary Layouts	<ul style="list-style-type: none">▪ Develop Preliminary Bridge Layouts		
Structures Foundation Request	<ul style="list-style-type: none">▪ Coordinate Geotechnical Analysis for Bridges		Lead Geotechnical Engineer/Geologist

Review Proposed Grade and Alignment for Non-Hydraulic Crossings

This task includes an evaluation and determination of preliminary structure types/sizes based on the Structural Design Lead's initial review/assessment of the horizontal and vertical alignment provided in the line and grade .dgn (as part of the Line and Grade Package).

For all identified non-hydraulic crossings, the Structural Design Lead:

- Reviews the proposed alignment, profile, and typical section in the initial line and grade .dgn.
- Confirms (based on the initial recommendations provided in the Concept Report) and/or determines appropriate structure type and span arrangement for each crossing.
- Calculates vertical and horizontal clearances for each assumed structure, evaluating whether the proposed line and grade are acceptable.

- Develops draft layouts for each crossing if the line and grade are acceptable. These layouts should include basic plan and elevation views of the proposed structures but will not be as detailed as a full Preliminary Bridge Layout(s).
- Coordinates a QC check of the layouts and addresses all comments received as detailed in the *TDOT Quality Manual*.

The Structural Design Lead compiles the results of the review in a letter submitted to the Roadway Design Lead. The letter includes:

- Proposed geometry of the assumed structures, including structure type, span arrangement, and skew
- Stationing (e.g., beginning and ending stations of proposed bridge or the center station of the bridge)
- Results of the clearance check and how much additional clearance is required if the proposed grade is deemed unacceptable

If the Structural Design Lead determines the proposed grade is acceptable, the draft bridge layouts are attached to the letter and distributed to the Project Manager, Roadway Design Lead, and other relevant project team members via email.

Related section: [1RD1](#)

Develop Preliminary Bridge Layouts

The Preliminary Bridge Layouts represent the initial structural design elements that are incorporated into the Functional Design Plans. Throughout this stage, the Structural Design Lead coordinates design development directly with the Roadway Design Lead, Utility Coordinator, and Hydraulics Lead (as applicable), with updated preliminary layouts/CADD files linked or provided regularly.

To prepare final preliminary bridge layouts, the Structural Design Lead:

- Reviews the Final Hydraulic Layout or Draft Preliminary Layout to ensure all geometry matches the latest roadway plans and adjusts the proposed structure as necessary.
- Develops a typical cross section using beam type recommendations from the Hydraulics Designer or assumed beam type from the grade approval for non-hydraulic crossings.
- Coordinates the design of deck drains with the Hydraulic Lead for all non-hydraulic structures.
- Updates notes and project information.
- Develops preliminary/conservative bridge (and any known wall) estimates based on square footage and preliminary design assumptions.

- Coordinates a QC review of the layouts and addresses all comments received as detailed in the *TDOT Quality Manual*.
- Submits the preliminary bridge layouts to the Structures Division CE Manager for approval (for consultant-led design).

Once approved, the Structural Design Lead compiles and distributes the final Bridge Preliminary Layouts to the Roadway Design Lead, Project Manager, and other project team members, as appropriate, for inclusion with the Functional Design Plans.

Coordinate Geotechnical Analysis for Bridges

It is critical to understand subsurface characteristics for all bridge foundations proposed for a project. Integral to developing the associated foundation reports, the Structural Design Lead, in coordination with the Lead Geotechnical Engineer and the Geotechnical Work Plan ([see 1GT1](#) for related information), establishes the boring locations via a request letter and MicroStation files of the proposed bridge layouts.

To prepare the *Foundation Data Sheets*, the Structural Design Lead:

- Removes unnecessary details from the Preliminary Bridge Layouts, leaving the plan and elevation views.
- Denotes investigation points at the ends of each substructure and prepares a table of points, which should include Station, Offset and Coordinates for each point.
- Includes notes describing proposed loading and required geotechnical information.
- Defines nearby benchmarks for the surveyors.

The Structures Foundation Request letter and layouts are compiled and submitted to the Lead Geotechnical Engineer/ Geotechnical Engineering Section at TDOT.Geotech@tn.gov. The Structural Design Lead also copies the Regional Survey Office and Survey Lead on the submittal for the purpose of staking the points in the field ([see 2SY1](#) for related information).

Related section: [2GT2](#)

3ST1 Complete Structural Design

Overview

Finalize the structural design (walls and bridge plans) for inclusion with the Plan-in-Hand Plans.

References

- AASHTO LRFD Bridge Design Specifications*
- AASHTO Guide Specifications for LRFD Seismic Bridge Design*
- Tennessee Structures Memoranda* (offline)
- TDOT Quality Manual*
- [*TDOT Structural Design Guidelines*](#)
- [*TDOT Roadway Design Guidelines*](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Draft Wall Plans and Wall Estimate File	<ul style="list-style-type: none">▪ <i>Complete Retaining/Noise Wall Sheets</i>		
Draft Bridge Plans and Bridge Estimate File	<ul style="list-style-type: none">▪ <i>Complete Design and Detail Bridge Plans and Estimate</i>	Structural Design Lead	Structures Division CE Manager

Complete Retaining/Noise Wall Sheets

Retaining walls are categorized according to *Roadway Design Guidelines*, Chapter 2, Section 9.

Category One walls are deemed to have constructability issues and are completely designed and detailed as part of the final Construction Documents. For Category One retaining walls, the Structural Design Lead:

- Designs the retaining wall, providing regular updates to the project team, in accordance with the *Geotechnical Design Notes and Requirements* shown on the wall preliminary plans, the current edition of *AASHTO Bridge Design Specifications*, and *TDOT Structural Design Guidelines*.
- Details or coordinates (for internal-led design) the final wall drawings, which includes Structures Division drawing numbers obtained from the Structures Division CE Manager.
- Coordinates a QC review of the wall plans and resolves comments received as detailed in the *TDOT Quality Manual*.
- Submits final plans, quantities, and calculations to the Structures Division CE Manager for review.

Category Two walls follow the conceptual layout model where final design is the responsibility of the contractor. For Category Two walls, the Structural Design Lead reviews the wall

preliminary plans, adjusting the acceptable wall types, aesthetic finishes, or other details as needed.

Noise walls follow a similar path as Category One retaining walls, being completely designed, and fully detailed for the final Construction Documents. For noise walls, the Structural Design Lead:

- Designs the wall, providing regular updates to the project team, in accordance with the current edition of *AASHTO Bridge Design Specifications* and *TDOT Structural Design Guidelines*. This could include confirming aesthetic requirements of the noise wall with the Noise Lead.
- Details or coordinates (for internal-led design) the final wall drawings, which includes Structures Division drawing numbers obtained from the Structures Division CE Manager.
- Coordinates a QC review of the wall plans and resolves comments as detailed in the *TDOT Quality Manual*.
- Submits final plans, quantities, and calculations to Structures Division CE Manager for review.

Once approved, the Structural Design Lead compiles all wall drawings into a final set with 'R' series sheet numbers as detailed in *Roadway Design Guidelines*, Chapter 2, Section 9. The Structural Design Lead submits the plans to the Roadway Design Lead and other project team members, as appropriate, for inclusion with the Plan-in-Hand Plans prior to the Plan-in-Hand Field Review ([see 3RD1](#) for related information).

Complete Design and Detail Bridge Plans and Estimate

For the bridge plans, the Structural Design Lead:

- Designs the bridge, providing regular updates to the project team, in accordance with the current edition of *AASHTO Bridge Design Specifications*, *AASHTO Guide Specifications for Seismic Design of Bridges*, and *TDOT Structural Design Guidelines*.
- Compiles design calculation notebook in .pdf format.
- Prepares or coordinates (for internal-led design) the structures special provisions and detailed bridge plans in accordance with TDOT structures detailing standards.
- Coordinates a QC review of the plans and resolves comments received as detailed in the *TDOT Quality Manual*.
- Submits calculation notebook and plans sheets to Structures Division CE Manager for review.
- Prepares quantity cost estimate in the standard TDOT Excel format.

Once approved, the Structural Design Lead compiles and distributes the structure plans to the Roadway Design Lead and other project team members, as appropriate, for inclusion with the Plan-in-Hand Plans prior to the Plan-in-Hand Field Review ([see 3RD1](#) for related information).

4ST1 Finalize Structural Plans

Overview

Compile the final Structural Design Documents (walls and bridge plans), specifications, and estimate with any other required documentation to assist the Roadway Design Lead (as applicable for the project type) in compiling the Construction Documents needed to advertise and let the project. For structure-led projects, the Structural Design Lead finalizes the Construction Documents for turn in following the process described in this section and 4RD1.

References

- AASHTO LRFD Bridge Design Specifications*
- AASHTO Guide Specifications for LRFD Seismic Bridge Design*
- Tennessee Structures Memoranda* (offline)
- [*TDOT Structural Design Guidelines*](#)
- TDOT Quality Manual*

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Final Wall Plans and Estimate File	<ul style="list-style-type: none">▪ <i>Finalize Retaining/Noise Wall Plans</i>	Structural Design Lead	Structures Division CE Manager
Final Bridge Plans and Estimate File	<ul style="list-style-type: none">▪ <i>Finalize Bridge Plans</i>		

Finalize Retaining/Noise Wall Plans

To prepare retaining wall and noise wall plans for the PS&E Review Meeting, the Structural Design Lead:

- Reviews comments from the Plan-in-Hand Field Review and addresses necessary design revisions and plan updates.
- Coordinates a QC review of the plans and resolves comments received as detailed in the *TDOT Quality Manual*.
- Prepares the plans for the PS&E Review Meeting, submitting these plans to the Roadway Design Lead for inclusion with the other design plans for review.
- Attends the PS&E Review Meeting.
- Resolves last comments from the meeting.

Once reviewed and comments are resolved, the Structural Design Lead then:

- Submits final plans and specifications to the Structures Division CE Manager for final review.
- Once reviewed and comments are resolved, seals the final Category One retaining wall plans and noise wall plans in accordance with TDOT standard procedures.



- Updates the wall cost estimate file using the standard TDOT Excel spreadsheet.
- Coordinates with the project team (specifically the Roadway Design Lead and Project Manager) on any changes that may impact other design elements.

Once complete, the TDOT Structures Division CE Manager uploads the Wall Construction Plans Set and Estimate/Documents to the project folder and sends a notification of the plans turn-in to the Project Manager, Roadway Design Lead, and other identified discipline leads (as applicable for the project type) using the appropriate distribution list.

Finalize Bridge Plans

To prepare bridge plans for the PS&E Review Meeting, the Structural Design Lead:

- Reviews comments from the Plan-in-Hand Field Review and addresses necessary design revisions and plans updates.
- Coordinates a QC review of the plans and resolves comments received as detailed in the *TDOT Quality Manual*.
- Prepares the plans for the PS&E Review Meeting, submitting these plans to the Roadway Design Lead for inclusion with the other design plans for review (as applicable for the project type).
- Attends the PS&E Review Meeting.
- Resolves last comments from the meeting.

Once reviewed and comments are resolved, the Structural Design Lead then:

- Submits final plans and specifications to the Structures Division CE Manager for final review.
- Once reviewed and comments are resolved, seals the final bridge plans in accordance with TDOT standard procedures.
- Updates the bridge cost estimate file using the standard TDOT Excel spreadsheet.
- Coordinates with the project team (specifically the Roadway Design Lead and Project Manager) on any changes that may impact other design elements.

Once complete, the Structures Division CE Manager uploads the Bridge Construction Plans Set and Estimate/Documents to the project folder and sends a notification of the plans turn-in to the Project Manager, Roadway Design Lead, and other identified discipline leads (as applicable for the project type) using the appropriate distribution list.

OSY1 Provide Preliminary Survey Data

Overview

Provide preliminary/limited survey data as requested by Strategic Transportation Investments Division (STID) for only projects that may lack terrain data, require involved underground utility locations, and/or are in very geographically constrained areas without statewide aerial LiDAR.

References

- [TDOT Survey Standards Manual](#)
- [TDOT OpenRoads Designer](#)
- [TDOT Roadway Design Documents](#)

Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
Project Control Document (Word)	<ul style="list-style-type: none">▪ Set Control Ground Survey	TDOT Survey Lead (Regional Survey Office only)
Microstation drawing (DGN), Geopak file (GPK), Terrain Model (TIN), ROW Acquisition Table (Excel)	<ul style="list-style-type: none">▪ Provide Preliminary Survey Data	Survey Lead
ORD File Types: Microstation drawing (DGN) and associated survey data files		
Property Packet (tax cards, deeds, property owner contact letters), roadway plans, One-Call tickets	<ul style="list-style-type: none">▪ Provide Preliminary Survey Data	Survey Lead (Consultant only)

Set Control Ground Survey

It is critical to establish project control along the proposed corridor to provide horizontal and vertical positioning for ground survey. To do this, the TDOT Survey Lead (TDOT Regional Survey Office only):

- Places semi-permanent monuments in accordance with the *TDOT Survey Standards Manual* and conducts “to-reach” and referencing calculations, static GPS occupations, distance checks, and leveling.
- Post-processes static data in accordance with the *TDOT Standards Survey Manual* to compute coordinates, tying horizontally to the Tennessee GNSS Reference Network (CORS) and vertically to North American Vertical Datum of 1988 (NAVD 88), and computes the Datum Adjustment (DA) factor and determines the appropriate Geoid model to utilize.
- Produces Project Control Document containing project information, location map, and data sheets.

The Survey Lead files the Project Control Document on the local server and, if needed, the Regional Survey Manager distributes to the consultant survey team during scoping of ground survey. Requests for project control are sent to the Regional Survey Manager.

Provide Preliminary Survey Data

As coordinated with the Strategic Transportation Investments Division (STID), the Survey Lead (either from the Regional Survey Office or a consultant) conducts initial ground survey in accordance with the *TDOT Survey Standards Manual*. This work may include, in a limited capacity and in coordination with STID Project Manager:

- A survey centerline
- Existing right-of-way and/or adjacent properties.
 - Property owner contact letters will need to be sent at least one week prior to entering private property.
 - Property owner contact letter templates can be found on the TDOT website under *Roadway Design Documents*.
- Existing topography, including location of underground and/or above ground utilities
- Profiles of survey centerlines
- Drainage information
- Digital Terrain Model (DTM)
- Limited Subsurface Utility Engineering (SUE) data (likely Level D at this stage)
- Other survey data, including:
 - If survey is to be delivered in Open Roads Design (ORD), provide the Microstation .dgn and associated survey data.

The Survey Lead submits survey files to the Regional Survey Manager for a QC review via email or file sharing website, utilizing the quality processes detailed in the *TDOT Quality Manual*. The Survey Lead resolves any comments, and the Regional Survey Manager then submits or approves submittal of the survey data to the STID Project Manager via email or file share link (depending on file size). Filenames are formatted in accordance with the *TDOT Survey Standards Manual*.

If survey is completed by a consultant, the Survey Lead also electronically submits a property packet, the conceptual layout used to establish existing right-of-way, One-Call tickets for utility location (if applicable), and any other pertinent information to the Regional Survey Manager for the project file.

Related Section: [OSD1](#)

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Determine Time to Complete the Aerial Survey

Considering the benefit of completing the aerial survey during the winter months for most projects, the TDOT Survey Lead (Regional Survey Office only) schedules the aerial survey to be completed either in this Stage 0 (as part of developing the conceptual layout/preliminary alignment) or early in Stage 1 as part of 1SY1. “Conduct Design-Level Survey” ([1SY1](#)) details the process to set ground control and complete an aerial survey.

1SY1 Conduct Design-Level Survey

Overview

Provide survey data that covers the project limits, as requested by the Roadway Design Lead or other technical leads to aid in the development of the Line and Grade Package and Functional Design Plans.

References

- [TDOT Survey Standards Manual](#)
- [TDOT OpenRoads Designer](#)
- [TDOT Roadway Design Documents](#)
- [TDOT Quality Manual](#)

Deliverables

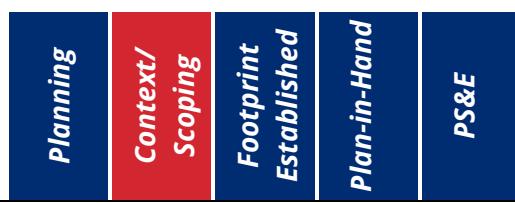
Deliverable	Task	Responsible Party
		Activity Leader
Mapping product, including the topographical survey and digital terrain model (DTM)	<ul style="list-style-type: none">▪ Prepare the Ground Control for Aerial Survey▪ Complete the Aerial Survey	Aerial Survey Lead
Project Control Document (Word)	<ul style="list-style-type: none">▪ Prepare the Ground Control for Aerial Survey▪ Set Control Ground Survey	TDOT Survey Lead (Regional Survey Office only)
Microstation drawing (DGN), Geopak file (GPK), Terrain Model (TIN), ROW Acquisition Table (Excel)	<ul style="list-style-type: none">▪ Conduct Survey Public Involvement and Ground Survey	Survey Lead
ORD File Types: Microstation drawing (DGN) and associated survey data files	<ul style="list-style-type: none">▪ Conduct Survey Public Involvement and Ground Survey	Survey Lead (Consultant only)
Property packet (tax cards, deeds, property owner contact letters), roadway plans, One-Call tickets	<ul style="list-style-type: none">▪ Conduct Survey Public Involvement and Ground Survey	Survey Lead (Consultant only)

Prepare the Ground Control for Aerial Survey

Whether completed as part of 0SY1 or 1SY1, it is critical to establish pre-flight targets and horizontal and vertical control for accurate aerial survey of a proposed corridor, whether flown by a fixed-wing aircraft or unmanned aerial vehicle.

To do this, the Aerial Survey Lead develops an aerial target layout that is provided to the Regional Survey Manager and Aerial Photographer. Once received, the Regional Survey Lead (or Consultant):

- Places aerial targets in accordance with the *TDOT Standards Survey Manual* and conducts GPS occupations.



- If static occupation is used, post-processes static data in accordance with the *TDOT Survey Standards Manual* to compute coordinates, tying horizontally to the Tennessee GNSS Reference Network (CORS) and vertically to North American Vertical Datum of 1988 (NAVD 88) and utilizes the appropriate Geoid model.
- Submits coordinate data and any other requested information to Aerial Survey Manager by placing the data on the Aerial Survey Server.

Complete the Aerial Survey

Once control is set and layout established, the Aerial Photographer completes the aerial mission (either via fixed-wing aircraft or unmanned aerial vehicle) to take aerial photographic images of the project corridor.

In accordance with the *TDOT Survey Standards Manual*, the Aerial Photographer:

- Creates a Flight and Ground Control Survey Plan that shows the proposed flight lines for the project with specific flying heights, forward overlap, and side overlap that optimally facilitates aero triangulation to ensure horizontal and vertical mapping accuracies are achieved.
- Obtains/verifies ground control survey.
- Upon notification of completion of the panels, coordinates with the Aeronautics Division to fly the project.
- Completes aero triangulation using the ground surveyed panel coordinates to establish accurate exterior orientation parameters for each photograph.
- After the project has been flown, post-processes both the aerial photography and the GNSS-IMU data that was collected during the flight.

