PDN - CHAPTER 1

GENERAL

CHAPTER 1 GENERAL
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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 Strategic Transportation Investments Division during Stage 0 of a project.

All forms mentioned throughout this chapter can be found on the *Roadway Design - TDOT Documents* webpage.

3 Phases of Project Development

1. Preliminary
2. Right-of-Way
3. Construction

Stages of Project Delivery Network

0. Planning
1. Context/Scoping
2. Footprint Established
3. Plan-in-Hand
4. PS&E

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SECTION 1 – PROJECT INFORMATION

1-100.00 PROJECT RECORDS

It is essential for every Technical Lead to create and maintain a detailed history of the design process for each of their projects. Information in the project records may be used if a problem arises during or after construction of the project. For example, records may be referenced after a flood causes property damage or for other legal claims in court. Examples of records to be kept are described in Chapter 1-102.00 Project Folder.

1-101.00 PROJECT SCOPE AND CHANGES IN SCOPE

As a project develops, the project manager shall contact the Program Development and Scheduling Office (TDOT.PDSO@tn.gov) if the scope of the project as defined in the Concept Report and Project Commitment Document and/or MPO TIP cannot be met. This includes all horizontal and vertical elements that would result in a design exception request, and/or other variations from the original scope such as typical section changes, additional right-of-way needs, project termini, etc. When estimates are submitted (see *Chapter 1-402.00 Submittal of Estimates* and all subsections), a request should be submitted for the monetary value of the estimate from the Bid Analysis and Estimating Office. If the estimate increases by more than 10% from the initial estimate, the Program Development and Administration Division shall be contacted.

1-102.00 PROJECT FOLDER

Each Technical Lead will be required to maintain an up-to-date digital project folder that contains information on the project for all four stages of development (Context/Scoping, Footprint Established, Plan-in-Hand and PS&E). The typical roadway design project folder shall consist of information kept in chronological order by dates and divided into categories. See *Figure 1-1, Example Folder Structure* to see how this folder shall be laid out. The following are the categories and examples of the types of information that may be found in each:

1. Deliverable Requests and Reports:
    - Traffic data request and report
    - Initial Studies request and corresponding letters and reports
    - Additional survey requests
    - Environmental documents
2. Correspondence:
    - Funding letters
    - Departmental emails and correspondence including any notes taken from verbal conversations

- Outside agency emails and correspondence including any notes taken from verbal conversations

3. Field Reviews\Public Meetings:
    - Letters sent for invitations or appointments for field reviews or public meetings
    - Field review reports including attendees list.(Construction Documents), Constructability, (all reviews that are applicable to project)
    - Documentation related to Public Meetings
4. Calculations:
    - Pavement quantities
    - Sight distance
    - Guardrail - length of need
    - Drainage - including any reports exported from approved drainage programs
    - Erosion Control
    - Grading Report (See *Chapter 2-1009.00*, *Grading Report*)
5. Estimated Quantities Excel file

