

PDN – CHAPTER 7

PS&E

STAGE 4

TDOT ROADWAY DESIGN GUIDELINES – PDN
CHAPTER 7 - PS&E

English

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INTRODUCTION

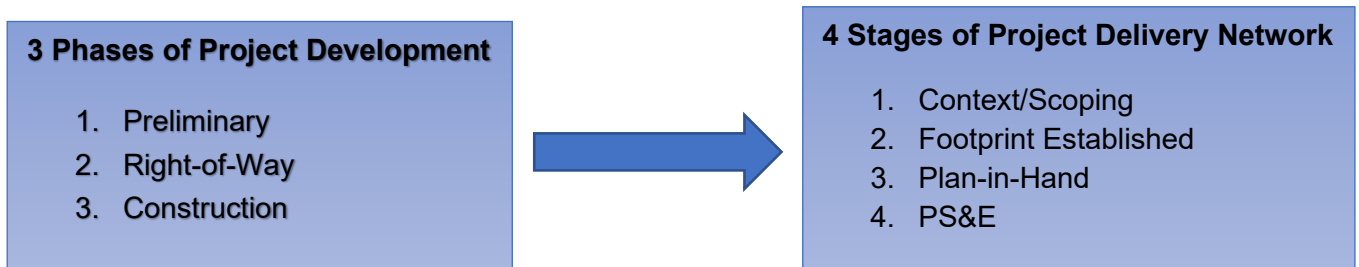
ROADWAY DESIGN GUIDELINES AND STANDARD DRAWINGS

Roadway Design Guidelines (RDG) and Standard Drawings have been created to ensure that there is consistency in TDOT projects across the state. The Roadway Design Guidelines and Standard Drawings indicate the current recognized design standards for new construction or reconstruction of existing highways and shall be utilized while giving due regard to topography, natural conditions, availability of road material, and prevailing traffic conditions.

Throughout these guidelines you will see the following terms used. To clarify the meanings intended in this guide, the following definitions apply:

- **Design Lead / Technical Lead** – Preconstruction Discipline Designer, or Consultant Discipline Designer
- **Project Manager** – assigned from Project Management division to lead Project team in delivery of project within defined scope, schedule, and budget.
- **Project Team** – Preconstruction Team consisting of a Discipline Manager, members of Roadway, Structure, Survey, Environmental, ROW, and Utilities (either TDOT staff or consulting staff), overseen by a Project Manager.
- **Concept Report** – Report developed by the Engineering Concepts Section of the Project Management Division during Stage 0 of a project.

All forms mentioned throughout this chapter can be found on the [Roadway Design -TDOT Documents](#) webpage.



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SECTION 1 – PREPARING PS&E PLANS

The roadway design should be finalized by this point in the design process. The goal in this stage is to compile the final set of design documents and plans, specifications, and the estimates to advertise and let the project. Refer to PDN 4RD1 for more information regarding PS&E plans.

SECTION 2 – SPECIAL PROVISIONS

7-200.00 SPECIAL PROVISIONS

As part of the Final PS&E Document submittal, or “Complete Package,” the design team must complete the [Special Provisions Order Sheet](#) with the assistance of the Construction Division. Additional information regarding each special provision and when each is recommended to be used can be found in *Table 7-1 – Special Provision Details*.

Special Provision	Description	Usage Indicator	Related Item No.
105C	Railroad Agreement	Include if project contains railroad crossings. Provided by RR section.	
107C	Availability of ROW	Include if there are any ROW tracts not available at the time of letting. Requires PIJ. Provided by ROW Division	
107FP	Water Quality and Storm Water Permits	Included based on environmental commitments and obligations in the plans/special notes. Attach copies of all environmental permits. Provided by Environmental Division.	
107L	Potentially Acid Producing Materials	Likely presence of Acid Producing Materials Use when Geotech notes indicate grading operations	