Once the aerial photography is obtained and all data post-processed, the Project Manager either uses in-house TDOT staff or a consultant to complete the mapping product, which includes the topographical survey and digital terrain model (DTM). The planimetric mapping and ground elevation data are also compiled alongside the mapping.

The Aerial Photographer or consultant submits the product to the TDOT Photogrammetrist for a quality control (QC) review as detailed in the *TDOT Quality Manual*. The Aerial Photographer or consultant resolves any comments, and then submits the final products to the Regional Survey Lead via file share link (depending on file size) for incorporation into project's survey files. Filenames are formatted in accordance with the *TDOT Survey Standards Manual*. The mapping product may also be referenced in the state mapping database.

Set Control Ground Survey

To establish project control along the project corridor to provide horizontal and vertical positioning for ground survey, the TDOT Survey Lead (TDOT Regional Survey Office only):

- Places semi-permanent monuments in accordance with the *TDOT Survey Standards Manual* and conducts “to-reach” and referencing calculations, static GPS occupations, distance checks, and leveling.
- Post-processes static data in accordance with the *TDOT Survey Standards Manual* to compute coordinates, tying horizontally to the Tennessee GNSS Reference Network (CORS) and vertically to North American Vertical Datum of 1988 (NAVD 88), and computes the Datum Adjustment (DA) factor and determines the appropriate Geoid model to utilize.
- Produces Project Control Document containing project information, location map, and data sheets.

The Survey Lead files the Project Control Document on the local server and, if needed, the Regional Survey Manager distributes to the consultant survey team during scoping of ground survey.

Conduct Survey Public Involvement and Ground Survey

To inform the Line and Grade Package (namely the line and grade .dgn) and other discipline's efforts in Stage 2, the Survey Lead (either from the Regional Survey Office or a consultant) conducts an initial ground survey in accordance with the *TDOT Survey Standards Manual*. This work typically includes:

- A survey preliminary centerline
 - Established preliminary centerlines may be sent to the Roadway Design Lead for review before finalizing survey files. Conversely, the Roadway Design Lead may establish the alignment and centerline using the preliminary survey files.
 - This is coordinated through the Regional Survey Manager.
- Existing right-of-way and/or adjacent properties
 - Property owner contact letters are sent out at least one week prior to entering private property.
 - Property owner contact letter templates can be found on the TDOT website under Roadway Design Documents.
- Existing topography, including location of underground and/or above ground utilities
- Profiles of survey centerlines
- Drainage information
- Digital Terrain Model (DTM)
- Subsurface Utility Engineering (SUE) data
- Other survey data, including:



- Environmental features identified in the Environmental Boundaries Reports and other requested survey data for the permit assessment plans/sketches ([see 2EN3](#) and [2RD1](#) for related information), such as wetland locations, stream and ephemeral crossings, ordinary high-water mark (OHWM), or top of bank. Coordinate with the NEPA Lead and Environmental Permit Lead on related requests.
- If survey is to be delivered in Open Roads Design (ORD), provide the Microstation .dgn and associated survey data.

The Survey Lead submits survey files to the Regional Survey Manager for a QC review via email or file sharing website, utilizing the quality processes detailed in the *TDOT Quality Manual*. The Survey Lead resolves any comments, and the Regional Survey Manager then submits or approves submittal of the survey files to the Roadway Design Lead via email or file share link (depending on file size). Filenames are formatted in accordance with the *TDOT Survey Standards Manual*.

If survey is completed by a consultant, the Survey Lead also submits a property packet used to establish the existing right-of-way, One-Call tickets for utility location, and any other pertinent information via email or file sharing website to the Regional Survey Manager for the project file.

If the project requires additional survey, survey updates, or alignment updates at any Stage in the process, the Roadway Design Lead or other technical lead submits a detailed request to the Regional Survey Manager or Consultant Project Lead.

Related section: [1RD1](#)

Incorporate SUE Request into Survey

Accurate SUE data often minimizes utility conflicts and avoids unnecessary costs and delays when advancing design and relocating utilities.

As part of the initial project survey efforts, the Survey Lead (either from the Regional Survey Office or a consultant) may incorporate SUE information to aid in early utility depiction as follows:

- Information obtained by surveying and then plotting visible above-ground features (SUE Quality Level C) and by using engineering judgment to correlate/validate the information gathered from a SUE Quality Level D review.
- This effort may be completed in the planning stage or Stage 1 to provide a general understanding of utility locations and inform early design development for the Roadway Design Lead and Utility Coordinator (among other team members as needed).

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- The Survey Lead contacts Tennessee One Call to obtain utility markings to be located and incorporated into the ground survey. If a utility company does not mark the utility, the Survey Lead contacts that utility to obtain GIS mapping of the utility.
- Data from this survey is typically incorporated into the existing topography deliverable for the stage.

As part of the survey files, the Survey Lead submits the information to the Regional Survey Manager for a QC review via email or file sharing website, utilizing the quality processes detailed in the *TDOT Quality Manual*. The Survey Lead resolves any comments and submits the data and files to the Roadway Design Lead and Utility Coordinator via email or file share link (depending on file size). Filenames are formatted in accordance with the *TDOT Survey Standards Manual*.

2SY1 Complete SUE and Requested Staking

Overview

Complete requested subsurface utility engineering (SUE) and staking for proposed sounding holes and right-of-way to support the respective technical discipline's work.

References

- [TDOT Survey Standards Manual](#)
- [TDOT OpenRoads Designer](#)
- [TDOT Roadway Design Documents](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Supplemental DGN and Geopak Input File or Update to the Master Survey Files	▪ <i>Incorporate SUE Level A and B Request into Survey</i>	Survey Lead	
ORD File Types: Microstation drawing (DGN) and associated survey data files			
Pothole Data Sheets from SUE Level A Survey			
Updated Layout Sheet with Ground Elevations (as provided) or Station Offset, Northern Easting, ground elevations			Structural Design Lead, Lead Geotechnical Engineer, or Roadway Design Lead
Notification for Completing ROW Staking	▪ <i>Stake ROW</i>		Region ROW Staff

Incorporate SUE Level A and B Request into Survey

Accurate subsurface utility engineering (SUE) data often minimizes utility conflicts and avoids unnecessary costs and delays when advancing design and relocating utilities. The Roadway Design Lead, Utility Coordinator, Project Manager, or other team members (as needed) may identify SUE Level B and Level A needs to aid in utility deconfliction and design plan development ([see 2UT1](#) and [2RD1](#) for related information).

While the request is project specific and survey scope may vary per project, the Survey Lead may complete two more in-depth quality level surveys for utility depiction (as coordinated with the project team and scheduled strategically based on when information is needed):

- SUE Quality Level B: Information obtained via surface geophysical methods (marking its horizontal position on the ground) determines presence and designates approximate horizontal position of subsurface utility.

- This effort is best completed when gathering initial survey data or after the line and grade .dgn has identified specific areas of impact, likely early in Stage 2 as the other disciplines are developing their respective design.
- Data from this survey is included in a supplemental MicroStation .dgn file and Geopak file or update to the Master Survey Files.
- SUE Quality Level A: Obtaining precise horizontal and vertical location of a utility by physical exposure/potholing and subsequent measurement of the subsurface utility, usually at a specific point.
- This effort is best completed/coordinated among the Roadway Design Lead, Structural Design Lead, and/or Utility Coordinator to strategically identify utility conflicts of concern during Stage 2 (when developing the Functional Design Plans) but can also advance early in Stage 3 (right after the Functional Design Plan Field Review).
- Data from this survey is included in a supplemental MicroStation .dgn file and Geopak file or update to the Master Survey Files.
- Specific pothole location data is presented on individual data sheets that typically include type, size, and depth to utility.

The Survey Lead submits the information to the Regional Survey Manager for a QC review via email or file sharing website, utilizing the quality processes detailed in the *TDOT Quality Manual*. The Survey Lead resolves any comments and submits the data and files to the Project Manager, Roadway Design Lead, and Utility Coordinator via email or file share link (depending on file size). Filenames are formatted in accordance with the *TDOT Survey Standards Manual*.

Related sections: [2GT2](#), [2UT1](#), [2RD1](#)

Stake Sounding Holes

Integral to developing the associated foundation reports, the Survey Lead provides staking of locations identified by the Structural Design Lead or Lead Geotechnical Engineer/Geologist on the proposed Layout Sheet. Completed in accordance with the *TDOT Survey Standards Manual*, the Survey Lead references the Layout Sheet's desired drilling site and sets the field markings to complete the following staking (including general staking parameters listed as follows):

- Proposed bridge foundations with existing elevations along key points along the abutment and pier(s)\bent(s). The typical boring layout would include one to three borings per substructure.
- Retaining wall locations at one boring per 50 to 100 feet of retaining wall length.
- Noise wall locations at one boring for each proposed noise wall post.
- High-mast lighting locations.
- The entire alignment.

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Once complete, the Survey Lead updates the Layout Sheet to include assigned ground elevations, which is maintained in the project file. The Survey Lead also notifies the HQ Geotechnical Manager and the requestor that the staking is complete.

Related sections: [2GT2](#), [2RD1](#), [2ST2](#)

Stake ROW

As typically requested by a Region's Right-of-Way (ROW) Office after funding is approved and title reports are completed, the Survey Lead stakes the proposed right-of-way for use by the appraisers and buyers to field-locate parcel impacts, each prioritized and scheduled as determined during the ROW Strategy Meetings ([see 2PM3](#) for related information).

The Survey Lead completes the field staking and marks the stakes with a description, station, and offset designations in accordance with the *TDOT Survey Standards Manual*.

Once complete, the Survey Lead emails the Regional ROW Manager and ROW Appraiser 4 that the ROW staking is complete.

Related section: [3RW1](#), [2PM3](#)

0TO1 Conduct Initial Traffic Ops/TSMO Review

Overview

Review the existing conditions and potential Transportation Systems Management and Operations (TSMO) strategies to develop recommendations to meet traffic operational needs. A determination of all affected corridors is crucial to the scoping, design, and implementation of signal, lighting, intelligent transportation systems (ITS), and other TSMO-related items.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT ITS Project Development Guidelines](#)
- [Statewide and Regional ITS Architectures](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [TDOT Traffic Design Manual](#)
- [Federal Highway Administration \(FHWA\) Lighting Handbook](#)
- [FHWA Standard Highway Signs](#)
- [FHWA 2012 Supplement to the 2004 Standard Highway Signs](#)
- [Tennessee Supplement to the Standard Highway Signs Book](#)
- American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
- [TDOT Standard Traffic Operations Drawings](#)
- [ITS Technical Special Provisions TSP725](#)
- [Highway System Access Manual](#)
- [TSMO/Traffic Operations Program Plan \(Future Policy Statement\)](#)
- [Future AASHTO Transportation Operations Manual](#)
- [STID Comment Resolution Form](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
TSMO Alignment/Operations Review	▪ <i>TSMO Alignment & Operations Review</i>	TSMO Coordinator	Cross discipline team as listed below
Site Review Comments using the STID Comment Resolution Form			
ITS Project Identification Form			
Concept Report Comments using STID Comment Resolution Form	▪ <i>Review Concept Report</i>		

The TDOT Traffic Operations Division works with the Regions and Headquarters to integrate Transportation Systems Management and Operations (TSMO) strategies at both the State and

local level. TSMO describes a cross-discipline, collaborative, and integrated program of strategies and applications that leverage technologies and operational strategies to support the safety, efficiency, reliability, and resiliency of the transportation system. It ranges from fundamental programs like incident management to the more cutting-edge use of connected vehicle technologies.

There are times when operations elements (like ITS, lighting, and traffic signals) and operations strategies (like access & incident management) are overlooked during the concept/planning stage. When these elements are identified in later stages, it causes delays, inadequate funding, and other obstacles to advancing the integration of TSMO.

TSMO Alignment & Operations Review

The TSMO Alignment and Operations Review encourages an early assessment of the operations needs of a project during the concept/planning phase, so that the scope, schedule, and budget of all project elements are accounted for to ensure effective project delivery. This review includes a cross-discipline team from TDOT, including Regional Ops, HQ Traffic Ops, HQ Engineering Ops, Planning, Multimodal, Freight & Logistics, STID, TMC Operations, IT Division, and the Occupational Health & Safety Division. Additionally, input is sought from local maintaining agency and “first responder” stakeholders.

Using the STID Comment Resolution Form, this review includes the completion of a checklist that covers the following key focus areas:

- Consideration for existing operational elements, i.e. Traffic Signals, Lighting, Communications, & Traffic Management Center Operations
- Review of potential planned operational elements
- Traffic & Safety review (i.e. Traffic Ops, pavement marking and signage, clear zone, incident management, and other)
- Multimodal & freight considerations
- Maintenance needs (existing and future maintenance needs, including lifecycle of specific deployments)
- Software development and supporting public outreach
- Local agency coordination considerations
- Assessment of maintenance of traffic activities to reduce the need for design revisions later in the project (a pre-traffic management plan [TMP] process). This assessment is foundational for the development of the TMP ([see 3TO1](#) for related information).

ITS, signals, and lighting systems are typically installed within TDOT-owned rights-of-way. Prior to preparing warrants, the assigned Lighting, Signal, and/or ITS Engineer(s) conduct an

evaluation of the existing systems and needs. The evaluation includes site investigation and inventory of existing:

- Signal equipment and signal systems
- Lighting equipment and lighting systems
- ITS equipment and ITS systems

The Lighting, Signal, and/or ITS Engineer(s) then:

- Compiles a list of all affected signal systems, lighting systems, and ITS. This list includes:
 - Any new systems being constructed by the project or any system being added to the existing systems.
 - Identification of party responsible for traffic operations along the corridor.
- Evaluates the need for signal, lighting, and ITS infrastructure within the project footprint.
- Completes the ITS Project Identification Form.
- Completes a preliminary cost estimate.

The TSMO Coordinator compiles a list of any relocated, upgraded, or new items being proposed for the project. The list is used for scoping to determine the number of traffic operation systems to be considered for the project and is further refined in [OTO2](#). The completed list is submitted to the STID Project Manager for inclusion in the Concept Report.

Within two weeks of receiving the request from STID, the TSMO Coordinator provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information).

Related section: [OSD1](#)

Attend Site Visit

A project site visit allows the internal divisions and external stakeholders to discuss the proposed improvement, challenges, and requests to consider as the Concept Report is drafted. While assigned Traffic Operations staff provides comments for all projects, staff only attends a site visit for projects where there are:

- Existing signal, lighting, and ITS infrastructure-related elements of concern
- Proposed need for signal, lighting, and ITS infrastructure in the footprint
- Anticipated complexity for maintenance of traffic activities
- Potential for new or cutting-edge technologies or approaches to traffic management, including ramp metering, hard shoulder running, managed lanes, or transit priority

When receiving notification from the STID Project Manager (which includes the date of the visit and a packet of information), the assigned staff is to review the site visit packet to prepare for

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the site visit. Any discussion from the site visit becomes informative for the recommendations and to advance the design in Stage 1 and beyond.

Review the Concept Report

The assigned Traffic Operations staff reviews the draft Concept Report to:

- Validate the traffic information and details in the Concept Report analysis for the base year (5 year) and design year (20 year) traffic projections.
- Confirm that the TSMO scope items and estimate are included in Concept Report.

Within two weeks of receiving the draft Concept Report, the Traffic Operation reviewer(s) provide review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

0TO2 Develop TSMO Scope Items

Overview

Prepare signal and lighting warrants early in the planning stage to validate the need for signals and lighting on the project. Prepare TSMO scope and budget for projects that have identified TSMO needs.

References

- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [TDOT ITS Project Development Guidelines](#)
- [Statewide and Regional ITS Architectures](#)
- [TDOT Traffic Design Manual](#)
- [Traffic Operation Memorandums, TOM 2202](#)
- [AASHTO Roadway Lighting Design Guide](#)
- [FHWA Lighting Handbook](#)
- [TDOT Standard Traffic Operations Drawings](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Signal Warrant (and Final Engineering Study)	▪ <i>Analyze Signal Warrants</i>	Signal Design Engineer	Signal Design Manager
Lighting Warrant	▪ <i>Analyze Lighting Warrants</i>	Lighting Design Engineer	Lighting Design Manager
TSMO & ITS Scope and Budget	▪ <i>Prepare TSMO & ITS Scope and Budget</i>	ITS/TSMO Design Engineer	ITS/TSMO Design Manager
SSEAF or SEAR	▪ <i>Complete SSEA Form or SEA Report</i>		

Analyze Signal Warrants

Earlier identification of signal warrants helps determine infrastructure impacts and costs associated with a project. If needed, the Signal Design Engineer updates the traffic signal warrant following the current MUTCD and TDOT *Traffic Design Manual*. This work includes:

- Collecting and analyzing traffic (and bike/ped) data
- Analyzing crash history
- Analyzing MUTCD signal warrants
- Preparing layout sketch
- Performing a quality control review of the engineering study and signal warrant
- Preparing final engineering study and warrant analysis

The Signal Design Engineer submits a final engineering study to the Signal Design Manager for approval. Once approved, the Signal Design Engineer provides the study and analysis to the STID Project Manager for inclusion in the Concept Report. The Signal Design Engineer uploads the documents to the project file.

Related section: [OSD1, OSD2](#)

Analyze Lighting Warrants

Lighting warrants help determine infrastructure impacts and costs associated with a project. The Lighting Design Engineer completes a lighting warrant following the current AASHTO *Roadway Lighting Design Guide* and FHWA *Lighting Handbook*. This includes:

- Reviewing the draft Conceptual Layout
- Analyzing the current traffic data, including bicyclist and pedestrian data if available
- Analyzing crash history
- Preparing a layout sketch
- Performing a quality control review of the Engineering Study and Lighting Warrant
- Preparing the Final Engineering Study and Warrant Analysis

The Lighting Design Engineer submits the Final Engineering Study to the Lighting Design Manager for approval. Once approved, the Lighting Design Engineer provides the study and analysis to the STID Project Manager for inclusion in the Concept Report. The Lighting Design Engineer uploads the documents to the project file.

Related section: [OSD1, OSD2](#)

Prepare TSMO & ITS Scope and Budget

Understanding the initial scope and budget for TSMO elements early, including ITS equipment, helps the team plan for the costs and input needed to implement the applicable TSMO elements for the corridor. To prepare these items, the ITS/TSMO Design Engineer:

- Reviews the draft Conceptual Layout.
- Coordinates with regional efforts and other statewide efforts, such as ITS deployment plan, statewide safety plans, statewide fiber build out plan, freight plan, etc. for opportunities to add TSMO elements to support advancing these collaborative efforts.
- Reviews the project area for existing ITS equipment and related components (e.g., conduit, pull boxes, vaults, electrical service, communication).
- Prepares layout sketch, as applicable for identified equipment.
- Prepares scope and budget for proposed ITS equipment and related components.

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The ITS/TSMO Design Engineer provides the scope and budget to the STID Project Manager for inclusion in the Concept Report. The ITS/TSMO Design Engineer uploads the documents to the project file.