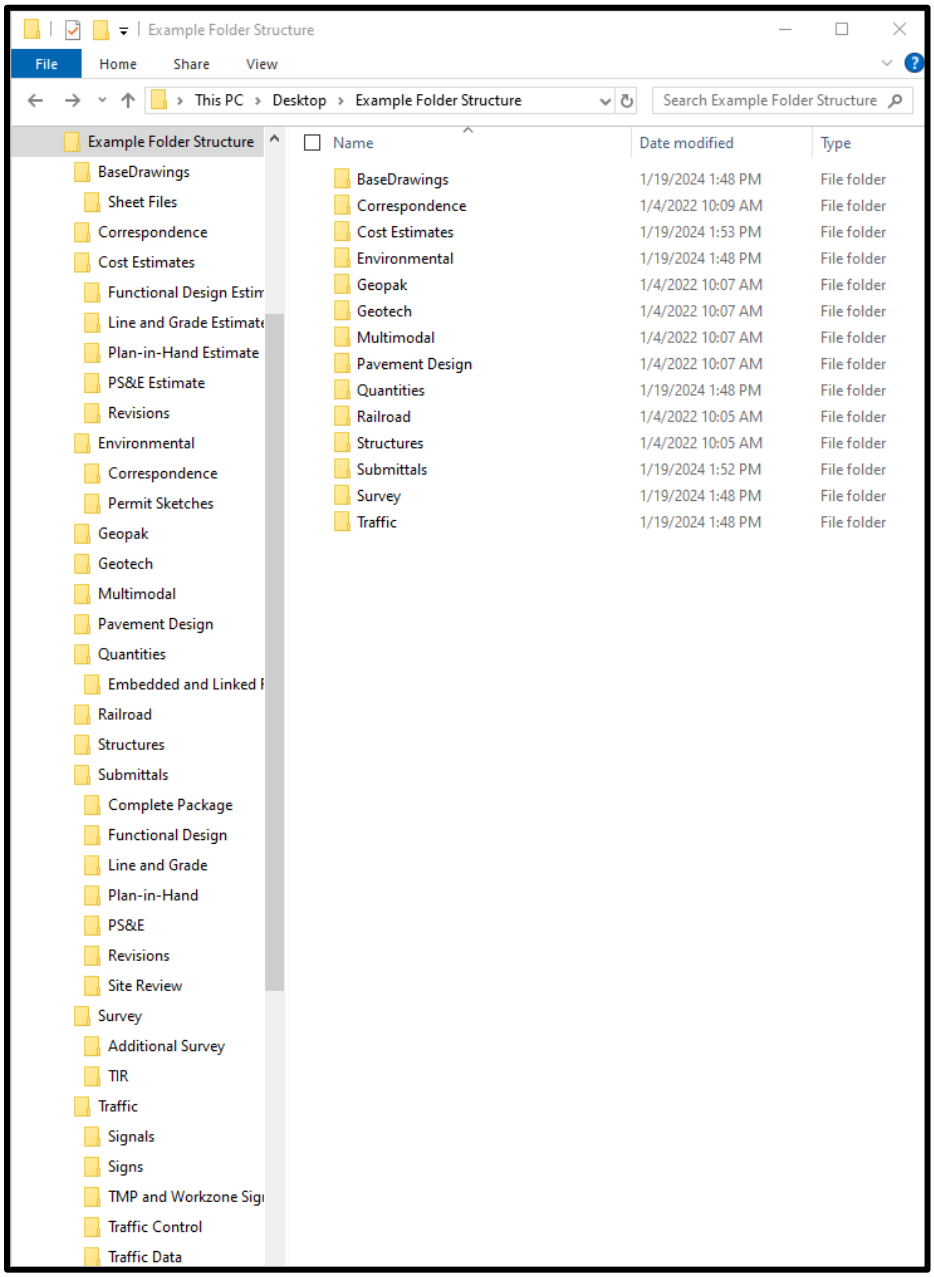


Figure 1-1
Example Project Folder Structure

For each project, a folder shall be made for each of the categories and then placed in an Adobe PDF Portfolio or zip file. At letting turn-in, the Design Lead shall place the Adobe Portfolio or zip file containing the entire project folder onto FileNet with the naming convention: nnnnnn-nn-ProjectFolder.pdf or nnnnnn-nn-ProjectFolder.zip. The nnnnnn-nn-ProjectFolder.pdf/ nnnnnn-nn-ProjectFolder.zip file will become a complete "Design Records" file and a part of the legal documents substantiating the final Construction Plans. It is the responsibility of the Technical

Leads (for Consultant designed projects) to maintain the project folder until the construction project is complete.

Upon receipt of the Notice of Completion from the Regional Operations Office, the Technical Leads shall upload any additional project information pertaining to the project (revisions, requests, correspondence with Operations and/or HQ Construction Division, etc.) that has occurred since the initial letting turn-in with the naming convention nnnnnn-nn-ProjectFolder-Addendum.pdf/nnnnnn-nn-ProjectFolder-Addendum.zip and contact the Design Lead and Project Manager.

1-103.00 CHARGING TIME TO PROJECTS

Refer to Project Delivery Network Section 1PM1 to ensure the correct PE number is utilized for the project stage.

Project Managers and Design Lead are reminded that a task profile ID, which is the TX number for the timesheet, will need to be set up in Edison for the Preliminary Engineering NEPA (PE-N) number and PE-D number at the appropriate stage to ensure that time is charged to the correct funding source. The Design Lead or Project Manager shall request the task profile ID numbers. If there is a child PIN associated with the project, check with the Program Development Scheduling Office to determine what number should be used to charge time.

1-104.00 PDF PLAN SHEET SIZE

PDF plans shall be full-size plans. It is essential that the correct plan size be used when making the PDFs to ensure that printing of the plans will be to scale. Plans Assembly personnel must combine plan sets from several divisions during the Letting phase. Personnel in this group can refuse PDFs that are not the correct size. If approved TDOT sheet borders are used as discussed in *Chapter 1-202.01, Sheet Borders*, the PDFs will be the correct size for 34” X 22”.

For further guidance, refer to the document Creating PDFs from DGNs.pdf located on the Standard Design CADD Files and Documents webpage.