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		will likely encounter acid producing materials.	
108C	Liquidated Damage-CEI Contracts	Include if the contract will have oversight under a project specific CEI contract.	
109A	Payment Adjustment for Fuel	Include for any Road and Drainage Excavation, Borrow Excavation, Undercutting, Embankment, Aggregate Base, Treated Permeable Base/Concrete Base	411 Asphalt material, or 501 concrete pavements. (Ex: 411-02.10 ACS Mix (PG70-22) Grading D)
109B	Payment Adjustment for Bituminous Materials	Substantial bituminous material use over time Include anytime asphalt material is included in the plans for paving/resurfacing.	
109ETAS	Electronic Ticket Delivery System for Asphalt	Include on all interstate resurfacing projects. Consult with HQ Construction for use on additional state route resurfacing projects.	
109ETC	Electronic Ticket Delivery System for Concrete	Include on contracts with concrete items at discretion of HQ Construction.	
202ACM	Removal of Asbestos Containing Material (ACM)	See related item(s)	202-01.02
203E	Scaling And Trimming	See related item(s)	203-11
204CG	Compaction Grouting	See related item(s)	
204DC	Drilled Caissons	See related item(s)	204-02.1*, 204-02.2*
205A	Embankment (Compacted in Place)	See related item(s)	203-10

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205IC	IC for Embankments and Aggregates Bases	See related item(s)	
205RSS	Reinforced Soil Slopes	See related item(s)	740-07.02
304FDR	Full Depth Reclamation (FDR) of Flexible Pavement	See related item(s)	304-01.04
307CAM	Crack Attenuating Mixture	See related item(s)	307-02.09
308CCPR	Cold Central Plant Recycled Bituminous Pavement	See related item(s)	308-02.10, 308-02.12, 309-10.01
308CIR	Cold In-Place Recycled Bituminous Pavement	See related item(s)	308-01.10, 308-01.12, 308-01.15, 309-10.01, 403-05.05, 403-05
405SS	Polymer Modified Asphalt Rejuvenating Scrub Seal	See related item(s)	414-04.03, 414-04.04
406HFST	High Friction Surface Treatments (HFST)	See related item(s)	406-04.02, 406-04.03, 406-04.04
407DEN	Bituminous Plant Mix Pavements (Hot Mix) Roadway Density	Acceptance of asphalt roadway density by use of core samples, and acceptance of asphalt longitudinal joint density Include in all interstate contracts when paving any mix other than OGFC. May also be included for high-volume traffic state routes at discretion of HQ Construction and regional resurfacing manager.	
407HRA	Hot In Place Recycled Asphalt - Remix Process	Typically noted in the plans	Include for all 311-03. ** Hot In Place Recycling of Asphalt items.

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<u>407IC</u>	Intelligent Compaction (IC) for Hot Mix Asphalt (HMA)	Typically noted in the plans. Include on all resurfacing projects. Verify with HQ Construction and regional resurfacing manager.	
<u>407SE</u>	Asphalt Pavement Safety Edge	Typically used when 1" or more & no milling Include if called out in General Notes – Pavement/Paving	
<u>411B</u>	Section 411 - Asphalt Concrete Surface (Hot Mix)	Pavement smoothness requirements, usually noted on plans (Typically 4-lane & Interstate) Consult with Headquarters Construction to determine if included when paving. To be included on projects on interstates and controlled access freeways as necessary. Attach pre-ride information.	
<u>411C</u>	Section 411 - Asphalt Concrete Surface (Hot Mix)	Consult with Headquarters Construction to determine if included when paving. Generally, included for all resurfacing contracts unless region waives requirement due to curb & gutter, manholes in travel lanes, and other issues that significantly affect the overall ride and require exclusion during smoothness testing. Attach pre-ride information.	

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502FRP	Hot Applied Fiber Reinforced Polymer Patching Material	See related item(s)	502-03.05
602	Section 602 - Steel Structures (Inspection Cost Only)	Reference in plans	602 LS items
604CR	Repair of Bridge Deck Cracks	See related item(s)	617-02, -04, -05
604FRP	Fiber-Reinforced Polymer Material	See related item(s)	604-10.83
604H	Bridge Deck Preparation Using Hydrodemolition	See related item(s)	604-08.01, 604-10.20
604HD	Bridge Deck Preparation, Repair, and Concrete Overlay using Hydrodemolition	See related item(s)	604-08.01, 604-10.20
607CS	Three Sided Pre-Cast Culvert Structures	See related item(s)	607-50.6*
610HD	Horizontal Drain Installation Specifications	Emergency repair contracts for rock slopes	
624	Retaining Walls	See related item(s)	604-07.** , 604-08.**
625	Drilled Shaft Specifications	See related item(s)	625-**
626	Aggregate Foundation System	See related item(s)	626-01.01
700SIG	Highway Signs, Luminaires, and Traffic Signals	Design of supports for overhead sign bridges and butterfly configurations, high mast lighting, luminaires, CCTV camera poles, and traffic signal strain poles and mast arm structures	713, 714 & 730 Various
707H	Rockfall Barrier Systems	See related item(s)	707-10.0*