Complete SSEA Form or SEA Report

Based on the level of project risk (low or high risk related to ITS implementation), the ITS/TSMO Design Engineer confirms that either a Simplified Systems Engineering Analysis Form (SSEA) for low risk ITS projects or a Systems Engineering Analysis Report (SEAR) for high-risk ITS projects is needed. The steps for ensuring ITS compliance and the process to complete either the report or form are detailed in Section 4 of the *TDOT ITS Project Development Guidelines*.

1TO1 Validate Analysis and Determine Significance

Overview

Validate the traffic analysis from the Concept Report and determine work zone significance and potential incident management applications related to the mitigation strategies considered in the Transportation Management Plan (TMP).

References

- [TDOT Traffic Design Manual](#)
- [TDOT ITS Project Development Guidelines](#)
- [Statewide and Regional ITS Architectures](#)
- [TDOT Standard Traffic Operations Drawings](#)
- [TDOT Highway System Access Manual](#)
- [TDOT Roadway Design Guidelines](#)
- [Highway Capacity Manual](#)
- [Work Zone Significance Determination Form](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Traffic Operations Review Memorandum	<ul style="list-style-type: none">▪ <i>Validate Traffic Analysis</i>	Traffic Operations Engineer	Roadway Design Lead, Regional Traffic Engineer
Work Zone Significance Determination	<ul style="list-style-type: none">▪ <i>Determine Work Zone Significance</i>	Roadway Design Engineer	Traffic Operations Engineer, Regional Traffic Engineer

Validate Traffic Analysis (SECTION STILL IN DEVELOPMENT BASED ON EPIC CHANGES)

The traffic analysis defines the measures of effectiveness (MOEs), as discussed with the project team early in Stage 0 and early in Stage 1, that support the development of the design and where an environmental document's purpose and need include congestion, connectivity, safety, or mobility-related needs. The traffic operations analysis also recommends lane geometries, storage lengths, and design configurations for the line and grade .dgn in the Line and Grade Package ([see 1RD1](#) for related information).

The Traffic Operations Engineer:

- Determines the level of project complexity based on initial traffic analysis and input completed during the planning stage.



- Verifies the limits of the analysis and intersections to be included in the analysis to match those included in the traffic forecast.
- Verifies the traffic analysis includes the following scenarios (update accordingly):
 - Base year no-build (based on existing conditions)
 - Future year no-build (based on existing conditions, without the proposed project but with any other fiscally constrained project(s) in place)
 - Future year build for the alignment in question
- Completes the analysis in accordance with the *Highway Capacity Manual (HCM)*.
- Recommends innovative operational strategies to address system reliability improvements beyond traditional LOS when applicable.

The first step in the validation process is to confirm the base year and future year no-build scenarios, with the following considerations.

- These may be developed and submitted separately from the build analysis, if determined appropriate by the team.
- Preliminary review of the no-build analysis may be helpful in validating the purpose and need for the environmental document. Preliminary review and approval can also be beneficial for complex projects where the build scenario expands on the no-build analysis and helps reduce re-analysis by identifying issues earlier in the process.

The next step is to validate the build analysis, considering:

- The analysis determines the recommended design layout and provides the required lane configuration and storage lengths.
- The design recommendations are then provided to the Roadway Design Lead/Roadway Engineer for incorporation into the roadway plans.
- If elements of the recommended design cannot be accommodated due to constraints, then the Roadway Design Lead and the Traffic Operations Engineer coordinate to determine how the design can be revised and still meet the project goals.
- At the end of the process, a comparison of the traffic analysis and design analysis occur to confirm they match.

The last step in the traffic analysis validation involves a review that could result in the recommendation of strategies aimed at addressing system reliability.

After review, the Traffic Operations Engineer formalizes a Traffic Operations Review Memorandum, sending the memo to the Roadway Design Lead and Project Manager. The Traffic Operations Engineer uploads the memorandum to the project file, informing the Project Manager and Roadway Design Lead when complete.

Determine Work Zone Significance

The work zone significance determination is completed as the project footprint (developed via the Line and Grade Package) is established to manage work zone impacts from the project and help determine mitigation strategies to consider in the project's Transportation Management Plan (TMP).

The preparer (typically a Roadway Design Engineer) completes the Work Zone Significance Determination Form to classify all operations (highway construction projects, utility projects, maintenance work, right-of-way use permits, etc.) as significant, non-significant, or exempt. The resulting classification (along with needed details to be developed under later stages) are as follows:

- Significant Project
 - The TMP includes Temporary Traffic Control (TTC) plans, Transportation Operations (TO) strategies, and public information (PI) strategies
 - The TMP is an ongoing process, from scoping through project development, and continuing through the design and construction phases
 - Coordination with TDOT's Community Relations Division is required
 - Opportunities to mitigate incidents (e.g., using smart work zones with queue warnings, emergency service provider coordination, emergency pull outs)
- Non-Significant Project
 - The TMP shall include TTC plans
 - Non-significant projects may include TO and PI strategies, depending on project-specific circumstances
 - Coordination with TDOT's Community Relations Division is required
- Exempt project
 - Does not require a formal TMP document, but all projects must comply with *MUTCD* and TDOT Standard Drawings with respect to the TTC plans

The Traffic Operations Engineer and/or Regional Traffic Engineer provide support/oversight for the Roadway Design Engineer when determining significance and through development of the TMP and TTC plans ([see 2TO1](#) and [3TO1](#) for related information).

Related section: [1RD1](#)

2TO1 Prepare ITS, Signals, and Lighting Sheets

Overview

Initiate preliminary design for all signal, lighting, and ITS work for the Functional Design Plan Field Review, ensuring early and ongoing coordination of the project's signal, lighting, and ITS scope and equipment locations with the Transportation Project Specialist Senior (Utility Coordinator), Structural Design Lead, and Roadway Design Lead to mitigate potential impacts. Coordinate with the ITS Manager and Roadway Design Lead in meeting all design requirements and when developing the ITS sheets.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT ITS Project Development Guidelines](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [TDOT Traffic Design Manual](#)
- [Traffic Operation Memorandums, TOM 2202](#)
- [FHWA Lighting Handbook](#)
- [FHWA Standard Highway Signs](#)
- [FHWA Supplement to the Standard Highway Signs](#)
- [Tennessee Supplement to the Standard Highway Signs Book](#)
- [AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals](#)
- [Highway System Access Manual](#)
- [TDOT Standard Traffic Operations Drawings](#)
- [Highway Capacity Manual](#)
- [Work Zone Safety and Mobility Manual](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party
		Activity Leader
TSMO/ITS Sheets	▪ Prepare TSMO/ITS Device Sheets	ITS Design Engineer
Signal Sheets	▪ Prepare Signal Sheets	Signal Design Engineer
Lighting Sheets	▪ Prepare Lighting Sheets	Lighting Design Engineer

Prepare TSMO/ITS Device Sheets

Based on the initial scope and budget for ITS equipment identified during the planning stage and confirmed in Stage 1, the ITS Design Engineer creates a preliminary ITS design and submits

sheets for review in accordance with the TDOT *Traffic Design Manual*. The goal is for the ITS Design Engineer to advance the ITS-related design to help set the overall project footprint and define all ITS-related impacts to the right-of-way. The ITS Design Engineer coordinates design development directly with the Roadway Design Lead throughout this stage, with updated ITS sheets/CADD files linked or provided regularly.

To do this, the ITS Design Engineer:

- Reviews the line and grade .dgn in the Line and Grade Package provided by the Roadway Design Lead and the layout sketch previously developed.
- Prepares an ITS layout with ITS communication type; device, pole, and structural support locations; and power connection locations.
- Develops the preliminary ITS sheets and quantities in accordance with *TDOT Traffic Design Manual*.
- Coordinates with the Transportation Project Specialist Senior (Utility Coordinator) to mitigate issues related to power and overhead/underground conflicts during construction.
- Coordinates a quality control (QC) review of the design/sheets following the Roadway Design Checklist and *TDOT Quality Manual*.

Once the sheets have been reviewed, the ITS Design Engineer submits the ITS sheets and CADD files to the Roadway Design Lead for inclusion with the Functional Design Plans.

Related section: [2RD1](#)

Prepare Signal Sheets

If a signal is warranted or if the existing signal equipment conflicts with construction, the Signal Design Engineer creates a preliminary signal design and submits sheets for review in accordance with the TDOT *Traffic Design Manual*. The goal is for the Signal Design Engineer to advance the signal-related design to help set the overall project footprint and define all signal-related impacts to the right-of-way. The Signal Design Engineer coordinates design development directly with the Roadway Design Lead throughout this stage, with updated signal sheets and CADD files linked or provided regularly.

To do this, the Signal Design Engineer:

- Reviews the line and grade .dgn in the Line and Grade Package provided by the Roadway Design Lead and the layout sketch previously developed.
- Prepares a signal layout with:
 - Pole locations and strain poles (station/offset/coordinates provided)
 - Power connection locations

- Controller cabinet
- Signal heads
- Pull boxes and conduit
- Develops the preliminary signal sheets and quantities in accordance with *TDOT Traffic Design Manual*.
- Coordinates with the Utility Coordinator to mitigate issues related to power and overhead/underground conflicts during construction.
- Verifies if there are signal maintenance agreements.
- Coordinates a QC review of the signal design/sheets following the Roadway Design Checklist and *TDOT Quality Manual*.

Once the sheets have been reviewed, the Signal Design Engineer submits the signal sheets and CADD files to the Roadway Design Lead for inclusion with the Functional Design Plans.

Related section: [2RD1](#)

Prepare Lighting Sheets

If lighting is warranted or if the existing lighting equipment conflicts with construction, the Lighting Design Engineer creates a preliminary lighting design and submits lighting sheets for review in accordance with the *TDOT Traffic Design Manual*. The goal is for the Lighting Design Engineer to advance the lighting-related design to help set the overall project footprint and define all lighting-related impacts to the right-of-way. The Lighting Design Engineer coordinates design development directly with the Roadway Design Lead throughout this stage, with updated lighting sheets and CADD files linked or provided regularly.

To do this, the Lighting Design Engineer:

- Reviews the line and grade .dgn in the Line and Grade Package provided by the Roadway Design Lead and the layout sketch previously developed.
- Prepares a photometric layout replicated in MicroStation.
- Prepares a lighting layout with pole locations and identifies power connection locations.
- Determines underpass lighting.
- Develops the preliminary lighting sheets and quantities in accordance with *TDOT Traffic Design Manual*.
- Coordinates with the Utility Coordinator to mitigate issues related to power and overhead/underground conflicts during construction.
- Verifies any lighting maintenance agreement.
- Coordinates a QC review of the lighting design and lighting sheets following the Roadway Design Checklist and *TDOT Quality Manual*.

Once the sheets have been reviewed, the Lighting Design Engineer submits the lighting sheets and CADD files to the Roadway Design Lead for inclusion with the Functional Design Plans.

Related section: [2RD1](#)

Oversee Development of the Conceptual Traffic Control Strategies

To determine the conservative extents of potential work zone impact management strategies, the assigned Roadway Design Engineer, with support/oversight from the Traffic Operations Engineer and/or Regional Traffic Engineer, prepares conceptual strategies or Temporary Traffic Control (TTC) concept plans in accordance with the *Work Zone Safety and Mobility Manual*.

This information helps identify/define potential extents that will increase or modify the project footprint and/or the need for additional right-of-way to accommodate temporary construction easements, probable locations of haul roads, staging ingress and egress, and other construction operational impacts. This detail is foundational for the TTC plans and TMP (*see* [2RD1](#) and [3TO1](#) for related information).

3TO1 Complete Signal, Lighting, and TSMO/ITS Device Design

Overview

Complete all signal, lighting, and ITS design work for the Plan-in-Hand Field Review, ensuring early and ongoing coordination of the project's signal, lighting, and ITS scope and equipment locations with the Transportation Project Specialist Senior (Utility Coordinator), Structural Design Lead, and Roadway Design Lead to mitigate potential impacts.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT ITS Project Development Guidelines](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [TDOT Traffic Design Manual](#)
- [Traffic Operation Memorandums, TOM 2202](#)
- [TDOT Standard Drawings](#)
- [FHWA Lighting Handbook](#)
- [FHWA Standard Highway Signs](#)
- [FHWA Supplement to the Standard Highway Signs](#)
- [Tennessee Supplement to the Standard Highway Signs Book](#)
- [AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals](#)
- [TDOT Standard Traffic Operations Drawings](#)
- [Highway Capacity Manual](#)
- [Work Zone Safety and Mobility Manual](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Signal Design Plans	▪ <i>Complete Signal Design</i>	Signal Design Engineer	
Lighting Design Plans	▪ <i>Complete Lighting Design</i>	Lighting Design Engineer	
TSMO/ITS Design Plans	▪ <i>Complete TSMO/ITS Design</i>	ITS Design Engineer	
Final TMP (and TTC Plans)	▪ <i>Review the TMP for Compliance</i>	Roadway Design Engineer	Traffic Operations Engineer

Complete Signal Design

While the Signal Design Engineer completes the Signal Design Plans by the end of Stage 3, at any point in this stage, the Signal Design Engineer may need to produce his/her current design for the ROW Acquisition Exhibits or the Utility Coordination Plans.

Based on comments from the Functional Design Plans Field Review, the Signal Design Engineer advances the signal design and sheets to include:

- Finalized signal design plans and detail sheets
- Finalized Geotechnical Report for signal foundations (optional and [see 2GT2](#) for related information)
- Compiled signal communications plans and details (as applicable)
- Signal timing plans as coordinated with the Local Agency (as applicable)
- Compiled signal quantities

Prior to the Plan-in-Hand Field Review, the Signal Design Engineer coordinates a QC review of the design, signal sheets, and signal quantities as detailed in the *TDOT Quality Manual*.

Once the plans have been reviewed, the Signal Design Engineer confirms with the Utility Coordinator and Roadway Design Lead that there are no impacts prior to submitting the plans and CADD files to the Roadway Design Lead for inclusion with the Plan-in-Hand Plans.

Complete Lighting Design

While the Lighting Design Engineer works to complete the Lighting Design Plans by the end of Stage 3, at any point in this stage, the Lighting Design Engineer may need to produce his/her current design for the ROW Acquisition Exhibits or the Utility Coordination Plans.

Based on comments from the Functional Design Plans Field Review and if lighting is warranted or if the existing lighting equipment conflicts with construction, the Lighting Design Engineer advances the lighting design and sheets to include:

- Finalized lighting design plans and detail sheets
- Completed lighting circuit sheets
- Finalized Geotechnical Report for lighting foundations (optional and [see 2GT2](#) for related information)
- Completed voltage drop calculations based on the system operating voltage and loads
- Compiled lighting quantities

Prior to the Plan-in-Hand Field Review, the Lighting Design Engineer coordinates a QC review of the design, sheets, voltage calculations, and quantities as detailed in the *TDOT Quality Manual*.

Once the plans have been reviewed, the Lighting Design Engineer submits the plans and CADD files to the Roadway Design Lead for inclusion with the Plan-in-Hand Plans.

Complete TSMO/ITS Device Design

As with the other designs, the ITS Design Engineer completes the ITS design by the end of Stage 3. However, at any point in this stage, the ITS Design Engineer may need to produce his/her current design for the ROW Acquisition Exhibits or the Utility Coordination Plans.

Based on comments from the Functional Design Plans Field Review and based on the scoped ITS equipment, the ITS Design Engineer advances the ITS design and sheets to include a:

- Finalized ITS design plans and detail sheets
- ITS scope of work
- General notes
- Finalized ITS communication network design
- Finalized ITS power service details
- Finalized ITS voltage calculations
- Finalized Geotechnical Report for ITS foundations (optional and [see 2GT2](#) for related information)
- Compiled ITS quantities
- ITS typicals (Standard Drawings)
- Traffic control (as applicable)

Prior to the Plan-in-Hand Field Review, the ITS Design Engineer coordinates a QC review of the design, sheets, and quantities and confirms validation of the design with the System Engineering Analysis (SEA).

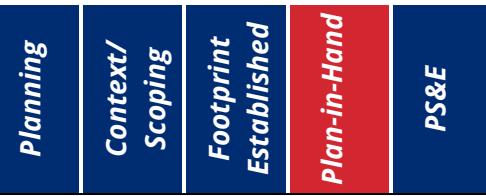
Once the plans have been reviewed, the ITS Design Engineer submits the plans and CADD files to the Roadway Design Lead for inclusion with the Plan-in-Hand Plans.

Review the TMP for Compliance

For both significant and non-significant projects, the Roadway Design Engineer, in coordination with the Traffic Operations Engineer, finalizes the Transportation Management Plan (TMP) in accordance with the *Work Zone Safety and Mobility Manual*. The final TMP and related TTC plans memorialize the relevant project information regarding the:

- Project background
- Anticipated challenges
- Engineering judgement used in developing the work zone impact management strategies

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Whether developed by a consultant or TDOT Roadway Design Engineer, various staff (e.g., the Regional Traffic Engineer, State Work Zone Engineer, State Traffic Engineer, and Regional Communications Representative) review the TMP to ensure compliance with the *Work Zone Safety and Mobility Manual* and *TDOT Standard Drawings*. Once confirmed, each reviewer signs the TMP cover page, and the Roadway Design Engineer uploads a completed TMP (and associated TTC plans) to the project file ([see 3RD1](#) for related information).

4TO1 Finalize Signal, Lighting, and TSMO/ITS Plans

Overview

Compile the final signal, lighting, and TSMO/ITS Design Documents and estimate with any other required documentation to assist the Roadway Design Lead in compiling the Construction Documents needed to advertise and let the project.

References

- [TDOT Roadway Design Guidelines](#)
- [TDOT ITS Project Development Guidelines](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [TDOT Traffic Design Manual](#)
- [Traffic Operation Memorandums, TOM 2202](#)
- [FHWA Lighting Handbook](#)
- [FHWA Standard Highway Signs](#)
- [FHWA Supplement to the Standard Highway Signs](#)
- [Tennessee Supplement to the Standard Highway Signs Book](#)
- [AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals](#)
- [TDOT Standard Traffic Operations Drawings](#)
- [TDOT Standard Roadway Design Guidelines](#)
- [Highway Capacity Manual](#)
- [Work Zone Safety and Mobility Manual](#)
- [TDOT Quality Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Signal Construction Plans			
Lighting Construction Plans	▪ <i>Finalize Signals, Lighting, and TSMO/ITS Design Documents</i>	Respective Design Engineer	Signal Design Manager, Lighting Design Manager
TSMO/ITS Construction Plans			
Final ITS Special Provisions	▪ <i>Finalize ITS Special Provision</i>	ITS Design Lead	Construction Engineer

Finalize Signals, Lighting, and TSMO/ITS Design Documents

To prepare the final signal, lighting, and TSMO/ITS Design Documents, the respective Design Engineer:

- Reviews comments from the Plan-in-Hand Field Review and addresses necessary design revisions and plan updates.