1-105.00 MAJOR MILESTONE FILENET PROJECT DELIVERABLES

Design Leads are responsible for archiving Roadway Design records for all new construction, reconstruction, and resurfacing projects on the Design folder on the FileNet server utilized by the Department. Unless specified otherwise, when this document refers to FileNet uploads, it is referring to the Design folder. For guidance in creating a composite plan set in the *.pdf format refer to the document Creating PDFs from DGNs.pdf located on the Standard Design CADD Files and Documents webpage.

FileNet archiving shall include all projects with the most recently completed deliverable. See *Table 1-1, Project Deliverable Types* for a summary of each type of file associated within a project deliverable.

Project Deliverable	Format	Additional Notes
Plan Set	.pdf	Include Cross-Sections
Estimates File	.xlsm	As applicable
Approved Design Exception	.pdf	As applicable
Traffic Management Plan	.pdf	As applicable
Project Notebook	.pdf	Included on all ORD projects
Project Design Files	.zip (compressed file) (NOT password protected)	Include all entire project's ORD WorkSet folder

Table 1-1
Project Deliverable Types

To streamline the submittal process, there are email templates for each submittal. When a project reaches a stage completion, an email template is provided for each region and stage. Follow the instructions in the blue text to complete the submittal process. A PDF of each submittal should be saved within the project folder.

Due to process changes, a new solution for each team may be available in the future. At that time, the email submittals will not be needed.

For further guidance, refer to the FileNet Project Deliverables document located on the Roadway Design Guidelines webpage. This document lists the project deliverables and plan sets that shall be loaded on the FileNet server.

1-105.01 LINE AND GRADE PACKAGE FIELD REVIEW SUBMITTAL

Line and Grade (L&G) Package shall include all items listed in the Line and Grade Plans Checklist. See PDN 1RD1 for more information. For the Line and Grade Field Review, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-2, Line and Grade Plans Field Review Package List*. See *Figure 1-2, Line and Grade Plans Field Review Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-LineandGradePlans.pdf**.

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be **nnnnnn-nn-LineandGradePlans.zip.**

A Line and Grade Estimate shall also be submitted by the Project Manager as part of the Line and Grade Package. The naming convention for this estimate shall be **nnnnnn-nn-LineandGradeEstimate.xlsm**. See Chapter 1-402.01 Submittal of the Line and Grade Estimate for more information regarding the estimate submittal.

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the Line and Grade Plans checklist	*nnnnnn-nn*-LineandGradePlans-Roadway.pdf
1	Estimated Roadway Quantities plan sheets – labeled Info Only	*nnnnnn-nn*-RoadwayEstimatedQuantities.pdf
2	Project Notebook	*nnnnnn-nn*-LineandGradePlans-PN.*pdf*
3	Signed Line and Grade Design Plans checklist	*nnnnnn-nn*-LineandGradePlansChecklist.pdf

Table 1-2
Line and Grade Plans Field Review Package List

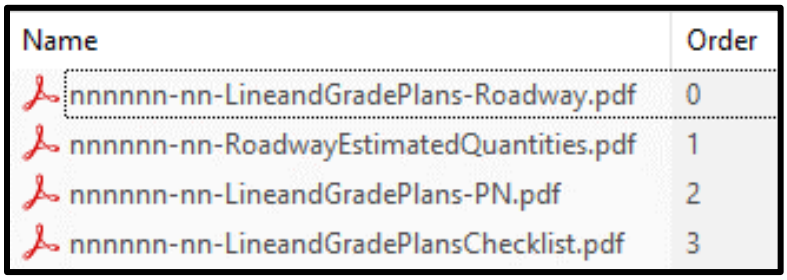


Figure 1-2
Line and Grade Plans Field Review Package Example

1-105.02 FUNCTIONAL DESIGN PLANS FIELD REVIEW FILENET SUBMITTAL PACKAGE

Functional Design Review plans shall include all items listed in the Roadway Design Checklist for Functional Design Plans including, if applicable: the preliminary bridge drawings and retaining walls, Natural Stream Design sheets, ITS sheets, Signal/Lighting sheets, and Geotechnical sheets. These plans shall be uploaded to FileNet by the respective Divisions for use by the Design Lead to include in the submittal packet. Refer to PDN 2RD1 and 2PM5.

For Functional Design Plans Field Review submittal, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added.