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707D	Rockfall Slope Drape	See related item(s)	707-10.0*
712DSL	Digital Speed Limit Sign Assembly (Variable Speed Zone)	See related item(s)	712-08.09
712PQWS	Portable Queue Warning System	See related item(s)	712-08.14
712PTQ	Traffic Queue Protection	See related item(s)	712-08.12
712SFS	Speed Feedback Sign Assembly	See related item(s)	712-08.08
714M	Roadway and Structure Lighting		
714N	Roadway and Structure Lighting		
716CPM	Contrast Pavement Markings	See related item(s)	716-09.**
716PTA	Profiled Thermoplastic Pavement Marking Audible System	See related item(s)	716-14.01, 716-14.02
716WR	Wet Retroreflective Pavement Marking	See related item(s)	716-09.**
715(x)	Technical Specifications	Project Specific on ITS projects. Provided by ITS Section.	
725SWZ	Portable Smart Work Zone System		
730A	Temporary Traffic Control (Signalization)	Utilized when there is the placement of traffic signals specific to a certain city as depicted on the Special Provision Order form.	730-40, -50

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730C (Chattanooga)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730CLEV (Cleveland)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730FA (Farragut)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730FR (Franklin)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730JC (Johnson City)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730K (Knoxville)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730M (Memphis)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730MTOWN (Morristown)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730R (Murfreesboro)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or	

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		County to see if they have a special provision	
730N (Nashville)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730PF (Pigeon Forge)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
730SV (Sevierville)	Section 730 - Traffic Signals	Permanent signals. Check with the respective City or County to see if they have a special provision	
740D	Geomembrane		
790	Electrical Utility Specifications	Placeholder for project-specific electrical utility special provisions, which must be obtained from the utility companies.	790- See Standard Utility Items .
909A	Powder Coated Guardrail		
930PDA	Dynamic Pile Testing		
940	Geofoam Backfill		

Table 7-1
Special Provision Details

SECTION 3 – PLAN SPECIFICATIONS AND ESTIMATE PROCESS

7-300.00 PS&E PROCESS

This stage is to compile the project's plans, specifications, and estimates (PS&E) and ensure all agreements, permits, and certifications are in place for letting. Upon completion of the PS&E Review, the project is advertised for letting.

7-300.00 PS&E FIELD REVIEW

See [PDN 4RD1](#) and [Chapter 1-105.08](#) for information regarding the PS&E Field Review process.

7-301.00 FINAL ROADWAY PS&E SUBMITTAL

See [PDN 4RD1](#) and [Chapter 1-105.09](#) for information regarding the Roadway PS&E Submittal process.

For all non-Roadway Design Plan Series to be included in the Final PS&E Submittal Package, the Designer shall include them in the Sheet Index category following the example in [Chapter 1 Figure 1-54](#). More information on the types of plan sets that need to be included and warrants for inclusion can be found in the [PS&E Checklist](#).

A Plans Assembly check needs to be completed prior to submitting final plans and each field review submittal. It is the responsibility of the Designer to review the final plans to ensure that sheet numbers are correct according to the index and are in order; pdf pages rotated correctly; PDF sheet sizes for pdfs created from OpenRoads Designer are 34" x 22"; PDF sheet sizes for scanned in sheets are 34" x 22"; and indexes set up correctly prior to turn in.

7-302.00 FINAL PS&E DOCUMENTS SUBMITTAL

To facilitate the requirements of [Chapter 1-105.10, Final PS&E Documents "Complete Package"](#), all design plans will be submitted as PDF portfolios and then added to the zipped Complete Package. Refer to the documents [CADDV8.pdf](#) (MicroStation) and [TDOT ORD File Naming Convention Standards.pdf](#) (OpenRoads Designer) for proper files naming convention from which the corresponding Adobe PDF (.pdf) files are created.