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Planning

Context/
Scoping

Footprint
Established

Plan-in-Hand

PS&E

- Coordinates a QC of the plans and resolves comments received as detailed in the *TDOT Quality Manual*.
- Prepares the plans for the PS&E Review Meeting, submitting these plans to the Roadway Design Lead for inclusion with the other design plans for review.
- Attends the PS&E Review Meeting.
- Resolves last comments from the meeting.
- Submits the final plans and quantities to the applicable Design Manager for final review.
- Responds to review comments.

Once reviewed and comments are resolved, the respective Design Engineer then:

- Assembles the final Signal, Lighting, and ITS Package for letting.
- Submits sealed plans (as allowed in accordance with TDOT standard procedures for signing and sealing plans) and CADD files to the Roadway Design Lead for inclusion with the Construction Documents.

Finalize ITS Special Provisions

As part of finalizing the Construction Documents, the ITS Design Engineer:

- Coordinates with the Construction Engineer in Stage 3 to create the project's ITS special provisions, assembling the final ITS special provisions for letting.
- Conducts a QC review on the ITS Package, including the special provisions.
- Submits the special provisions to the Roadway Design Lead for inclusion with the Construction Documents.

OUT1 Complete Utility Preliminary Estimates

Overview

Develop high-level, utility and railroad cost estimates to be used for planning purposes.

References

- [TDOT Utility Manual](#)
- [Buy America Presentation](#)
- [TDOT Guidebook for Utility Relocation](#)
- [TDOT Rules & Regulations Accommodating Utilities](#)
- [Other Utilities Resources](#)
- [STID Comment Resolution Form](#)

Deliverables

Deliverable	Task	Responsible Activity Leader
ROW Form 44-A	<ul style="list-style-type: none">▪ Prepare Preliminary Utility Estimate	Transportation Project Specialist Senior
ROW Form 44-A	<ul style="list-style-type: none">▪ Prepare Preliminary Railroad Cost Estimate	Railroad Office Designee
Concept Report Comments on the STID Comment Resolution Form	<ul style="list-style-type: none">▪ Review the Concept Report	Transportation Project Specialist Senior or TDOT designee

^a Unless noted, all references to the Transportation Project Specialist Senior may be completed by a Consultant. This title is referenced as the Utility Coordinator in the other sections of the PDN.

Prepare Preliminary Utility Estimate

The Transportation Project Specialist Senior or TDOT designee (TDOT staff only) is responsible for creating the utility estimates for their respective regions and uploading the estimates into IRIS. These estimates are incorporated into the Form 44-A for use by the Programming Division.

To develop an accurate estimate in accordance with the *Utility Manual*, the Transportation Project Specialist Senior or TDOT designee:

- Reviews a project's conceptual layout, draft technical report (e.g., the draft Concept Report from STID), and/or the project's scope provided by the STID Project Manager or Concept Lead to determine which existing utilities could be in conflict and uses the STID Comment Resolution form to note which utilities may need to be relocated (as requested).
- Compares projected relocations with past relocations costs to determine likely costs for each utility.
- Completes the estimate (determining preliminary utility costs) and uploads the estimate into IRIS.

- Notifies the assigned Regional ROW Appraiser 4 (ROW Lead) that the utility estimate has been uploaded.

The ROW Lead combines the preliminary utility, railroad, and right-of-way estimate into one estimate. Within two weeks of receiving the request from STID, the Transportation Project Specialist Senior or TDOT designee provides comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD2](#) for related information).

Prepare Preliminary Railroad Cost Estimate

This activity focuses on whether there is railroad involvement on the project. If a railroad is not involved:

- The Region ROW Office completes their work.
- The Railroad Office receives the final Form 44 and signs the document confirming there is no railroad involvement on the project, ensuring the railroad estimate is for zero (\$0.00) dollars.

If the project has railroad involvement:

- The Railroad Office receives notification from the Regional ROW Manager (or assistant) through IRIS.
- The Transportation Project Specialists in the Railroad Office fills out the number of railroads involved and the estimate related to all railroads involved.
 - Note: All information is inputted into IRIS while the document is still a Form 44-A

When the document becomes a Form 44, the document is submitted to the Railroad Office to the attention of the Transportation Project Specialist, who confirms all information is correct and executes the form.

The final document and information are stored in IRIS for future reference. The Railroad Office is not involved with all project types. This process is reserved for the larger projects in which the ROW Division is engaged prior to sufficient plans being generated to start the railroad coordination process.

Review the Concept Report

As requested and within two weeks of receiving the draft Concept Report, the Transportation Project Specialist Senior or TDOT designee provides review comments using the STID Comment Resolution Form, returning a completed form to the STID Project Manager via email ([see OSD3](#) for related information).

1UT1 Begin Third-Party (Utilities & Railroad) Coordination

Overview

Contact the utility owners/railroads in a project's vicinity to confirm all are aware of one another's plans, which reduces late-stage changes that can negatively impact the schedule and add unexpected costs.

References

- [TDOT Utility Manual](#)
- [Buy America Presentation](#)
- [TDOT Guidebook for Utility Relocation](#)
- [TDOT Rules & Regulations Accommodating Utilities](#)
- [Other Utilities Resources](#)

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
List of all utilities on project	▪ <i>Make Initial Utility Contact</i>	Technician Supervisor	
Coordination Kickoff Meeting Agenda	▪ <i>Conduct Utility Coordination Kickoff Meeting</i>	Transportation Project Specialist Senior	
Coordination Kickoff Meeting Minutes			
Railroad Coordination Initiation Forms List of Stakeholders Preliminary Engineering Agreement	▪ <i>Initiate Railroad Coordination</i>	State Railroad Coordinator	Assistant Railroad Coordinators and Coordination Specialists

^a Unless noted, all references to the Transportation Project Specialist Senior may be completed by a Consultant. This title is referenced as the Utility Coordinator in the other sections of the PDN.

Make Initial Utility Contact

TCA 54-5-853 requires TDOT to notify all owners of utilities facilities that may occupy the rights-of-way effected by a project. To complete this task, the Technician Supervisor or designee (TDOT staff only):

- Sends notice of a project to all utilities in the project area and that the utility has 60 days to respond.
- If there is no response within 60 days, sends a second 10-day notice to the utilities.

If the utility fails to respond to either notice, TDOT may presume the non-responsive utilities are not owners on the project, and TDOT and its contractor may proceed without liability to the utility owner for damages to the owner's facilities.

At the end of the 10-day notice, the Technician Supervisor compiles a list of the utilities that responded and sends it to the Roadway Design Lead. The Technician Supervisor files this list in the project folder, notifying the project team that it is available for reference. The Roadway Design Lead uses this list, with the project's survey data, to create the utility table that identifies all utilities and related owners potentially impacted by the project. This list also identifies the utility owners by which to send the Utility Coordination Plans.

Related section: [2RD1](#)

Conduct Utility Coordination Kickoff Meeting

The purpose of this kickoff meeting is to facilitate early discussion and exchange of information for potential utility impacts with existing facilities and proposed plans for future facilities in the project area. Other projects may be discussed in this meeting or as a follow-up meeting immediately following, if possible and appropriate.

To lead the meeting, the Transportation Project Specialist Senior invites the Project Manager, Roadway Design Lead, other relevant project team members (depending on the scope of the work), and all potentially impacted utility owners, preparing an agenda to cover the following topics:

- Describes the scope and location of the project.
- Details the general projected schedule and expected project duration.
- Discusses the coordination/communication plan for working with the utility owners, including expectation of how and when the Utility Coordination Plans ([see 3UT1](#) for related information) are provided to each owner and the general expectations for utility relocation review and relocation scheduling (all consistent with State law and TDOT policy).
- Discusses rights/costs determination, documentation, and Chapter 86 eligibility.
- Discusses potential design options (at least generally) that may avoid conflicts.
- Requests that the utility owner (as applicable):
 - Provide a description of the type, size, and function of all facilities in the project area
 - Provide related as-builts, records, or plans for the utility owner's existing facilities
 - Identify critical facilities that have restrictions on service interruption for relocation or that may be difficult to relocate, noting difficulty in acquiring property for the relocation, difficulty in coordinating outages with customers, or difficulty in construction
 - Identify facilities with a high relocation cost
 - Provide a description of factors that may affect the project schedule, such as lengthy design times, need to establish a construction budget, long-lead times when ordering materials, or long times between construction of the new facilities and abandonment of the old facilities

- Provide protect-in-place or construction/removal/relocation buffer requirements or restrictions
- Discusses the expected impact of each of the utility facilities on the project and the impact of the project on the utility facilities.

This meeting may also involve a site visit to verify and correlate information provided by the utilities and to search for previously unknown utilities.

After the meeting, the Transportation Project Specialist Senior prepares and distributes meeting minutes of all decisions, important discussions, and requests for information. The meeting minutes are sent to all utility owners in attendance and other invitees and filed in the project folder.

Initiate Railroad Coordination

The Project Manager informs or reconfirms (based on assumptions used to develop the same estimate in 0UT1) with the Railroad Office that they have a project planned, which in their opinion, has Railroad involvement.

Each project which has Railroad involvement is unique, and those involved in the coordination process require different elements. For simplicity, the following major milestones are required for all Railroad-coordinated projects. The State Railroad Coordinator:

- Identifies the Railroad entities involved and the impact types.
- Engages in property research.
- Searches for previous agreements.
- Sets up the project for coordination.
- Generates the required coordination initiation forms.
- Identifies all stakeholders.
- Develops the Preliminary Engineering Agreement.

Once the information is communicated, the State and Assistant State Railroad Coordinators, in conjunction with the Railroad Coordination Specialist, work through the initiation requirements outlined in the *Utilities Manual* and assign the project to the Railroad.

Different Railroads require certain actions to assign a project, but the necessary items needed from the Region or HQ TDOT staff is requested and distributed per the *Utilities Manual*.

Although many different documents are transmitted between the Railroad and the Railroad Coordination Office, the main documents are the Preliminary Engineering Agreement and the Preliminary Engineering Force Account Estimate.

Related section: [OSD1, OUT1](#)

2UT1 Initiate Utility/Railroad Pre-Acquisition Activities

Overview

Provide updated estimates, coordinate subsurface utility exploration (SUE) needs, and advance third-party coordination efforts from previous stages.

References

- [TDOT Utility Manual](#)
- [Buy America Presentation](#)
- [TDOT Guidebook for Utility Relocation](#)
- [TDOT Rules & Regulations Accommodating Utilities](#)
- [Other Utilities Resources](#)

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
ROW Form 44	<ul style="list-style-type: none">▪ Prepare Utility Estimate	Transportation Project Specialist Senior	ROW Manager
Revised Final ROW Form 44	<ul style="list-style-type: none">▪ Prepare Railroad Estimates	Railroad Office Designee	
Utility Impact/Conflict Matrix	<ul style="list-style-type: none">▪ Develop a Utility Impact/Conflict Matrix	Transportation Project Specialist Senior	

^a Unless noted, all references to the Transportation Project Specialist Senior may be completed by a Consultant. This title is referenced as the Utility Coordinator in the other sections of the PDN.

Coordinate/Request Needed SUE

Accurate SUE data often minimizes utility conflicts and avoids unnecessary costs and delays when advancing design and relocating utilities. As part of the initial project survey tasks, the Transportation Project Specialist Senior, Project Manager, and Roadway Design Lead (and other team members if needed) strategize needed SUE quality level request(s) to aid in early utility depiction.

During Stage 1, the project team considers the value of:

- SUE Quality Level C: Information obtained by surveying and then plotting visible above-ground features and by using engineering judgment to correlate/validate the information gathered from a level D review.
 - This effort may be completed in the planning stage or Stage 1 to provide a general understanding of utility locations and inform early design development.
 - Data from this survey is typically incorporated into the existing topography deliverable for the stage.

Based on what is received from the Survey Lead, the Transportation Project Specialist Senior and Roadway Design Lead use the data/information submitted as part of the survey files to inform the utility coordination efforts, ensuing deconfliction meetings, and respective roadway plans and Utility Coordination Plans.

Early in Stage 2, the project team coordinates with the Survey Lead on the potential to complete more in-depth quality level surveys for utility depiction (scheduled strategically based on when information is needed):

- SUE Quality Level B: Information obtained via surface geophysical methods (marking its horizontal position on the ground) determines presence and designates approximate horizontal position of subsurface utility.
 - This effort is best completed after the Line and Grade Package has identified specific areas of impact, likely early in Stage 2 as the other disciplines are developing their respective design.
- SUE Quality Level A: Obtaining precise horizontal and vertical location of a utility by physical exposure/potholing and subsequent measurement of the subsurface utility, usually at a specific point.
 - This effort is best completed/coordinated to strategically identify utility conflicts of concern either during Stage 2 (when developing the Functional Design Plans) or early in Stage 3 (after the Functional Design Plans Field Review).
 - Specific pothole location data is presented on individual data sheets that typically includes type, size, and depth to utility.

Based on what is received from the Survey Lead, the Transportation Project Specialist Senior and Roadway Design Lead use the data/information submitted as part of the survey files to inform the utility coordination efforts, ensuing deconfliction meetings, and respective roadway plans and Utility Coordination Plans ([see 2RD1](#) and [2SY1](#) for related information on the SUE request and work completion process).

Related section: [1RD1](#)

Prepare Utility Estimate

The Transportation Project Specialist Senior or TDOT designee (TDOT staff only) is responsible for creating the utility estimates for their respective regions and uploading them into IRIS. These estimates are incorporated into the Form 44 for use by the Programming Division.

To develop an accurate estimate, the Transportation Project Specialist Senior or TDOT designee, in accordance with the *Utility Manual*:

- Reviews project features (earthwork, structures, etc.) as coordinated with the Roadway Design Lead and compares/confirms with existing utilities to determine which utilities are likely to be in conflict and relocated.
- Compares projected relocations with past relocation costs to determine likely costs for each utility.
- Completes the estimate (determining utility costs) and uploads the estimate into IRIS.
- Notifies the assigned Regional ROW Appraiser 4 (ROW Lead) and Project Manager that the utility estimate has been uploaded.

Related section: [2RW1](#)

Prepare Railroad Estimates

Once the assigned ROW Lead has accomplished their work, the updated Form 44 is submitted to the Railroad Office, where the Railroad Office designee confirms the information shown on the document, signs it if it is correct, and submits it back to the ROW Lead. If there is any incorrect information, the Railroad Office designee informs the appropriate individuals at the Region, the modifications are made, and a revised final Form 44 is sent to Programming, the Project Manager, and all other applicable recipients.

Develop a Utility Impact/Conflict Matrix

Based on the complexity of the project and potential utility impacts, the Roadway Design Lead, in collaboration with the Transportation Project Specialist Senior, may develop a project-specific Utility Impact/Conflict Matrix for internal coordination and external reference. This matrix minimally documents:

- Utility name and contact information
- Location of a potential conflict based on the current version of the roadway plans
 - Note: The matrix is a living/working document that the Roadway Design Lead updates as the design advances in coordination with the Transportation Project Specialist Senior
- Type of aboveground and underground utility and infrastructure in conflict (hydrant, manhole, conduit, stormwater/sewer, etc.)
- Proposed disposition (protect in place, relocate, adjust to grade, remove, abandon, etc.)
- Additional actions needed

Located in the project folder, the project team uses this list to:

- Identify all utilities and related owners on the project
- Further understand and eliminate known conflicts
- Proactively direct relocation strategies

Review SUE Data and Attend Internal Design Deconfliction Meetings

As needed, deconfliction discussions among the project team are critical to proactively address known conflicts as the project team advances the Functional Design Plans. These meetings are to reference the available SUE data (as received from the Survey Lead), the current Utility Impact/Conflict Matrix (if developed), and all relevant information received from the utility owners ([see 2RD1](#) and [2SY1](#) for related information).

Prior to the meetings, the Transportation Project Specialist Senior:

- Coordinates agenda items with the Project Manager and Roadway Design Lead.
- Reviews any related information and/or list of conflicts to be discussed during the meeting
- Attends the meeting
- Supports/reviews the distribution of meeting minutes that document all decisions, important discussions, action items, and schedule

3UT1 Perform Utility Coordination

Overview

Develop and execute a plan to address how each utility on a project is addressed (avoided, relocated, protected-in-place, etc.) so construction may move forward without any delays/issues.

References

- [TDOT Utility Manual](#)
- [Buy America Presentation](#)
- [TDOT Guidebook for Utility Relocation](#)
- [TDOT Rules & Regulations Accommodating Utilities](#)
- [Other Utilities Resources](#)

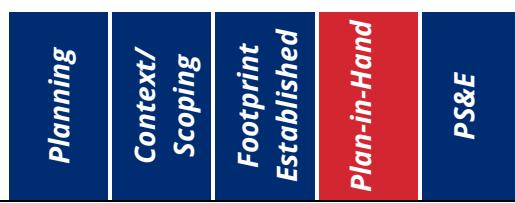
Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
Consultant Authorization Letter	▪ Process Consultant Requests		
Plan Review Kickoff Meeting Agenda			
Plan Review Kickoff Meeting Minutes			
Utility Owner Deconfliction Meeting Agenda	▪ Conduct Utility Plan Review Kickoff Meeting	Transportation Project Specialist Senior	
Utility Owner Deconfliction Kickoff Meeting Minutes			
Executed Relocation Contract	▪ Complete 120-day Utility Review and Process Relocation Contract Requests		ROW Contracting Division
Utility Relocation Plans (aka Rainbow Plans)	▪ Submit Rainbows to Environmental	Technical Supervisor	Transportation Project Specialist Senior, NEPA Lead
Put to Work Letter	▪ Put Utilities to Work	Transportation Project Specialist Senior	
U1s, and possible U2s, U3s, etc.	▪ Submit Construction Drawings to Design	Transportation Project Specialist Senior	

^a Unless noted, all references to the Transportation Project Specialist Senior may be completed by a Consultant. This title is referenced as the Utility Coordinator in the other sections of the PDN.

Process Consultant Requests

When a utility owner does not have in-house staff to perform the engineering to accommodate a project's utility requests, the owner may request the use of a consultant. As part of the consultant review and approval process, the Transportation Project Specialist Senior or designee (TDOT staff only):



- Reviews the applicable consultant documents, including:
 - Any established MOUs
 - Certification of consultant
 - Proposed scope of work
 - Estimate of costs
- Issues a consultant authorization letter to the utility owner, allowing them to proceed with hiring a consultant.

Once the Transportation Project Specialist Senior sends the consultant authorization letter, the Transportation Project Specialist Senior files the information in IRIS.

Send Utility Coordination Plans

TDOT is required, by law, to send a complete set of Utility Coordination Plans to all known utility owners, allowing them 120 days to respond with:

- A set of relocations plans
- Schedule of calendar days to relocate
- Estimate of costs

For projects where the utility coordination tasks (namely this 3UT1) are on the critical or near critical path, the Roadway Design Lead may develop a separate set of Utility Coordination Plans during Stage 2 well before completing and submitting the Functional Design Plans. If an early plan set is not needed, the Utility Coordination Plans are to be the Functional Design Plans, which should be submitted to the utility owner as soon as possible after the initial Functional Design Plans turn in.