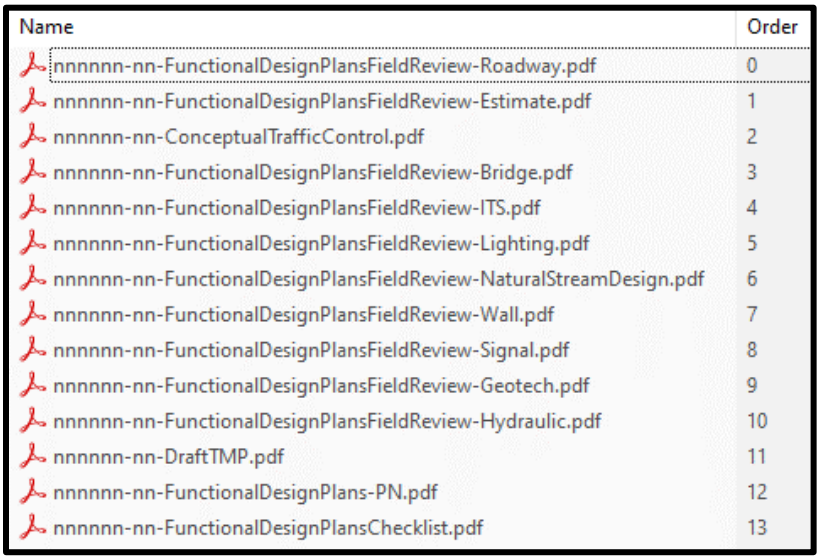
The order structure and naming convention is shown in *Table 1-3, Functional Design Plans Field Review Submittal Package List.* See *Figure 1-3, Functional Design Plans Field Review Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-FunctionalDesignPlansFieldReview.pdf**.

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be ***nnnnnn-nn*-FunctionalDesignPlansFieldReview.zip.**

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the Functional Design Plans checklist	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Roadway.pdf
1	Estimated Roadway Quantities plan sheets – labeled Info Only	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Estimate.pdf
2	Traffic Control Strategies and Concepts – labeled Info Only	*nnnnnn-nn*-ConceptualTrafficControl.pdf
3	Bridge, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Bridge.pdf
4	ITS, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-ITS.pdf
5	Lighting, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Lighting.pdf
6	Preliminary Natural Stream Design, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-NaturalStreamDesign.pdf
7	Retaining Wall and Noise Wall Locations, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Wall.pdf
8	Signal, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Signal.pdf
9	Geotechnical, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Geotech.pdf
10	Hydraulic, as applicable	*nnnnnn-nn*-FunctionalDesignPlansFieldReview-Hydraulic.pdf

11	Draft TMP, as applicable	*nnnnnn-nn*-DraftTMP.*pdf*
12	Project Notebook	*nnnnnn-nn*-FunctionalDesignPlans-PN.*pdf*
13	Signed Functional Design Plans checklist	*nnnnnn-nn*-FunctionalDesignPlans-Checklist.pdf

Table 1-3
Functional Design Plans Field Review Submittal Package List



Name	Order
nnnnnn-nn-FunctionalDesignPlansFieldReview-Roadway.pdf	0
nnnnnn-nn-FunctionalDesignPlansFieldReview-Estimate.pdf	1
nnnnnn-nn-ConceptualTrafficControl.pdf	2
nnnnnn-nn-FunctionalDesignPlansFieldReview-Bridge.pdf	3
nnnnnn-nn-FunctionalDesignPlansFieldReview-ITS.pdf	4
nnnnnn-nn-FunctionalDesignPlansFieldReview-Lighting.pdf	5
nnnnnn-nn-FunctionalDesignPlansFieldReview-NaturalStreamDesign.pdf	6
nnnnnn-nn-FunctionalDesignPlansFieldReview-Wall.pdf	7
nnnnnn-nn-FunctionalDesignPlansFieldReview-Signal.pdf	8
nnnnnn-nn-FunctionalDesignPlansFieldReview-Geotech.pdf	9
nnnnnn-nn-FunctionalDesignPlansFieldReview-Hydraulic.pdf	10
nnnnnn-nn-DraftTMP.pdf	11
nnnnnn-nn-FunctionalDesignPlans-PN.pdf	12
nnnnnn-nn-FunctionalDesignPlansChecklist.pdf	13

Figure 1-3
Functional Design Plans Field Review Submittal Package Example

1-105.03 FUNCTIONAL DESIGN PLANS SUBMITTAL PACKAGE

Functional Design plans submittal shall include all items listed in the Roadway Design Checklist for Functional Design Plans including, if applicable: the preliminary bridge drawings and retaining walls, Natural Stream Design sheets, ITS sheets and Signal/Lighting sheets. These plans shall be uploaded to FileNet by the respective Divisions for use by the Design Lead to include in the submittal packet. The sealed Functional Title Sheet will additionally be included in the PS&E submittal packages. Refer to PDN 2RD1.

For Functional Design Plans submittal, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-4, Functional Design Plans Submittal*

Package List. See *Figure 1-4, Functional Design Plans Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-FunctionalDesignPlans.pdf**.