When the Final PS&E Documents are turned in for the Letting process for [PDN](#) Activity 4RD1 Finalize PS&E Documents, the Design Lead shall upload the Final PS&E Submittal Package to FileNet or ProjectWise (Folder 02 Final PS&E Packet Submittal) (See [Chapter 1-105.10, Final PS&E Documents "Complete Package"](#)). The Design Lead or Project Manager shall email the Final PS&E Submittal Package to the Regional Quality Team using the [Submittal](#)

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[Templates](#). The Regional Quality Team will then perform a quality review of the Final PS&E Submittal Package per the [TDOT Quality Manual](#). A copy of the email shall be placed in the project folder to document the submittal of the Final PS&E Package.

After this review, the Regional Quality Team will alert the Preconstruction Regional Transportation Engineer (RTE). The RTE will then review the Final PS&E Submittal Package. Once they complete their review, they will compile all projects that are being turned in within the [Letting Submittal](#) Excel spreadsheet. They will then alert HQ Construction of all projects that are officially ready for turn in by using the [Submittal Templates](#).

7-303.00 LETTING REVISION

The determination of a letting revision will be made by the Headquarters Contracts Letting and Administrative Support Office. One week prior to the release of the Notice to Contractors, no letting revisions shall be submitted.

If a Letting Revision is issued but no quantities were revised the Designer shall state “No Quantities Affected” in the body of the email. This information is necessary in order to maintain a current and accurate estimate.

If a Letting Revision is issued and quantities were revised, the completed [Estimate Revision Request](#) form shall be attached to the letting revision notification email. The revised Estimate Excel File shall be updated in the Letting Revision Submittal Package as well. For additional information on the Estimate Revision Process see [Chapter 1-402.07](#).

The Design Lead responsible for the project will upload the Letting Revision Package to FileNet or ProjectWise (See [Chapter 1-105.11](#)) and submit an email notification to the Regional Quality Team using the [Submittal Templates](#) for a quality review.

After their review of the Letting Revision Package, the Regional Quality Team will update the ProjectWise 04 Final Letting Packet Stage 4 folder with a subfolder for each revision with the naming convention identified in the Letting Revisions folder of “Letting Revision MMDDYY”. They will notify the Preconstruction Regional Transportation Engineer. The RTE will review the documents and then notify HQ Contracts Letting and administrative Support Office of the Letting Revision using the [Submittal Templates](#).

7-304.00 AWARDED PROJECT DOCUMENT SUBMITTAL

After the project has been awarded, HQ Construction will email the Preconstruction Regional Transportation Engineer and the Regional Quality Team a list of the awarded projects. The Regional Quality Teams will then copy the final project package into a separate folder within ProjectWise (Folder 05 Awarded Project Package). After the final project package have been placed in this folder, the Preconstruction RTE will alert the Resident Engineer, Assistant Resident

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Engineer, and the HQ Production Support Quality Team using the [Submittal Templates](#). This notification email will include the [Letting Submittal](#) Excel spreadsheet. The Resident Engineer will take these plans and place them on to PlanGrid. The HQ Production Support Quality Team will archive the plans in File Room FileNet.

7-305.00 PS&E REVISION

When a project has been awarded to contract and a change becomes necessary anywhere on the project, a PS&E Plans revision is required. All PS&E revision requests will be submitted from the Resident Engineer's Office to the Project Team POC and Preconstruction RTE in an accurate and timely manner.

For Projects with a Project Team: The Resident Engineer (or their staff) notifies the Preconstruction RTE about the revision and discusses it with the PDN Project Team. The PDN Project Team processes the revision with the Functional Lead performing a quality review. The PDN Project Team then submits the PS&E Revision using the email templates and places the revision package on ProjectWise (or FileNet for pre-2025 Letting Projects that do not have a ProjectWise folder) according to the process documented in [Chapter 1-105.12](#). The submittal will include the Resident Engineer, Assistant Resident Engineer, Preconstruction RTE, HQ Construction and HQ Production Support Quality Team using the PS&E Revision Submittal template. HQ Quality Team will update the archived plan set on File Room FileNet with the revision and the Resident Engineer (or their staff) will update PlanGrid.

For Projects that are older and not part of a Project Team: The Resident Engineer (or their staff) notifies the Project POC that a revision is needed. The functional designer processes the revision and submits the revision by using the PSE Revisional Submittal email template and places it in ProjectWise (or FileNet for pre-2025 Letting Projects that do not have a ProjectWise folder). HQ Quality Team will update the archived plan set on File Room FileNet with the revision and the Resident Engineer (or their staff) will update PlanGrid.