Upon receiving a .pdf or .dgn of the Utility Coordination Plans from the Roadway Design Lead ([see 2RD1](#) for related information), the Transportation Project Specialist Senior:

- Reviews the plans, providing comments to the Roadway Design Lead of any changes prior to sending to the utility owner
- Coordinates with the Roadway Design Lead and Regional Environmental Technical Office (ETO) staff (Permits) to integrate plan set callouts and markups of certain environmental features (such as wetlands and streams) for a utility owner to avoid with its utility relocation ([see 2EN3 and 2EN4](#) for related information).
- Sends the identified utility owner a complete set of plans
- Uploads the submitted plans to IRIS

The submittal of this information begins a series of tasks to engage the utility owner on plan advancement and to solicit utility design comments.

Conduct Utility Plan Review Kickoff Meeting

Approximately one month after the utility owner/designated representative has been sent plans, the Transportation Project Specialist Senior sets a kickoff meeting to inform the utility owners of the various items they need to be aware of.

The agenda for this meeting may include:

- Discuss scope of the project
- Outline what is expected from the utility owners in terms of:
 - Relocation plans (aka rainbows plans)
 - Relocation cost estimate
 - Schedule of calendar days
 - Additional documents required if utility needs a consultant engineer
 - Any established MOUs
 - Certification of consultant
 - Scope of work
 - Estimate of cost
- Discuss Chapter 86 reimbursement and contract types
- Discuss deadlines for the A date (120-day deadline to submit relocation plans, estimate, and schedule) and B date for submittal of construction plans, quantities, and specifications
 - Note: The B date is included if the work is in the state contract
 - This date is usually 6 months prior to the letting
- Encourage utility owners to collaborate with one another

The Transportation Project Specialist Senior prepares and distributes meeting minutes of all decisions, important discussions, and related information. The meeting minutes are sent to all utility owners in attendance and filed in the project folder for reference by the project team.

60-Day Deconfliction Meeting

At this point, the utility owners should have had an opportunity to provide a high-level/initial review of the Utility Coordination Plans. The Transportation Project Specialist Senior sets a utility deconfliction meeting roughly 60 days after initial submittal of the Utility Coordination Plans. The Transportation Project Specialist Senior also invites the Project Manager, Roadway Design Lead, associated Roadway Design Engineers, and Structural Design Lead/Engineer (as appropriate) to this meeting.

The agenda for this meeting may include:

- Review of the roll plot for all utility owners to review at the same time.
- Discussion of all proposed utility locations.

- Discussion of environmental commitments or potential environmental areas (e.g., streams and wetlands) **not** to be used for utility relocations (*see 2EN3 and 2EN4* for related information).

Complete 120-day Utility Review and Process Relocation Contract Requests

To reimburse utility owners or include their work into the state contract, TDOT and the utility owner must enter into a utility relocation contract prior to starting any work. This package is due within 120 days of the Utility Owner receiving the Utility Coordination Plans.

The Transportation Project Specialist Senior (TDOT staff only) confirms/reviews that the following information has been received and completed by the deadline:

- A-date package from the Utility Owner, including:
 - Utility Relocation Plans, aka Rainbow Plans
 - Schedule of calendar days
 - Estimate of relocation cost

Once confirmed/processed, the Transportation Project Specialist Senior (TDOT staff only) forwards the A-date package to the ROW Contracting Section for contract generation, which involves.

- Generating and sending the relocation contract to the utility owner.
- Receiving a contract signed by the utility owner and circulating for execution by the Commissioner.
- Sending the utility owner a letter with the fully executed contract attached that authorizes the owner to proceed with their relocation.

Once the contract is fully executed, the ROW Contracting Section puts the utility to work.

Submit Rainbows to Environmental

When TDOT is performing the utility relocation (via a “move in state” contract), the Technician Supervisor or designee (TDOT staff only) continues the utilities permitting efforts by:

- Reviewing Utility Relocation Plans, aka Rainbow Plans
- Forwarding to the NEPA Lead and Environmental Permit Lead, who will continue the permit application process to obtain the necessary permits
 - The Technician Supervisor coordinates potential environmental reevaluations (for a utility relocation that alters impacts to environmental resources as described in the Environmental Document), additional environmental technical studies, or changes

needed to the permit sketches with the Roadway Design Lead and NEPA Lead as soon as possible in Stage 3 ([see 2RD1, 2EN1, 2EN2](#), and [2EN3](#) for related information).

- The Environmental Permit Lead (assigned staff from the TDOT Permit Section or as assigned to the Regional ETO staff) references the Utility Relocation Plans/Rainbow Plan to determine if a permit action is needed and to confirm that there are no conflicts with compensatory mitigation of streams and wetlands ([see 2EN3, 2EN4](#), and [3EN2](#) for related information).

Put Utilities to Work

Once TDOT and the utility owner agree on a plan of action, whether the relocation is covered under a relocation contract or if the utilities are moving on their own at their own cost, TDOT puts the owner to work to officially start their schedule.

To do this, the Transportation Project Specialist Senior or TDOT designee (TDOT staff only):

- Gathers all approved documents (Relocation Plans/rainbows, schedule, etc.) to include as an attachment to the “put to work letter”.
- Sends the utility owner a signed letter authorizing them to commence their relocation.

Once the letter is issued, the District Construction Office helps with follow up to ensure that the relocations are progressing according to the plan.

Submit Construction Drawings to Design

Every project requires a set of U1 construction drawings that are incorporated into the final Construction Documents ([see 4RD1](#) for related information). These drawings show where utilities that are not included in the state contract are present, and where the utility owner intends to relocate their utility.

Typically based on the Utility Owners' B-date packages, the Transportation Project Specialist Senior or TDOT designee (TDOT staff only):

- Generates the U1 drawings that compile all relocations not done by the contractor in one set of drawings.
- Gathers all utility relocation plans for each utility, including the owner's work in the state contract.
 - This is initiated with U2 sheets for the first utility, U3 sheets for the second, and so on.
- Compiles all drawings together into a .pdf portfolio.
- Sends the compiled drawings to the Roadway Design Lead for incorporation into the Plan-in-Hand Plans and then final Construction Documents.

3UT2 Perform Railroad Coordination

Overview

Coordinate design plan review and comment resolution with the Railroad. Receive Railroad plans and estimates. Generate the special provisions and Construction Agreement.

References

- [TDOT Utility Manual](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Special Provisions 105C (SP105C) Construction Force Account Estimate Construction Agreement	<ul style="list-style-type: none">▪ <i>Receive Railroad Plans and Estimates</i>	State Railroad Coordinator	Assistant State Railroad Coordinator

Receive Railroad Plans and Estimates

There are many different paths to the railroad coordination process. To advance the process in this Stage 3, the State Railroad Coordinator:

- Receives plans from the Roadway Design Lead or other assigned design staff.
- Submits the plans for Railroad review.
- Receives Railroad plan review comments.
- Submits Railroad plan review comments to the Roadway Design Lead or assigned design staff to be addressed.

The above process is an iterative process. Once the review comments have been resolved, the State Railroad Coordinator:

- Receives a statement from the Railroad that there are no further exceptions to the plans.
- Submits the Special Provisions 105C (SP105C) to the Railroad for their review and comment.
- Receives a statement from the Railroad that there are no further exceptions to the SP105C.
- Receives Construction Force Account Estimate from the Railroad. Note: If over \$100,000.00, submits to external audit for approval.
- Approves the Force Account Estimate and returns to the Railroad.
- Request the generation of the Construction Agreement.
- Submits the Construction Agreement to the Project Manager and other stakeholders for execution.

All items listed above are further detailed in the *Utility Manual*.

3UT3 Prepare and Submit Utility/Railroad Certification

Overview

Verify required coordination steps have been completed and secure/finalize the utility and (if applicable) railroad certification for letting.

References

- [TDOT Utility Manual](#)
- [Buy America Presentation](#)
- [TDOT Guidebook for Utility Relocation](#)
- [TDOT Rules & Regulations Accommodating Utilities](#)
- [Other Utilities Resources](#)

Deliverables

Deliverable	Task	Responsible Party ^a	
		Activity Leader	Additional Support
Deposit Check or LGIP Transfer	<ul style="list-style-type: none">▪ <i>Receive and Process Utility Deposits</i>	Transportation Project Specialist Senior	
Utility Certification	<ul style="list-style-type: none">▪ <i>Verify Utility Coordination Is Complete</i>		
Certification Letter Final SP105C	<ul style="list-style-type: none">▪ <i>Finalize the Railroad Agreement(s)</i>	State Railroad Coordinator	Assistant State Railroad Coordinator

^a Unless noted, all references to the Transportation Project Specialist Senior may be completed by a Consultant. This title is referenced as the Utility Coordinator in the other sections of the PDN.

Receive and Process Utility Deposits

When a utility owner elects for the contractor to perform their relocation and any portion of that work is not reimbursable, the owner must submit a deposit to the State for the entire non-reimbursable amount. This task may be initiated and completed in Stage 3 or 4.

The Transportation Project Specialist Senior (TDOT Staff only) confirms the following as part of this task:

- Utility owner has sent a check or wires money via a Local Government Investment Pool (LGIP) account to TDOT for the amount specified in the executed relocation contract. This includes coordinating with the Project Manager as this is high-risk for schedule delay.
- If TDOT has not received the money 6 months prior to letting, the Transportation Project Specialist Senior (TDOT Staff only) sends the utility owner a letter informing them that TDOT will remove their work from the state contract if funds are not received.
- Upon receiving the check, the Utility Section delivers the funds and submits a copy of the contract to Central Accounting.

Verify Utility Coordination Is Complete

Utility certification is required on all projects with federal funding per the Code of Federal Regulations (CFR). To secure a utility certification for the project, the Transportation Project Specialist Senior (TDOT staff only):

- Reviews the project to verify all CFR, Tennessee Code Annotated (TCA), and TDOT rules, regulations, and policies were followed with respect to both utility and railroad coordination.
- Checks that all contracts have been executed and utilities have been put to work.
- Verifies the Utility Relocation Plans (aka Rainbow Plans) have been sent to the NEPA Lead and Environmental Permits Lead.
- Verifies deposits, if any, have been sent to the Finance Division.
- Verifies that U1s, U2s, etc. have been sent to the Roadway Design Lead.

Upon verifying that everything needed for utility coordination has been completed, the Transportation Project Specialist Senior (TDOT staff only) issues the signed utility certification letter to the Programming Division to be included in the letting package, informing the Project Manager when complete.

Finalize the Railroad Agreement(s)

As applicable, certification for railroad coordination and utility coordination are tied together. Depending on the project type, the Railroad Office certifies the project, or the Railroad Office informs the Utility Office the project is ready for certification.

While most of the documentation and work accomplished on the project is between the State and the Railroad, there is one item the contractor needs to perform its work, the SP105C. This document is submitted as part of the Construction Documents along with the Public Project Manual for CSXT and NSRR railroads if they are involved with the project.

5CN1 Prepare the Construction Contract for Advertisement

Overview

Prepare the construction contract documents for advertising by reviewing the Construction Documents and related quantities/estimates (if needed), establishing contractual obligations, and compiling special provisions.

References

- [Project Management Workflow - Specs-Special Provision Guidance](#)
- [Special Provision Order Form](#)
- [TDOT HQ Construction Processes Manual](#)
- [TDOT Quality Assurance/Quality Control](#)
- [TDOT Roadway Design Documents](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Quantities and Estimate (in AASHTOWARE)	▪ <i>Verify Construction Documents and Finalize Quantities and Estimate</i>	HQ Construction	Senior Transportation Engineer; Contract Letting Manager; HQ Construction Technician; Estimating Manager; Statewide Transportation Engineer; Project Manager
Engineer's Estimate		Estimating Manager	Statewide Transportation Engineer; Transportation Engineer
Construction Contract Documents	▪ <i>Establish Contractual Obligations</i> ▪ <i>Verify and Compile Final Special Provisions</i> ▪ <i>Assemble the Contract for Advertisement</i>	Senior Transportation Engineer	Contract Letting Manager; Design Lead
Revision Letter, Estimate Revision Request, and revised plans (PDF) (<u>if needed</u>)	▪ <i>Verify Construction Documents and Finalize Quantities and Estimate</i>	Design Lead	Senior Transportation Engineer; Contract Letting Manager; Estimating Manager; Statewide Transportation Engineer; Project Manager; Other Design Leads

Verify Construction Documents and Finalize Quantities and Estimate

A critical step in preparing a project's construction contract for advertisement involves verifying the Construction Documents have been included and finalizing quantities and the engineer's estimate for advertisement. As part of this step, the Project Manager is to document the



answers to the following questions (minimally) to confirm the Construction Documents are complete.

- Are all water quality permits complete/ready or are there no water quality permits on the project?
- Are the design plans, including structures and utilities plans (as applicable), uploaded to the shared project folder?
- Is this a chapter 86 project?
- Have all project-specific special provisions (including, as applicable, SP105C, SP107C, and SP725) been coordinated/uploaded to the shared project folder?
- Are all Geotechnical Reports uploaded to the shared project folder?
- Is the Transportation Management Plan (TMP) signed? Has the TMP been uploaded to the shared project folder?
- Are there any relevant, project-specific considerations listed in TMP and with the water quality permits?

The Project Manager is to discuss the answers to these questions (or if an item is not applicable to the project) as part of the first letting meeting.

Once the Construction Documents have been uploaded and the distribution email received (see Chapter 6 of the *Roadway Design Guidelines* and [ARD1](#) for related information), the Senior Transportation Engineer (or assigned HQ Construction staff) and Contract Letting Manager complete the following:

- Attend the first letting meeting (as led by the Project Manager or Design Lead who reports on project progress) to confirm completeness of the Construction Documents and the advertisement process, including inclusion of the plans, specifications/special provisions, estimates, certifications, agreements, and permits (as applicable).
- Review the Construction Documents for major issues.
- Note key elements of compliance or deficiency(ies) for the Project Manager to document.
- Download and confirm the project's quantities and estimate spreadsheet, exporting both to AASHTOWARE.

If any changes to the plans or quantities are needed (based on this meeting or prior to advertising the project), the Design Lead corrects the plans and quantities and notifies the Project Manager and team of any changes.

The Design Lead prepares the necessary documentation, uploading the revised plans and emailing the project's distribution list the:

- Revision Letter,
- Estimate Revision Request (if quantities and the estimate have changed), and
- PDF of the revised sheets/plans only.

When the files are uploaded to the assigned Design Letting folder, the Transportation Engineering Specialist and/or the HQ Construction Technician compiles the revised sheets and quantities/estimate within the construction contract.

The Project Manager regularly updates the team as deficiencies are resolved and to verify completeness in preparing for advertisement.

Throughout this task, the Estimating Manager oversees development and finalization of the Engineer's Estimate to prepare for advertisement.

Establish Contractual Obligations

There are several provisions that need to be established for the construction contract to be ready for advertising. The *TDOT HQ Construction Processes Manual* provides more details on each, but these provisions typically include:

- Determining contract times/completion dates.
- Setting federal compliance goals (disadvantage business enterprise [DBE] and on-the-job training goals) in accordance with federal and state requirements.
- Assigning a contract number.

Verify and Compile Final Special Provisions

Using the special provisions developed with the Plan-in-Hand Plans and revised as part of Construction Document turn in, the Design Lead and Senior Transportation Engineer verify that all of the special provisions needed for the project have been included ([see 3RD1](#) and [4RD1](#) for related information).

To finalize the special provisions, the Senior Transportation Engineer references the previously submitted Special Provision Order Sheet (in Excel format) to confirm the following:

- All project-specific special provisions are included.
- The correct funding-oriented boiler plate special provisions are included (for state funded only, federal funded only, or mixed funded projects).



- **Note:** The Project Manager is to notify HQ Construction if any federal funds have been used for certain pre-construction activities (to acquire ROW, obtain permits, etc.), as funding type directs which boiler plate to use.

This verification process involves checking pay items for provisions that may be missing and considering specific item numbers from what is listed in the *TDOT HQ Construction Processes Manual* and "Determination of Project Specifications/Special Provisions" as part of the *Project Management Workflow 1.0*.

The Senior Transportation Engineer saves a copy of the order sheet to the Contract Proposal folder with a reference to both the contract number in the file name and the marked order sheet for the special provisions that apply to the scope, duration, and obligations in the contract.

Assemble the Contract for Advertisement

The final step to prepare a project for advertising is creating and updating the contract proposal in AWP and drafting and then finalizing the notice to contractors four weeks in advance of the advertisement date. The *TDOT HQ Construction Processes Manual* details specific steps and procedures on how to assemble the contract and advertise the project in AWP.

5CN2 Advertise and Let the Project

Overview

Prepare the project for advertisement, open the advertisement for bidding, post the Notice to Contractors (NTC), administer the advertisement period, and let the project.

References

- TDOT HQ Construction Processes Manual*
- TDOT Quality Assurance/Quality Control*
- TDOT Roadway Design Documents*

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Bid Authorization Sheet	▪ <i>Advertise/Let the Project</i>	Transportation Engineering Specialist; Senior Transportation Engineer	Regional Construction Representative; Assigned HQ Construction Staff; Contract Letting Manager
Revision Letter, Estimate Revision Request, and revised plans (PDF) (if needed)	▪ <i>Administer the Advertisement Period</i>	Design Lead	Assigned HQ Construction Staff; Regional Construction Representative; Project Manager

Advertise the Project

Once a project's letting date has been established and the contract documents are ready (see [5CN1](#) for related information), the Transportation Engineering Specialist and Senior Transportation Engineer complete the following to advertise the contract (all of which is detailed further in the *TDOT HQ Construction Processes Manual*):

- Complete/compile the Bid Authorization sheet, Instructions to Bidders, and TN-DBE.bin file.
- Post all letting documents in the BidExpress system.
- Open BidExpress for contractor bidding.

Administer the Advertisement Period

The Contract Letting Manager oversees the advertisement period (typically 4 weeks [28 days], but no less than 21 days for federally funded projects or 14 days for state-funded projects).



His/her work includes:

- Confirming that the Project Bid staff and assigned Senior Transportation Engineer have completed the contractor bid authorization actions following *TDOT HQ Construction Processes Manual*.
- Responding to bidders' requests for information (RFIs) by:
 - Logging bidder emails received,
 - Following up on each RFI response via email, and
 - Determining if an addendum is needed when answering the question.
- Administering any necessary design (Letting) revisions by coordinating with the Design Lead and Project Manager for completing plan revisions or the Estimate Revision Request (ERR).
 - Upon receipt of a revision request, the Design Lead follows the process in [SCN1](#) and the *Roadway Design Guidelines* for submitting updated plans and an ERR (if needed) to HQ Construction for issuance.
 - The Senior Transportation Engineer issues an addendum to the construction Proposal Contract.
- Finalizing the Engineer's Estimate as coordinated with Estimating Manager prior to the bid opening (the letting day).

On letting day, HQ Construction opens all the bids received and the team moves into [SCN3](#) to award and execute the construction contract.

5CN3 Award and Execute the Construction Contract

Overview

Initiate reviewing the bid, recommending an award, and confirming all contractual elements are in place prior to executing the contract. Execute the contract so that the contractor can begin work. TDOT Policy 355-02, Award of Construction Contracts, is followed for this activity.