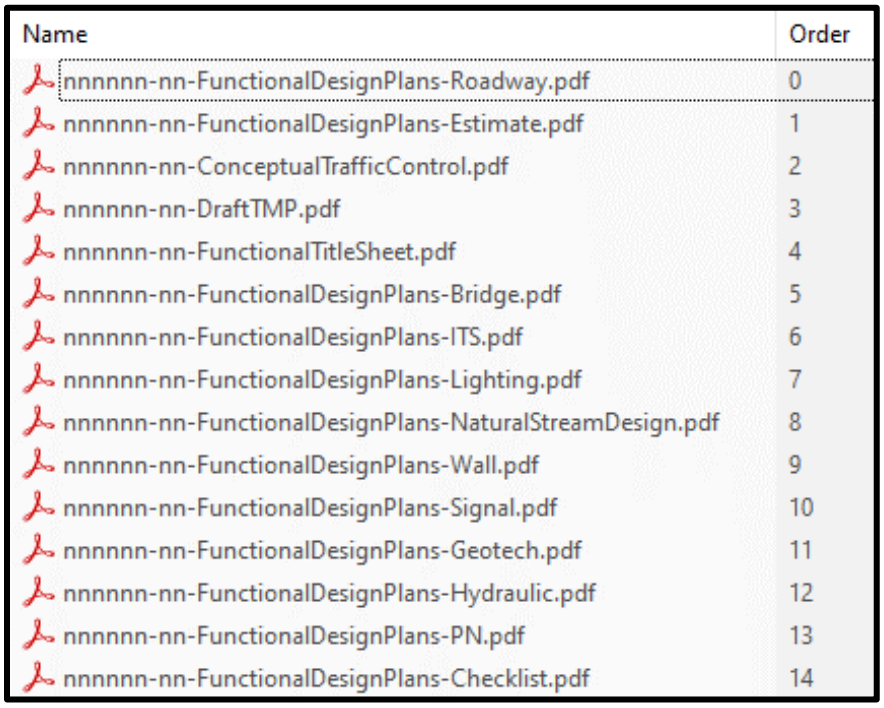
As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be **nnnnnn-nn-FunctionalDesignPlans.zip.**

A Functional Design Plans Estimate shall also be submitted by the Project Manager as part of the Functional Design Package. The naming convention for this estimate shall be **nnnnnn-nn-FunctionalDesignPlansEstimate.xlsm**. See Chapter 1-402.02 Submittal of Functional Design Plans Estimate for R.O.W. or Utilities Only Funding for more information regarding the estimate submittal.

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the Functional Design Plans checklist	*nnnnnn-nn*-FunctionalDesignPlans-Roadway.pdf
1	Estimated Roadway Quantities plan sheets – labeled Info Only	*nnnnnn-nn*-FunctionalDesignPlans-Estimate.pdf
2	Traffic Control Strategies and Concepts – labeled Info Only	*nnnnnn-nn*-ConceptualTrafficControl.pdf
3	Draft TMP, as applicable	*nnnnnn-nn*-DraftTMP.*pdf*
4	Original sealed Title Sheet	*nnnnnn-nn*-FunctionalTitleSheet.pdf
5	Bridge, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-Bridge.pdf
6	ITS, as applicable	*nnnnnn-nn*-FunctionaDesignlPlans-ITS.pdf
7	Lighting, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-Lighting.pdf
8	Preliminary Natural Stream Design, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-NaturalStreamDesign.pdf
9	Retaining Wall and Noise Wall Locations, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-Wall.pdf

10	Signal, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-Signal.pdf
11	Geotechnical, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-Geotech.pdf
12	Hydraulic, as applicable	*nnnnnn-nn*-FunctionalDesignPlans-Hydraulic.pdf
13	Project Notebook	*nnnnnn-nn*-FunctionalDesignPlans-PN.*pdf*
14	Signed Functional Design Plans checklist	*nnnnnn-nn*-FunctionalDesignPlans-Checklist.pdf

Table 1-4
Functional Design Plans Submittal Package List



Name	Order
nnnnnn-nn-FunctionalDesignPlans-Roadway.pdf	0
nnnnnn-nn-FunctionalDesignPlans-Estimate.pdf	1
nnnnnn-nn-ConceptualTrafficControl.pdf	2
nnnnnn-nn-DraftTMP.pdf	3
nnnnnn-nn-FunctionalTitleSheet.pdf	4
nnnnnn-nn-FunctionalDesignPlans-Bridge.pdf	5
nnnnnn-nn-FunctionalDesignPlans-ITS.pdf	6
nnnnnn-nn-FunctionalDesignPlans-Lighting.pdf	7
nnnnnn-nn-FunctionalDesignPlans-NaturalStreamDesign.pdf	8
nnnnnn-nn-FunctionalDesignPlans-Wall.pdf	9
nnnnnn-nn-FunctionalDesignPlans-Signal.pdf	10
nnnnnn-nn-FunctionalDesignPlans-Geotech.pdf	11
nnnnnn-nn-FunctionalDesignPlans-Hydraulic.pdf	12
nnnnnn-nn-FunctionalDesignPlans-PN.pdf	13
nnnnnn-nn-FunctionalDesignPlans-Checklist.pdf	14