References

- TDOT HQ Construction Processes Manual*
- [TDOT Policy 355-02](#)

Deliverables

Deliverable	Task	Responsible Party	
		Activity Leader	Additional Support
Summary of Bids Report	▪ <i>Review the Bid</i>	Transportation Engineering Specialist	Contract Letting Manager; Senior Transportation Engineer(s)
Award/Reject Recommendation			
Awards Committee Review Letter	▪ <i>Recommend Award</i>	Senior Transportation Engineer	Construction Director; Contract Letting Manager; Estimating Manager
Construction Contract (ready for execution)			

Review the Bid

The Contract Letting Manager and Senior Transportation Engineer(s) review the Summary of Bids Report generated from BidExpress to confirm the following (see Section 3.9 of the *TDOT HQ Construction Processes Manual* for additional items of note):

- There are no unbalancing/irregularities in the bid.
- The lowest bid is within the estimate target range of the respective engineer's estimate (within 10%).
- Confirmation that materially driven issues are not impacting the low bid.
- The DBE quote has been received.
- The apparent low bidder has an active Tennessee Contractor's license and is registered with the Secretary of State.

This bid review must be completed prior to the Bid Review Meeting.

Recommend Award

Following the processes described in Section 3.9 of the *TDOT HQ Construction Processes Manual*, the Senior Transportation Engineer prepares a recommendation on whether to accept (i.e., award) or reject the bid. This step includes:

- Attending the Bid Review Meeting to review the bids and discuss next steps.
- Contacting the Contractor if TDOT determines to reject a bid, discussing irregularities and issues of concern at that time.
- Finalizing the Award/Reject Recommendation prior to the Awards Meeting.
- Preparing (as needed) an Awards Committee Review Letter (as approved by the Construction Director, Contract Letting Manager, Estimating Manager, Senior Transportation Engineer) for all contracts that fell outside the target margins.
- This is based on the Engineer's Estimate and whether the recommendation is to award or reject.
- This includes noting the appropriate justifications for the recommendation.
- Attending the Pre-Award and Award meetings and directing the administration of the AWP system for contracting purposes.

Execute the Contract

Following the processes described in the *TDOT HQ Construction Processes Manual*, the Transportation Engineering Specialist confirms the following before circulating the contract for signatures:

- The bid was signed by an authorized signatory.
- The proposed contractor has an active Tennessee Contractor's license and is registered with the Secretary of State.
- The proposed contractor's surety is registered as an eligible surety.
- The proposed contractor has submitted a bid bond and certificates of insurance consistent with the contract requirements.

Once the award has been approved, the Transportation Engineering Specialist, or Transportation Engineer, routes the contract for signature and completes the needed actions in AWP per Section 3.10 of the *TDOT HQ Construction Processes Manual*.

Documents Referenced in the Appendix

- A. [*Project Commitment Document \(Word\)*](#)
- B. [*Executive Status Report \(Word\)*](#)
- C. [*Project Communication & Collaboration Documents*](#)
 - a. Agenda & Meeting Minutes (*Word*)
 - b. Project Team Contact List (*Word*)
 - c. Project Communication Plan (*Word*)
- D. [*Comment Resolution Form \(Excel\)*](#)
- E. [*Risk Management Plan and Risk Register \(Excel\)*](#)
- F. [*Concept Report \(fillable PDF and Word document\)*](#)
- G. [*Estimating Process \(Excel\) / Conceptual Estimating Tool \(in development\)*](#)
- H. [*ROW Exhibits \(PDF\)*](#)
- I. [*FHWA Summary of Actions in the PDN*](#)

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Appendix A

Appendix A

Project Commitment Document

[*Click here for access to the Word document template*](#)

Project Commitment Document

TN

Project Name | Project # | PIN | Location

TDOT Project Manager: Name, Phone, Email

Consultant PM: Name, Firm Name, Phone, Email

Project Description	Project Description	Project Type, Primary Funding Source, Short Description
	Project Goals and Metrics <i>Develop 3-5 “big picture” project goals that express results instead of project work items, include measurable metrics that are project specific.</i>	Ex. Improve capacity to LOS C and rehab pavement.
	Project Scope Statement <i>Define the work that needs to be accomplished to satisfy the Project Goals. Should include “do not statements”. A short statement of:</i> <ul style="list-style-type: none">• What will be accomplished?• When will it be completed? Include construction period.• How much will it cost?	Ex. Widen from 3 to 5 lanes from station XX to YY; rehab pavement from station XX to YY; provide ITS system from XX to YY. Construction period 18 months, complete by summer 20XX. Total construction cost \$1.2m.

Project Delivery Method: Design/Bid/Build Design Build Progressive Design Build
 CMCG (Construction Manager/General Contractor) Other

Environmental Doc. Type: CE EA EIS TEER Other

Preliminary Budget Estimate <i>List budget estimates, validated by the project team.</i>	Preliminary Engineering		Construction	
	Design:	\$	Construction Engineering Mgt:	\$
	ROW:	\$	Incentives, Misc., Contingency:	\$
	Utilities:	\$	Construction Contract Price:	\$
	Other:	\$	Other:	\$
	Total Cost Estimate:		\$	
	Programmed Amount:		\$	

Potential Project Risks

List major project risks impacting scope, schedule, budget.

Schedule <i>List major proposed milestone dates.</i>	Milestone	Scheduled Completion Date
	Environmental Complete	MM/DD/YYYY
	Footprint Established	MM/DD/YYYY
	Plan In Hand Complete	MM/DD/YYYY
	Right of Way Certification	MM/DD/YYYY
	Contract Letting	MM/DD/YYYY

Project Name _____

PIN _____

Acknowledgement

TN

By signing below, I acknowledge that I have reviewed the scope, schedule, and budget, as well as the risks outlined herein. I agree that the information included in the PCD is representative, based on the knowledge I have at this time.

Check if additional documentation is included.

Project Name _____

PIN _____

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Appendix B

Appendix B

Executive Project Status Report

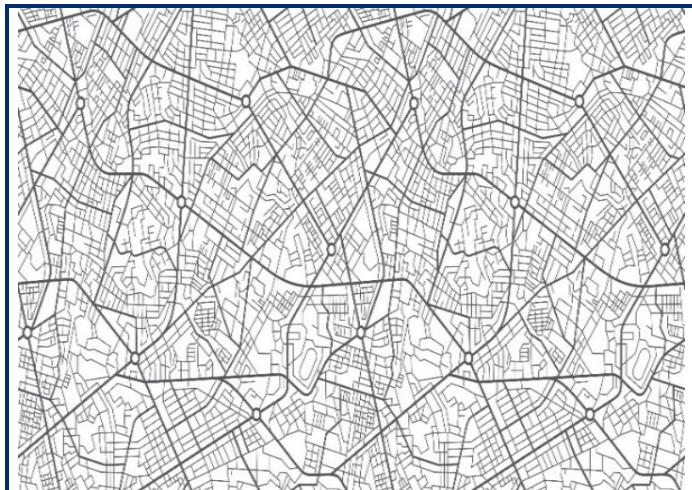
[Click here for access to the Word document template](#)

Project Name | Project #**PIN | Location****TDOT Project Manager:** Name

Phone, Email

Consultant Project Manager: Name

Phone, Email

Project Description: Project Type, Funding Source, Short Description**Project Map**

(click on the image to browse and insert map image)

What's Changed Since Last Update?

Identify changes to scope, schedule, budget, quality, risk (SSBQR.)

Project Risks

Identify risks impacting scope, schedule, budget (SSB.)

Project Budget

	Estimated	Programmed
PE Design	\$1.00	\$1.00
PE ROW	\$1.00	\$1.00
PE Utilities	\$1.00	\$1.00
PE Other	\$1.00	\$1.00
Constr. Eng. Mgt.	\$1.00	\$1.00
Incentives/Contingency	\$1.00	\$1.00
Constr. Contract Price	\$1.00	\$1.00
Other	\$1.00	\$0.00
TOTAL	\$ 8.00	\$ 7.00

Estimated costs above as of: MM/DD/YYYY

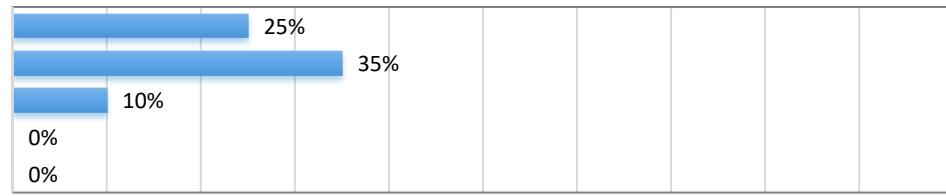
Project Schedule

	Actual Finish	Baseline Forecast
Kickoff Complete	MM/DD/YYYY	MM/DD/YYYY
Scoping Complete	MM/DD/YYYY	MM/DD/YYYY
PCD Signed	MM/DD/YYYY	MM/DD/YYYY
Env. Doc Complete	MM/DD/YYYY	MM/DD/YYYY
ROW Acquisition Begins	MM/DD/YYYY	MM/DD/YYYY
Footprint Established	MM/DD/YYYY	MM/DD/YYYY
Plan in Hand Complete	MM/DD/YYYY	MM/DD/YYYY
PS&E Review Complete	MM/DD/YYYY	MM/DD/YYYY
Letting	MM/DD/YYYY	MM/DD/YYYY

(Baseline Forecast as of signed PCD)

Percent Complete

Project Commitment Document



0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Appendix C

Project Communication and Collaboration Documents

Agenda & Meeting Minutes

Project Team Contact List

Project Communication Plan

[*Click here for access to the Word document templates*](#)

Project Name Project # PIN Location		
Meeting Title	Meeting Date, Meeting Time	Meeting Location

1. Introductions/Sign-In Sheet
2. Discipline Discussion
 - a. Roadway
 - b. Environmental
 - c. Drainage/Hydraulics
 - d. Structures
 - e. Survey
 - f. Pavement
 - g. ROW
 - h. Signing & Striping
 - i. Signals/Lighting
 - j. Geotech
 - k. Traffic
 - l. Utilities
3. Project Schedule
 - a. Upcoming Deliverables & Meeting(s) Summary
 - b. Review MS Project Schedule
4. Budget / Project Costs / Estimate
5. Quality
6. Risk/Mitigation
7. Stakeholder Outreach
8. Action Items

Action / Decision / Impact	Responsible Party	Due Date

Project Team Contact List

TN

Project Name | Project # | PIN | Location

List project team members who are responsible for the production and completion of the project during pre-construction.

Role	Name	Email	Phone	Address/Location
TDOT Project Manager				
Consultant Project Manager				
Bid Analysis & Estimates Rep.				
Community Relations Rep.				
Construction Manager				
Construction Rep (HQ, Regional)				
Drainage Designer				
Environmental Lead(s)				
Env. Mitigation Lead				
Env. Technical Leads				
Env. Permit Lead				
Mitigation Designer				
NEPA Lead				
Lead Geotech Eng./Geologist				
Hydraulic Lead				
Integrated Mobility Lead				
Mitigation Office Rep.				
Multimodal Lead				
Pavement Design Lead				
Project Management Director				
Railroad Coordinator(s)				
Regional Director				
Region Maintenance Rep.				
Region ROW Appraiser/Lead				
Resident Engineer				
Right-of-Way Lead				
Roadway Design Lead				
Roadway Engineer				
Signal Design Engineer				
STID Project Manager				
STID Engineer				
STIP Representative				
Structures Design Lead				
Survey Lead				
Traffic				
ITS Design Engineer				
Lighting Design Engineer				
Signal Design Engineer				
Traffic Operations Engineer				
Traffic Management Lead				
Traffic Safety				
Transportation Planning				
TSMO Coordinator				
Utility Coordinator				
Value Management Lead				
VE Program Coordinator				
Stakeholders				
FHWA Representative				
Local Government				

Project Name _____

PIN _____

Project Team Contact List

TN

Municipality Rep. (MPO/RPO)			000-000-0000	Company Name Street City State Zip
Property Owners				
Utility Owners			000-000-0000	Company Name Street City State Zip

Project Name _____

PIN _____

Project Communication Plan

TN

Project Name Project #	TDOT Project Manager	Consultant Project Manager
	PM Name Phone Email	PM Name Phone Email
Project Description: A summary that differentiates this project from other projects, primary funding source, high profile, maintenance, reconstruction, design bid build, design build, CMGC, etc.)		

Important Links			
Project Commitment Document [insert link]	Executive Status Reports [insert link]	Project Team Contact List [insert link]	Other [insert link]

Project Delivery Success (Notify the PM if any of these success factors are at risk.)			
Project completed on schedule and on budget (see PCD.)	Internal and external stakeholder acceptance.	Change orders <3% of construction costs.	Other

Impacts to SSBQR	Team Meetings & Project Updates
<p>Report concerns or changes to scope, schedule, budget, quality or risk as follows.</p> <ul style="list-style-type: none"> Directly notify the discipline/technical lead regarding issues that directly impact tasks and/or deliverables. Report issues that can/will be mitigated at the next scheduled project team meeting. Immediately report issues to the Project Manager that require a multidisciplinary solution or cannot be mitigated by the project team. Changes impacting the Project Commitment Document (PCD) must be approved by the Project Management Director and Regional Director. 	<p>Team member communication varies based on topic and timing; however, all project updates are documented in writing as follows.</p> <ul style="list-style-type: none"> Project team meetings occur every 4-6 weeks and include topics outlined and documented in the agenda and minutes. Time sensitive updates are reported as soon as possible to the Project Manager and the respective discipline lead(s) via email. Internal and external stakeholders attend project meetings (outlined in the PDN) and receive project information from the Project Manager. Comment resolution form is sent at least one week before the review meeting, all recipients respond regardless of their comments.

Team Collaboration & Conflict Resolution	Team Decision Making
<p>The project team collaborates across disciplines on a variety of tasks and deliverables, in person/phone/video collaboration is preferred.</p> <ul style="list-style-type: none"> Seven out of 11 project management activities are meetings, see activity meetings for a list of suggested invitees. Multidisciplinary conversations and meetings occur regularly outside of 	<p>The project team works in a matrix organization, reporting responsibilities and decision making may overlap.</p> <ul style="list-style-type: none"> The Project Manager makes decisions regarding scope, schedule, budget, quality and risk as it relates to project delivery. Team members report to the Project Manager on project related matters.

Project Name _____

PIN _____

Project Communication Plan

TN

project team meetings (we want to avoid surprises).

- Conflicts as well as differences in approaching risks and tasks are managed directly between team members. Project managers and discipline managers may assist in issue resolution as needed.
- Proactive communication with internal and external stakeholders is generally conducted as part of an assigned role or responsibility.

- The Design Lead(s) regularly make decisions regarding technical designs and documents, technical discussions and resolutions, costs and estimates, as well as risk mitigation.
- The Project Management Director and Regional Directors make decisions regarding changes to the Project Commitment Document impacting schedule and budget, as well as decisions regarding risks that escalate beyond the team's control.

Public, Community Media

The project team notifies the Public Involvement Lead and copies the Project Manager as soon as possible when team members receive:

- Messages from the public, business owners, public safety, or other local municipalities
- Public information requests, media requests and inquiries including membership and advisory boards, trade organizations, industry forums and personal blogs
- Public record requests (e.g., FOIA requests)
- General project information requests from outside the project team
- Concerns with or from external stakeholders

Naming Convention

Shared Project Files & Folders

Project ID_Document Name_YYYY.MO.DAY [\[insert link\]](#)

Project Emails

From: Last, First <firstname.lastname@tn.gov>

Sent: Tuesday, Month 15, 2022 11:38 AM

To: Name <name@companyname.com>

Cc: Name <name@companyname.com>

Subject: Project ID#, Project Name, Topic]

For the first email in a thread, provide a short summary statement (ideally in 50 words or fewer.)

Project Status Reporting

Project reports are sent to the recipients and uploaded to the [shared folder](#) for team review.

Report	Author	Frequency	Recipient(s)
Authorized Funds	TDOT Project Manager	Stage 1 – Confirm Authorization	Project Team, Project Management Director, Regional Director, Regional Director Project Management
Project Management Plan (PMP)	Project Manager	Stage 2 – Finalize PMP	Project Team
Project Commitment Document (PCD)	TDOT Project Manager	Stage 2 – Finalize PCD	Project Team Project Management Director Regional Director
Executive Status Report(s)	TDOT Project Manager	Monthly or frequency as requested	Project Management Director Regional Director

[Back to PDN Overview](#)

Appendix D

Appendix D

Comment Resolution Form

[*Click here for access to the Excel document template*](#)

Comment Resolution Form

TN

[Back to PDN Overview](#)

Appendix E

Appendix E

Risk Management Plan (and Risk Register)

[Click here for access to the Excel document template](#)

[Back to PDN Overview](#)

Appendix F

Appendix F

Concept Report

[*Click here for access to the fillable PDF template*](#)

Concept Report Form

TN

The Concept Report Form develops an initial project vision, basis of design and report (e.g., the Concept Report) to transition into the subsequent design stages (Stages 1 through 4 in the Project Delivery Network [PDN]). This form summarizes all project components using information to complete the Concept Report.

General Project Information										
Project Name										
PIN										
Route Information	Route	NHS (Y/N)	Functional Class			City		County		
Project Information	Begin Log Mile	End Log Mile	AADT¹	Design Hour Vol. (DHV)¹	Truck %¹	Design Speed MPH	Posted Speed MPH	Base Year	Design Year	
Project Description & Standard Drawings Used										Project Details
Important Project History Related Projects, or Commitments										
Project Purpose/Need										
Major Environmental Considerations										

Project Name _____

PIN _____

Multi-Modal Considerations				Preliminary Estimates	
Major Project Risks					
Concept Estimate and Timeline	Total Current Project Cost		Construction Year Estimate		
	Proposed Construction Year		Estimated Construction Duration		

¹ Traffic numbers reflect identified design year

Approvals

Executed for approval of this Concept Report:

STID Director

Date

Pre-Construction Director

Date

Regional Project Management Director

Date

Bureau Chief of Engineering

Date

Bureau Chief of Planning

Date

The following individuals to execute if a bridge concept report:

Structures Director

Date

Project Name _____

PIN _____

Action Checklist						
OSD1 Initiate Concept Report and Request Funding						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Request and Finalize Safety Data				
<input type="checkbox"/>	<input type="checkbox"/>	Request Project Number, PIN, and Task Profile Numbers				
<input type="checkbox"/>	<input type="checkbox"/>	Coordinate with Long Range Planning				
<input type="checkbox"/>	<input type="checkbox"/>	Request and Finalize Traffic Data				
<input type="checkbox"/>	<input type="checkbox"/>	Request Preliminary Survey Data				
<input type="checkbox"/>	<input type="checkbox"/>	Initiate Division Reviews				
<input type="checkbox"/>	<input type="checkbox"/>	Schedule Site Review (with appropriate Divisions)				
OEN1 Conduct Environmental Desktop Review						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Environmental Desktop Review is Complete			No comments received <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Request Concept Report Review			No comments received <input type="checkbox"/>	
OMM1 Conduct Multimodal Review						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Multimodal Review is Complete			No comments received <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Review Multimodal Considerations & Recommendations				
<input type="checkbox"/>	<input type="checkbox"/>	Request Concept Report Review			No comments received <input type="checkbox"/>	
OTD1 Conduct Initial Traffic Ops/TSMO Review (include HQ Traffic Ops and Regional Traffic Office)						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Confirm TSMO Alignment & Operations Review is Complete			No comments received <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Request Concept Report Review			No comments received <input type="checkbox"/>	
OST1 Develop Structures Recommendations						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Comments and Recommended Structure Type for Concept Report is Complete			No comments received <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Comments and Hydraulic Recommendations for Concept Report is Complete			No comments received <input type="checkbox"/>	
OSY1 Provide Preliminary Survey Data						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Review Preliminary Survey Data				
OGT1 Conduct Preliminary Geotechnical Assessment						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Geotechnical Division Review is Complete			No comments received <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Request Concept Report Review			No comments received <input type="checkbox"/>	
ORD1 Provide Roadway Desktop Review						
Complete	NA					
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Roadway Division Review is Complete			No comments received <input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	Request Concept Report Review			No comments received <input type="checkbox"/>	

Project Name _____

PIN _____

Action Checklist

0SD2 Develop Conceptual Layout and Complete Site Visit

Complete	NA	Date Completed
<input type="checkbox"/>	<input type="checkbox"/> Conduct Intersection and Interchange Evaluation (IIE)	
<input type="checkbox"/>	<input type="checkbox"/> Complete Conceptual Signal Warrants	
<input type="checkbox"/>	<input type="checkbox"/> Develop Draft Conceptual Layouts/Crash Figures for Site Visit	
<input type="checkbox"/>	<input type="checkbox"/> Compile Initial Divisional Reviews for Site Visit	
<input type="checkbox"/>	<input type="checkbox"/> Prepare & Send Site Visit Packet	
<input type="checkbox"/>	<input type="checkbox"/> Lead Site Visit	
<input type="checkbox"/>	<input type="checkbox"/> Initiate Interstate Access Requests (IAR) Concept Coordination with FHWA (if applicable)	

0SD3 Develop Draft Concept Report

Complete	NA	Date Completed
<input type="checkbox"/>	<input type="checkbox"/> Develop, Compile, and Distribute the Draft Concept Report	
<input type="checkbox"/>	<input type="checkbox"/> Develop Environmental Technical Study Area (ETSA)	

0TO2 Develop TSMO Scope Items (include HQ Traffic Ops and Regional Traffic Office)

Complete	NA	Date Completed
<input type="checkbox"/>	<input type="checkbox"/> Confirm Signal Warrants Analysis is Complete	
<input type="checkbox"/>	<input type="checkbox"/> Confirm Lighting Warrants Analysis is Complete	
<input type="checkbox"/>	<input type="checkbox"/> Review and Confirm TSMO & ITS Scope and Budget	

0UT1 Complete Utility Preliminary Estimates

Complete	NA	Date Completed
<input type="checkbox"/>	<input type="checkbox"/> Review and Confirm Preliminary Utility Estimate	
<input type="checkbox"/>	<input type="checkbox"/> Review and Confirm Preliminary Railroad Cost Estimate	

0SD4 Finalize Concept Report

Complete	NA	Date Completed
<input type="checkbox"/>	<input type="checkbox"/> Compile and Review Initial Risk Assessment	
<input type="checkbox"/>	<input type="checkbox"/> Finalize Conceptual Layouts	
<input type="checkbox"/>	<input type="checkbox"/> Finalize Environmental Technical Study Area (ETSA)	
<input type="checkbox"/>	<input type="checkbox"/> Address Comments and Finalize Concept Report	
<input type="checkbox"/>	<input type="checkbox"/> Address Comments and Finalize Interstate Access Requests (IAR) Document and Memo (if applicable)	
<input type="checkbox"/>	<input type="checkbox"/> Develop Roadway Safety Audit (RSA) No Plans Document	
<input type="checkbox"/>	<input type="checkbox"/> Submit the final Concept Report for Review and Signatures (as needed; see 0SD3 for additional information)	

NA Justification

Concept Report Table of Contents/Attachments

Concept Report Table of Contents/Attachments		
	Included	NA
One-Page Summary (with project location map)	<input type="checkbox"/>	<input type="checkbox"/>
Conceptual Layout(s) and Cross Section	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Technical Study Area (ETSA) Layout	<input type="checkbox"/>	<input type="checkbox"/>
Concept Cost Estimate (Construction Year Estimate)	<input type="checkbox"/>	<input type="checkbox"/>
TSMO & ITS Scope and Budget ¹	<input type="checkbox"/>	<input type="checkbox"/>
Enter other estimate information (e.g., utility estimate) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Crash Packet ¹	<input type="checkbox"/>	<input type="checkbox"/>
Crash Prediction Analysis ¹	<input type="checkbox"/>	<input type="checkbox"/>
Site Visit Attendee List	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Desktop Review Form ¹	<input type="checkbox"/>	<input type="checkbox"/>
Multimodal Considerations & Recommendations ¹	<input type="checkbox"/>	<input type="checkbox"/>
Existing Structure Summary ¹	<input type="checkbox"/>	<input type="checkbox"/>
Email or memo containing Structure Type Recommendations ¹	<input type="checkbox"/>	<input type="checkbox"/>
Email or memo containing Hydraulic Recommendations ¹	<input type="checkbox"/>	<input type="checkbox"/>
Hydraulic Data	<input type="checkbox"/>	<input type="checkbox"/>
Intersection and Interchange Evaluation (IIE) Analysis and Summary Form	<input type="checkbox"/>	<input type="checkbox"/>
Traffic Analysis Summary/Tables	<input type="checkbox"/>	<input type="checkbox"/>
Forecasted Traffic Sheets ¹	<input type="checkbox"/>	<input type="checkbox"/>
Traffic Modeling (e.g., Synchro, VISSIM, Highway Capacity Software (HCS) Output) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Signal Warrant ¹	<input type="checkbox"/>	<input type="checkbox"/>
Lighting Warrant ¹	<input type="checkbox"/>	<input type="checkbox"/>
Initial Risk Assessment using the Risk Assessment Form	<input type="checkbox"/>	<input type="checkbox"/>
Final Interstate Access Request (IAR) Document and Memo with Letter from STID Director	<input type="checkbox"/>	<input type="checkbox"/>
Road Safety Audit (RSA) No Plans ¹	<input type="checkbox"/>	<input type="checkbox"/>
NA Justification		

¹ External document to STIP

State Industrial Access (SIA) Packet Form

TN

The SIA Packet Form develops an initial project vision, basis of design and report (e.g., the SIA packet) to transition into the subsequent design stages (Stages 1 through 4 in the Project Delivery Network [PDN]). This form summarizes all project components using information to complete the SIA packet.

General Project Information										
Project Name										
PIN										
Route Information	Route	NHS (Y/N)	Functional Class			City		County		
Project Information	Begin Log Mile	End Log Mile	AADT ¹	Design Hour Vol. (DHV) ¹	Truck % ¹	Design Speed MPH	Posted Speed MPH	Base Year	Design Year	
Project Description & Standard Drawings Used										Project Details
Important Project History, Related Projects, or Commitments										
Project Purpose/Need										
Major Environmental Considerations										

Project Name _____

PIN _____

Multi-Modal Considerations				Preliminary Estimates
Major Project Risks				
Concept Estimate and Timeline	Total Current Project Cost		Construction Year Estimate	

¹Traffic numbers reflect identified design year

Executed for approval of this SIA Packet:

Statewide SIA Program Manager

Date

STID Director

Date

Action Checklist			
0SD5 Develop State Industrial Access (SIA) Packet			
Complete	NA		Date Completed
<input type="checkbox"/>	<input type="checkbox"/>	Receive Draft Application or Initial Request	
<input type="checkbox"/>	<input type="checkbox"/>	Schedule and Prep for Site Visit	
<input type="checkbox"/>	<input type="checkbox"/>	Lead Site Visit	
<input type="checkbox"/>	<input type="checkbox"/>	Develop Conceptual Layout, Cost Estimate, and Environmental Technical Study Area (ETSA)	
<input type="checkbox"/>	<input type="checkbox"/>	Conduct Benefit-Cost Analysis	
<input type="checkbox"/>	<input type="checkbox"/>	Develop Letter(s) of Approval	
<input type="checkbox"/>	<input type="checkbox"/>	Confirm Execution of Letter(s) of Approval	
<input type="checkbox"/>	<input type="checkbox"/>	Finalize the SIA Packet	
<input type="checkbox"/>	<input type="checkbox"/>	Route the SIA Packet for Review	
NA Justification			

Project Name _____

PIN _____

State Industrial Access (SIA) Packet
Table of Contents/Attachments

	Included	NA
One Page Summary (with project location)	<input type="checkbox"/>	<input type="checkbox"/>
Conceptual Layout(s)	<input type="checkbox"/>	<input type="checkbox"/>
Environmental Technical Study Area (ETSA) Layouts	<input type="checkbox"/>	<input type="checkbox"/>
Concept Cost Estimate	<input type="checkbox"/>	<input type="checkbox"/>
TSMO & ITS Scope and Budget ¹	<input type="checkbox"/>	<input type="checkbox"/>
Enter other estimate information (e.g., utility estimate) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Traffic Analysis Summary/Tables	<input type="checkbox"/>	<input type="checkbox"/>
Forecasted Traffic Sheets ¹	<input type="checkbox"/>	<input type="checkbox"/>
Traffic Modeling (e.g., Synchro, VISSIM, Highway Capacity Software (HCS) Output) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Signal Warrant ¹	<input type="checkbox"/>	<input type="checkbox"/>
Signed SIA Application by the Local Government(s) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Resolution from the Local Government(s) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Industrial Site Plan(s) ¹	<input type="checkbox"/>	<input type="checkbox"/>
Benefit-Cost Analysis ¹	<input type="checkbox"/>	<input type="checkbox"/>
Letter(s) of Approval ¹	<input type="checkbox"/>	<input type="checkbox"/>
Site Visit Attendee List	<input type="checkbox"/>	<input type="checkbox"/>
NA Justification		

¹ External document to STID

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Appendix G

Appendix G

Estimating Process

TDOT Estimating Process within PDN Stages

TN

	Stage 0	Stage 1 Cost Validation	Line and Grade Package	Functional Design Plans	Plan-in-Hand Plans	Plans, Specification & Estimate Plans/Letting	
BID ITEMS	CONSTRUCTION ITEMS	Concept Report Estimate using template.	Validate Concept Estimate. Report Estimate. - Scoping information - Statewide averages	Focus on major Items that include 80% of the costs (see below) and considers a realistic inflation % for the year the project will be let.	Estimate all Project Items.	Estimate all Project Items based on inflation, market, etc.	Estimate Final Review and Update based on inflation, market, etc.
			Concept Report Estimate updated by Roadway Design Lead Engineer through Scoping Process.	Major items quantified and estimated by Discipline - Compiled by Roadway Design Lead Engineer. • Major Removals • Pavement (conservative pavement section assumptions) • Earthwork (excavation, borrow, geotech recommendation [e.g., graded solid rock, geotextiles], rock cuts) • Barrier/Guardrail • Drainage System • Structures (hydraulic and non-hydraulic) • Walls (retaining, sound) • Sign structures • TSMO (ITS, signals, and lighting)	All Items quantified and estimated by Discipline - Compiled by Roadway Design Lead Engineer.	All Items quantified and estimated by Disciplines, Headquarters and 3rd Party - Compiled by Roadway Design Lead Engineer.	Completed by Headquarters Construction.
				Statewide and Regional Averages for Unit Prices			
% BASED ITEMS			Recommended Values: Project < \$5 M Mobilization 8-11% of Construction Traffic Control 3-5% of Construction			Utilize production based unit price estimate process.	Completed by Headquarters Construction.
	CONTINGENCY FOR CONSTRUCTION ITEMS		Add Contingency to Bid Items Total - Recommended Values: • 10% Rural minor pavement preservation without complications. • 15% Urban minor pavement preservation without complications. • 20% New construction, reconstruction, rehabilitation, widening, trails, landscaping, and enhancement. • 10% for construction change orders (on all types of projects). - Adjust per understanding of project Level of Detail (LOD).		Lower Contingency Based on LOD - Recommended Values: • 5% Rural minor pavement preservation without complications. • 8% Urban minor pavement preservation without complications. • 10% New construction, reconstruction, rehabilitation, widening, trails, landscaping, and enhancement. • 10% contingency for construction change orders (on all types of projects).	Lowest Level of Contingency - Recommended Values: • All items should be estimated with limited risk of project changes. • 5% to 10% contingency for construction change orders.	

TDOT Estimating Process within PDN Stages

TN

		Stage 0	Stage 1 Cost Validation	Line and Grade Package	Functional Design Plans	Plan-in-Hand Plans	Plans, Specification & Estimate Plans/Letting
NON-BID	OTHER			<ul style="list-style-type: none"> • ROW funded amount • Utilities and Railroad utilize Concept Estimate (OUT1) • Environmental mitigation (streams and wetland design or credits) • Incentives 2% of construction 	<ul style="list-style-type: none"> • ROW funded amount • Utilities and Railroad updated estimate (2RW1/2UT1) • Final environmental mitigation (streams and wetland design or credit costs) • Incentives 2% of construction 	<ul style="list-style-type: none"> • Final ROW costs • Final utility costs • Final incentive costs • Final environmental mitigation (streams and wetland design or credit costs) 	
	PRELIMINARY ENGINEERING			PE Recommendations (as applicable): 6% - Rural or Urban Pavement Rehab, and safety projects. 10% - New construction, reconstruction, roadway and bridge rehabilitation, widening, trails, landscaping, and enhancement. 20% - Local Government - Percentage is based on the design complexity vs. construction costs. Adjust the recommendations to fit the anticipated needs of the project. PE costs can range higher than 20% depending on design complexity and the size of the project. Small projects generally have a higher PE % than large projects.		Include actual PE costs	Completed by Headquarters Construction.
	CONSTRUCTION ENGINEERING			CE Recommended Values: Construction, Reconstruction, Rehabilitation: \$500K - \$1M: 12.0% \$1M - \$5M: 7.5% \$5M - \$15M: 7.0% >\$15M: 6.5%	Spot Improvement, Safety, Enhancements: \$0 - \$500K: 12.0% \$500K - \$5M: 8.5% \$5M - \$15M: 7.5% >\$15M: 6.5%	Included actual CE costs (as coordinated with Construction) in the estimate	Completed by Headquarters Construction.
	INFLATION FACTOR			5.5% per year until Programmed Construction Year			
		Update Project File at each stage of the project.					

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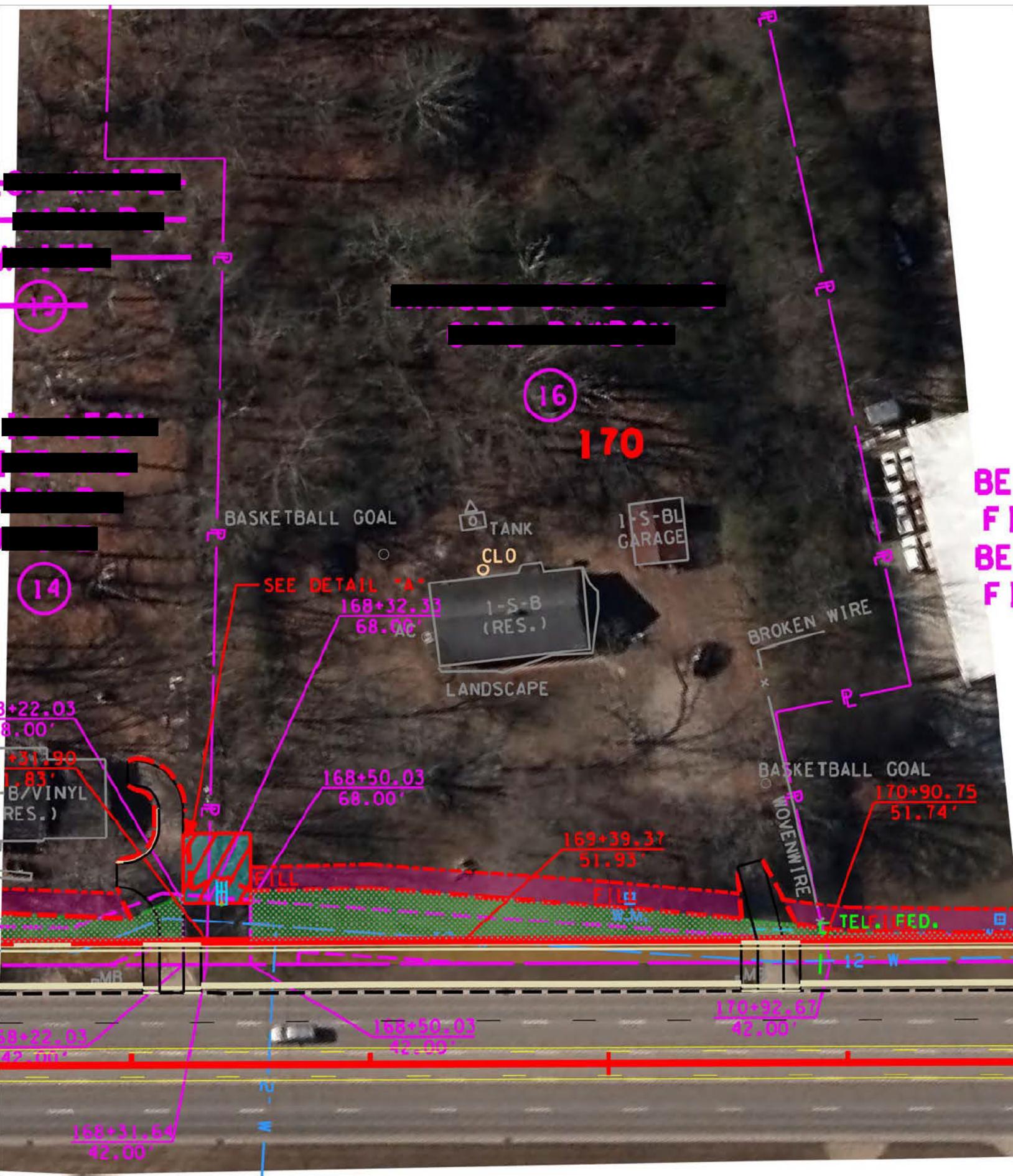
Appendix H