Figure 1-4
Functional Design Plans Submittal Package Example

1-105.04 RIGHT-OF-WAY REVISION FILENET SUBMITTAL PACKAGE

When the Functional Design Plans and the Right-of-Way appraisals and acquisition have been submitted for a project, and a change becomes necessary on the project that changes the

design or footprint of the project, a Right-of-Way Plans revision is required. However, if the revision only includes a property ownership change or update or a subdivision of a property, a R.O.W. Revision would not be needed. This type of change could be reflected in updating the R.O.W. Exhibits. See PDN 3RD1 for more details regarding the R.O.W. Exhibits. All Right-of-Way revisions will be submitted through the Project Manager responsible for the project in an accurate and timely manner. It is not necessary to re-seal the title sheet unless the revision is on the title sheet.

R.O.W. revisions shall include all items listed in the Roadway Design Checklist for R.O.W. including, if applicable: the preliminary bridge drawings and retaining walls, Natural Stream Design sheets, ITS sheets and Signal/Lighting sheets. These plans shall be uploaded to FileNet by the respective Divisions for use by the Design Lead to include in the submittal packet.

For all R.O.W. revisions, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-5, R.O.W. Revision Submittal Package List*. See *Figure 1-5, R.O.W. Revision Submittal Package Example*. The naming convention for the submittal package shall be **nnnnnn-nn-ROW-Rev-mm-dd-yy.pdf**.

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be **nnnnnn-nn-ROW-Rev-mm-dd-yy.zip.**

Portfolio Order #	Item Description	Naming Convention
0	Current R.O.W. Revision Email	*nnnnnn-nn*-ROWRevisionEmail-mm-dd-yy*.pdf*
1	Previous ROW Revision Emails **Folder,** if applicable (This is individuals pdfs of the revision emails dropped into this folder.)	Previous_ROW_Revision_Emails
2	Original Functional Design Submittal Email, PDF	*nnnnnn-nn-* FunctionalDesignSubmittalEmail*.pdf*
3	Draft TMP, as applicable Or Signed TMP, if available	*nnnnnn-nn*-DraftTMP*.pdf* *nnnnnn-nn*-TMP*.pdf*
4	Original sealed Title Sheet	*nnnnnn-nn*-FunctionalDesignTitleSheet.pdf

5	All plan sheets as turned in for Functional Design Submittal with revised sheets	*nnnnnn-nn*-FunctionalDesignPlans-Roadway-Rev-mm-dd-yy.pdf
6	Estimated Roadway Quantities plan sheets – labeled Info Only	*nnnnnn-nn-FunctionalDesignPlans-Estimate.pdf*
7	Traffic Control Strategies and Concepts – labeled Info Only	*nnnnnn-nn-ConceptualTrafficControl.pdf*
8	Bridge, as applicable	*nnnnnn-nn-FunctionalDesignPlans-Bridge.pdf*
9	ITS, as applicable	*nnnnnn-nn-FunctionaDesignlPlans-ITS.pdf*
10	Lighting, as applicable	*nnnnnn-nn-FunctionalDesignPlans-Lighting.pdf*
11	Preliminary Natural Stream Design, as applicable	*nnnnnn-nn-FunctionalDesignPlans-NaturalStreamDesign.pdf*
12	Retaining Wall and Noise Wall Locations, as applicable	*nnnnnn-nn-FunctionalDesignPlans-Wall.pdf*
13	Signal, as applicable	*nnnnnn-nn-FunctionalDesignPlans-Signal.pdf*
14	Geotechnical, as applicable	*nnnnnn-nn-FunctionalDesignPlans-Geotech.pdf*
15	Hydraulic, as applicable	*nnnnnn-nn-FunctionalDesignPlans-Hydraulic.pdf*
16	Project Notebook	*nnnnnn-nn-FunctionalDesignPlans-PN.pdf*
17	Signed Functional Design Plans checklist	*nnnnnn-nn-FunctionalDesignPlans-Checklist.pdf*