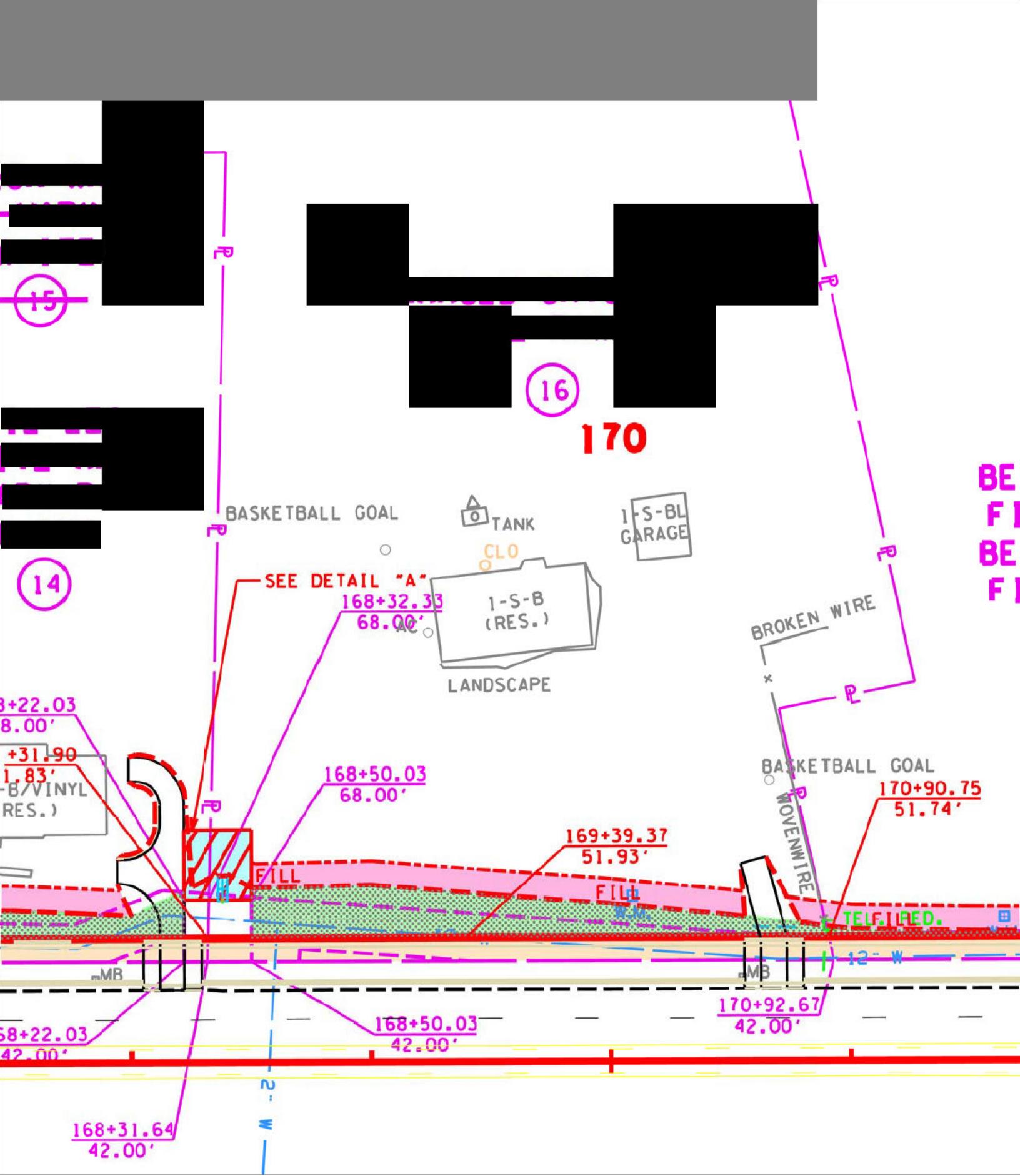
Appendix H

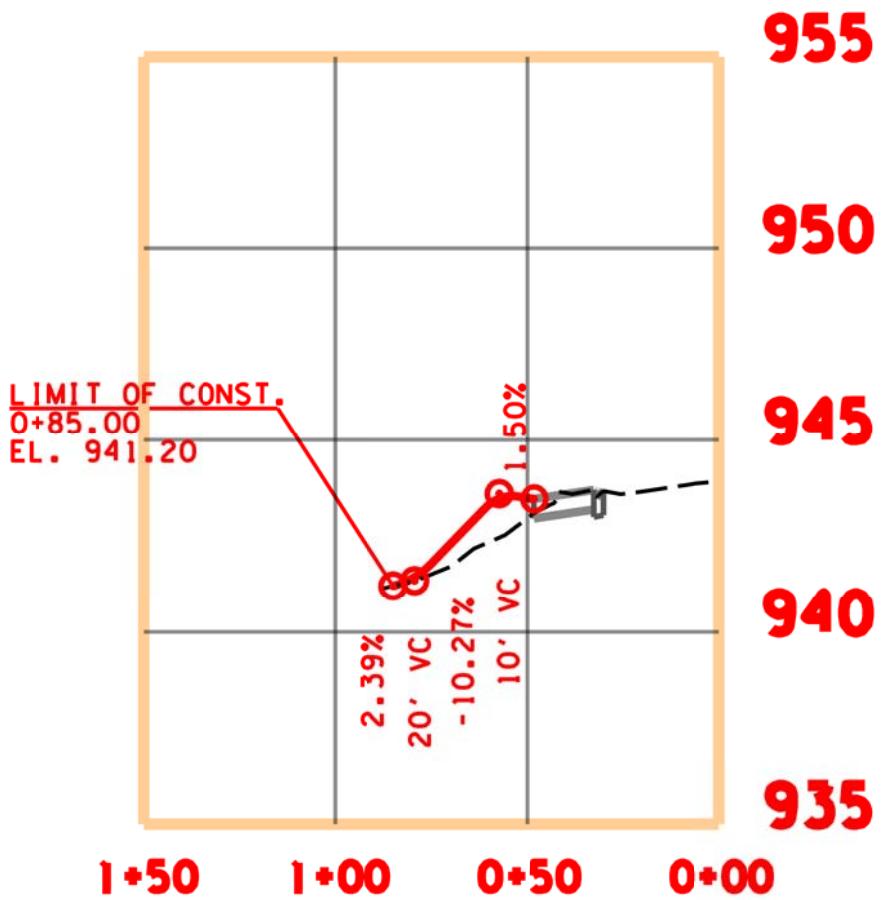
ROW Exhibits

LEGEND

SYMBOL	AQUISITION TYPE
	FEE ACQUISITION
	PERMANENT DRAINAGE EASEMENT
	PERMANENT SLOPE EASEMENT
	TEMPORARY CONSTRUCTION EASEMENT







10' PVT. DR. LT. 170+70.50
TRACT NO. 16
NO S.D. REO'D

R.O.W. ACQUISITION TABLE

TRACT NO.	PROPERTY OWNERS	COUNTY RECORDS				TOTAL AREA (ACRES)			AREA TO BE ACQUIRED (ACRES)			AREA REMAINING (ACRES)		EASEMENT (ACRES)			
		TAX MAP NO.	PARCEL NO.	DEED DOCUMENT REFERENCE		LEFT	RIGHT	TOTAL	LEFT	RIGHT	TOTAL	LEFT	RIGHT	PERMANENT	SLOPE	CONSTRUCTION	AIR RIGHTS
				BOOK	PAGE												
1		74	44.04	RB474	310	2.400		2.400				2.400					
2		71	30	RB404	960	1.446		1.446				1.446					
3		74	30.04	RB441	100	2.850		2.850				2.850					
4		71	37.02	RB467	264	1.875		1.875				1.875					
5		71	37	RB277	524	5.568		5.568				5.568					
6		71	36	519	155	2.097		2.097				2.097					
7		71	33	10/279	3B4/360	2.742		2.742				2.742					
8		71	27	RB551	297	5.268		5.268	3401 S.F.		3401 S.F.	5.190			914 S.F.	1211 S.F.	
9		71	27.01	RB455	861	0.462		0.462	1483 S.F.		1483 S.F.	0.428			439 S.F.	668 S.F.	
10		71	26.01	280	329	1.333		1.333	3923 S.F.		3923 S.F.	1.243			376 S.F.	346 S.F.	
11		71	26	RB371	853	7.351		7.351	0.198		0.198	7.153			1172 S.F.	0.114	4239 S.F.
12		71	28	RB522/70/210/43	466/694/275/328	6.125		6.125				6.125					
13		71	21	502	037-092	20.550		20.550				20.550					
13A		71	21	RB532	12	2.266		2.266	3346 S.F.		3346 S.F.	2.189			400 S.F.	2893 S.F.	3256 S.F.
13B		71	21	RB532	12	1.794		1.794	3745 S.F.		3745 S.F.	1.708			0.147	2853 S.F.	
13C		71	21	RB532	12	7.428		7.428	2550 S.F.		2550 S.F.	7.369			0.148	0.120	
13D		71	21	RB532	12	12.996		12.996	0.183		0.183	12.813			0.305	0.154	
14		71	19	RB285/297	313/72	4.927		4.927	2346 S.F.		2346 S.F.	4.873			309 S.F.	2340 S.F.	1715 S.F.
15		71	10	297	72	2.672		2.672				2.672					
16		71	17	RB257	685	5.456		5.456	2562 S.F.		2562 S.F.	5.397			503 S.F.	4005 S.F.	2184 S.F.
17		72	1.01	RB363	202	4.748		4.748	2308 S.F.		2308 S.F.	4.695			501 S.F.	1518 S.F.	
18		59	31	108	308	1.327		1.327	1813 S.F.		1813 S.F.	1.285			610 S.F.	625 S.F.	
19		50	20	RB179	802	1.270		1.270	1620 S.F.		1620 S.F.	1.220			1146 S.F.	722 S.F.	

LAWRENCE COUNTY

Fed. Project: STP-EN-NH-6(129)

State Project: 50001-2273-14

Tract 16

Tax Map: 71 , Parcel: 17.00

LOCATED IN LAWRENCE COUNTY, TENNESSEE

Beginning at the point of intersection of the existing west margin of S.R. 6 and the south boundary of the [REDACTED] (Tract 17) property, said point of intersection being 42.00' left of S.R. 6 proposed centerline station 170+92.67; thence with said existing margin [REDACTED] to a point, said point being 42.00' left of S.R. 6 proposed centerline station 168+31.64; thence with the north boundary of the [REDACTED] [REDACTED] (Tract 14) property [REDACTED] to a point, said point being 51.83' left of S.R. 6 proposed centerline station 168+31.90; thence with the proposed west margin of said road as follows: ⁽¹⁾ [REDACTED], ⁽²⁾ [REDACTED] to a point, said point being 51.74' left of S.R. 6 proposed centerline station 170+90.75; thence with said south boundary [REDACTED] to the point of beginning, containing 2562 square feet.

The above described property is hereby conveyed in fee simple.

Beginning at the point of intersection of an existing permanent drainage easement and the north boundary of said [REDACTED] property (Tract 14), said point of intersection being 68.00' left of S.R. 6 proposed centerline station 168+32.33; thence with said north boundary [REDACTED] [REDACTED] to a point, said point being 97.00' left of S.R. 6 proposed centerline station 168+33.09; thence with the proposed margin of the herein described drainage facility as follows: ⁽¹⁾ [REDACTED] [REDACTED] ⁽²⁾ [REDACTED] to a point, said point being 68.00' left of S.R. 6 proposed centerline station 168+50.03; thence with said existing permanent drainage easement [REDACTED] to the point of beginning, containing 503 square feet.

The above described property is hereby conveyed as a permanent easement for construction and maintenance of a drainage facility. The land described above, on which the drainage facility is to be constructed, is to remain the property of the undersigned and may be used for any purpose desired, provided such use does not interfere with the use or maintenance of said facility.

Beginning at the point of intersection of the proposed west margin of S.R. 6 and the south boundary of said [REDACTED] property (Tract 17), said point of intersection being 51.74' left of S.R. 6 proposed centerline station 170+90.75; thence with said proposed west margin as follows: ⁽¹⁾ [REDACTED]
[REDACTED] ⁽²⁾ [REDACTED] ± to a point; thence with the north margin of the existing permanent drainage easement [REDACTED] ± to a point, said point being 68.00' left of S.R. 6 proposed centerline station 168+50.03; thence with the proposed drainage facility described above, [REDACTED] ± to a point; thence with the meander of the slope northerly 241' ± to a point; thence with said south boundary [REDACTED] ± to the point of beginning, containing 4005 square feet.

The above described property is hereby conveyed as a permanent easement for construction and maintenance of slopes outside the existing right of way line. The land described above, on which the slopes are to be constructed, is to remain the property of the Grantor(s) and may be used for any purpose desired, provided such use does not interfere with the use or maintenance of said slopes.

Being a strip of land parallel to and at all point no greater than 10.00' from the slope easement described above, containing 2184 square feet.

The above described property is hereby conveyed as an easement for the construction of a working area and erosion control outside of the proposed right of way line. The title to the above described land remains vested in the Grantor(s), and is to be used by the State of Tennessee, its contractors or assigns for a period of 3 years, from and after the commencement of construction.

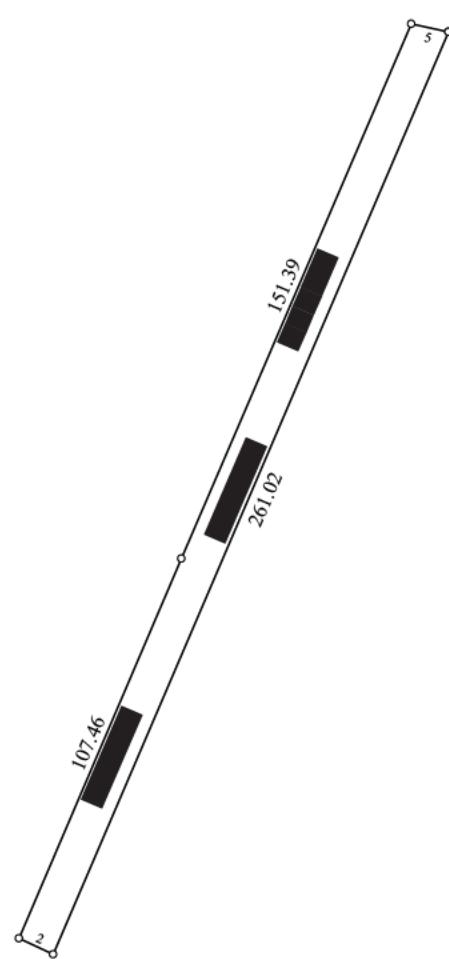
Reference

[REDACTED] in the Register's Office of Lawrence County, Tennessee.

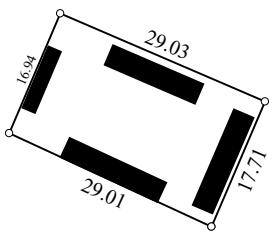
Property Address:

[REDACTED]

[REDACTED]



Title: Tr 16 Lawrence County, PIN 126899.00	Date: 12-22-2020
Scale: 1 inch = 50 feet	File: Fee Simple Tr 16.des
Tract 1: 0.059 Acres: 2561 Sq Feet: Closure = s45.3551w 0.00 Feet: Precision =1/125667: Perimeter = 540 Feet	



Title: Tr 16 Lawrence County PIN 126899.00

Date: 12-22-2020

Scale: 1 inch = 25 feet

File: Drainage Easement Tr16.des

Tract 1: 0.012 Acres: 503 Sq Feet: Closure = n44.4404e 0.00 Feet: Precision =1/21409: Perimeter = 93 Feet

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Appendix I

Appendix I

FHWA Summary of Actions in the PDN

FHWA Summary of Actions in the PDN

Required Actions and Involvement

PDN Stage	FHWA Involvement	Regulatory Reference
<i>Stage 0</i>	Approval of TIP/STIP (Federally funded transportation projects must be approved in the STIP/TIP prior to environmental clearance. Projects cannot advance without satisfying this requirement.)	23CFR450.326(a) ¹
<u>1PM1</u>	Approval of funding authorization before beginning any phase of work (PE-NEPA, PE-Final Design, ROW, study, etc.) on any Federal-aid project.	23CFR630.106
<u>1PM1</u>	All actions are retained for Appalachian Development Highway System (ADHS) projects.	23 U.S.C. 106(g)(5)(B)
<u>1EN1</u>	Required action on all Federal-aid projects for Tribal consultations.	36CFR800.2(c)(2)(ii) ³
<u>1RD1</u>	Required FHWA action for Interchange Access Request (IAR) approval prior to adding or modifying points of access on the Interstate System. See <i>FHWA/TDOT Interstate Access Request (IAR) Standard Operating Procedure (SOP)</i> for additional details.	23 U.S.C. 111
<u>2EN2</u>	Required review and approval of D-list Categorical Exclusions (CEs) (except Programmatic Categorical Exclusions (PCEs)), Environmental Assessments (EAs), Environmental Impact Statements (EISs), and Environmental Re-Evaluations.	23CFR771.117(d) ⁴ 23CFR771.119(c) ⁵ and (h) ⁵ 23CFR771.123(g) ⁶ 23CFR771.125(b) ⁷ 23CFR771.125(c) ⁸ 23CFR771.127(a) ⁹ 23CFR771.129(c) ¹ 23CFR774.7(d) ¹ 23CFR774.9(b) ¹²
<u>2EN4</u>	Required action if a Memorandum of Agreement (MOA) is needed.	36CFR800.6(c)
<u>2ST2; 3ST1</u>	Required action if the project includes unusual/complex bridges and/or structures.	23UCS109(a)
<u>5CN1</u>	Required action to authorize construction funding (including advanced construction) prior to TDOT issuing a notice to proceed to begin construction work on any Federal-aid project. Note: FHWA will issue the project authorization.	23CFR630.106
<u>5CN1</u>	Required action to approve any Buy America waivers for any identified steel or iron products that are permanently incorporated on a Federal-aid project. Note: TDOT is required to have a waiver approved and in place before product installation.	23CFR635.410

Required Actions and Involvement (for Risk-Based Involvement Projects)

Under the FHWA/TDOT Stewardship & Oversight Agreement of the Federal-aid program, FHWA may choose to review a project or elements of a project based on elevated risk potential. If chosen for Risk-Based Involvement (RBI), TDOT is to submit the project (or portion thereof) for FHWA Division office review.

PDN Stage	FHWA Involvement	Regulatory Reference
*Varies	RBI Preliminary Plan Review (TDOT's Functional Design Plans Field Review)	FHWA/TDOT Stewardship & Oversight Agreement
*Varies	RBI Constructability Review (occurs during Functional Design Plans and potentially Plan-in-Hand field reviews)	
*Varies	RBI Final Plan Review (TDOT's Plan-in-Hand Field Review)	
*Varies	RBI PS&E Plan Review (TDOT's PS&E Review)	

*Dependent on project-specific Stewardship and Oversight Plan. See the RBI Circular Letter.

Optional Involvement (primarily in a support role to expedite process or decisions)

PDN Stage	FHWA Involvement
Stage 0	Optional involvement in development of IAR documents and processes. See <i>FHWA/TDOT Interstate Access Request (IAR) Standard Operating Procedure (SOP)</i> for additional details.
<u>2PM3</u>	Optional attendance at ROW strategy meetings.
<u>2UT1</u>	Optional involvement in utility and railroad agreement development.
<u>3EN2; 2PM4</u>	Optional involvement in the permit coordination process.
<u>3RW2</u>	Review ROW certification on high visibility projects.
<u>3UT3</u>	Review utility/railroad certification on high visibility projects.
XPMX	Optional attendance at the various field review meetings outlined in the PDN.
<u>5CN1</u>	DBE goal setting.

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