Table 1-5
R.O.W. Revision Submittal Package List

Name	Order
nnnnnn-nn-ROWRevisionEmail-mm-dd-yy.pdf	0
Previous_ROW_Revision_Emails	1
nnnnnn-nn-FunctionalDesignSubmittalEmail.pdf	2
nnnnnn-nn-DraftTMP.pdf	3
nnnnnn-nn-FunctionalDesignTitleSheet.pdf	4
nnnnnn-nn-FunctionalDesignPlans-Roadway-Rev-mm-dd-yy.pdf	5
nnnnnn-nn-FunctionalDesignPlans-Estimate.pdf	6
nnnnnn-nn-ConceptualTrafficControl.pdf	7
nnnnnn-nn-FunctionalDesignPlans-Bridge.pdf	8
nnnnnn-nn-FunctionalDesignPlans-ITS.pdf	9
nnnnnn-nn-FunctionalDesignPlans-Lighting.pdf	10
nnnnnn-nn-FunctionalDesignPlans-NaturalStreamDesign.pdf	11
nnnnnn-nn-FunctionalDesignPlans-Wall.pdf	12
nnnnnn-nn-FunctionalDesignPlans-Signal.pdf	13
nnnnnn-nn-FunctionalDesignPlans-Geotech.pdf	14
nnnnnn-nn-FunctionalDesignPlans-Hydraulic.pdf	15
nnnnnn-nn-FunctionalDesignPlans-PN.pdf	16
nnnnnn-nn-FunctionalDesignPlans-Checklist.pdf	17

Figure 1-5
R.O.W. Revision Submittal Package Example

1-105.05 PUBLIC MEETING FILENET SUBMITTAL PACKAGE

Public Meeting plans shall include all items listed in the Functional Design Plans Checklist and are to be used for public meetings or public hearings. For additional information and documents regarding a public meeting, see the Public Involvement and Communication Office. Refer to PDN 2R2 for more information. For a Public Meeting submittal, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-6, Public Meeting Submittal Package List*. See *Figure 1-6, Public Meeting Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-PublicMeeting.pdf**.

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the Functional Design Plans checklist	*nnnnnn-nn*-PublicMeetingPlans.pdf
1	Displays files - if there are multiple files used to create displays shown at the meeting, a folder can be used and include a pdf of each of the necessary files	*nnnnnn-nn*-Displays.pdf

Table 1-6
Public Meeting Submittal Package List

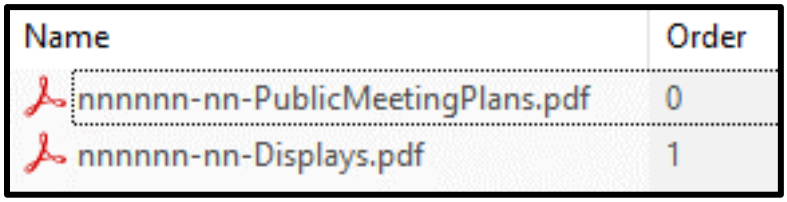


Figure 1-6
Public Meeting Submittal Package Example

1-105.06 PLAN-IN-HAND FIELD REVIEW FILENET SUBMITTAL PACKAGE

Plan-in-Hand (PIH) Field Review plans shall include all items listed in the Roadway Design Checklist for Plan-in-Hand including, if applicable, bridge and retaining walls plans, ITS, signal, and lighting plans, and natural stream design plans. See PDN sections 3EN1-3EN2 for more details regarding environmental permits that will be submitted at this time. These plans shall be uploaded to FileNet by the respective Divisions for use by the Designer to include in the submittal packet. Refer to PDN 3RD1 and 3PM2.

For the Plan-in-Hand Field Review submittal, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-7, Plan-in-Hand Field Review Submittal Package List.* See *Figure 1-7, Plan-in-Hand Field Review Submittal Package Example.* The naming convention for the submittal package shall be ***nnnnnn-nn*-PIHFieldReview.pdf**.

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be **nnnnnn-nn-PIHFieldReview.zip.**

A Plan-in-Hand Field Review Estimate shall also be submitted by the Project Manager as part of the Plan-in-Hand Field Review Package. The naming convention for this estimate shall be **nnnnnn-nn-RoadwayPIHFieldReviewEstimate.xlsm**. See Chapter 1-402.04 Submittal of Plan-in-Hand Estimate for Field Review for more information regarding the estimate submittal.

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the Plan-in-Hand checklist	*nnnnnn-nn*-PIHFieldReview-Roadway.pdf
1	Bridge, as applicable	*nnnnnn-nn*-PIHFieldReview-Bridge.pdf
2	Geotechnical, as applicable	*nnnnnn-nn*-PIHFieldReview-Geotech.pdf
3	ITS, as applicable	*nnnnnn-nn*-PIHFieldReview-ITS.pdf
4	Lighting, as applicable	*nnnnnn-nn*-PIHFieldReview-Lighting.pdf
5	Natural Stream Design, as applicable	*nnnnnn-nn*-PIHFieldReview-NaturalStreamDesign.pdf
6	Retaining Wall and Noise Wall Details, as applicable	*nnnnnn-nn*-PIHFieldReview-Walls.pdf
7	Signal, as applicable	*nnnnnn-nn*-PIHFieldReview-Signal.pdf
8	Utility Rainbow Plans, as applicable	*nnnnnn-nn*-PIHFieldReview-UtilityRainbows.pdf
9	TMP, as applicable	*nnnnnn-nn*-PIH-TMP.pdf
10	Project Notebook	*nnnnnn-nn*-PIH-PN.*pdf*
11	Signed Plan-in-Hand checklist	*nnnnnn-nn*-PIH-Checklist.pdf

Table 1-7
Plan-in-Hand Field Review Submittal Package List

Name	Order
nnnnnn-nn-PIHFieldReview-Roadway.pdf	0
nnnnnn-nn-PIHFieldReview-Bridge.pdf	1
nnnnnn-nn-PIHFieldReview-Geotech.pdf	2
nnnnnn-nn-PIHFieldReview-ITS.pdf	3
nnnnnn-nn-PIHFieldReview-Lighting.pdf	4
nnnnnn-nn-PIHFieldReview-NaturalStreamDesign.pdf	5
nnnnnn-nn-PIHFieldReview-Walls.pdf	6
nnnnnn-nn-PIHFieldReview-Signal.pdf	7
nnnnnn-nn-PIHFieldReview-UtilityRainbows.pdf	8
nnnnnn-nn-PIH-TMP.pdf	9
nnnnnn-nn-PIH-PN.pdf	10
nnnnnn-nn-PIH-Checklist.pdf	11

Figure 1-7
Plan-in-Hand Field Review Submittal Package Example

1-105.07 PLAN-IN-HAND FILENET SUBMITTAL PACKAGE

Plan-in-Hand plans submittal shall include all items listed in the Roadway Design Checklist for Plan-in-Hand Plans including, if applicable: the preliminary bridge drawings and retaining walls, Natural Stream Design sheets, ITS sheets and Signal/Lighting sheets. These plans shall be uploaded to FileNet by the respective Divisions for use by the Design Lead to include in the submittal packet. Refer to PDN 3RD1.

For Plan-in-Hand Plans submittal, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-8, Plan-in-Hand Design Plans Submittal Package List.* See *Figure 1-8, Plan-in-Hand Design Plans Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-Plan-in-HandPlans.pdf**.

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be ***nnnnnn-nn*-Plan-in-HandPlans.zip.**

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the Plan-in-Hand Plans checklist	*nnnnnn-nn*-PIH-Roadway.pdf
1	Bridge, as applicable	*nnnnnn-nn*-PIH-Bridge.pdf
2	Geotechnical, as applicable	*nnnnnn-nn*-PIH-Geotech.pdf
3	ITS, as applicable	*nnnnnn-nn*-PIH-ITS.pdf
4	Lighting, as applicable	*nnnnnn-nn*-PIH-Lighting.pdf
5	Preliminary Natural Stream Design, as applicable	*nnnnnn-nn*-PIH-NaturalStreamDesign.pdf
6	Retaining Wall and Noise Wall Locations, as applicable	*nnnnnn-nn*-PIH-Wall.pdf
7	Signal, as applicable	*nnnnnn-nn*-PIH-Signal.pdf
8	Utility Rainbow Plans, as applicable	*nnnnnn-nn*-PIH-UtilityRainbows.pdf
9	Signed TMP, as applicable	*nnnnnn-nn*-TMP.pdf
10	Project Notebook	*nnnnnn-nn*-PIH-PN.*pdf*
11	Signed Plan in Hand checklist	*nnnnnn-nn*-PIH-Checklist.pdf

Table 1-8
Plan-In-Hand Design Plans Submittal Package List

Name	Order
nnnnnn-nn-PIH-Roadway.pdf	0
nnnnnn-nn-PIH-Bridge.pdf	1
nnnnnn-nn-PIH-Geotech.pdf	2
nnnnnn-nn-PIH-ITS.pdf	3
nnnnnn-nn-PIH-Lighting.pdf	4
nnnnnn-nn-PIH-NaturalStreamDesign.pdf	5
nnnnnn-nn-PIH-Walls.pdf	6
nnnnnn-nn-PIH-Signal.pdf	7
nnnnnn-nn-PIH-UtilityRainbows.pdf	8
nnnnnn-nn-TMP.pdf	9
nnnnnn-nn-PIH-PN.pdf	10
nnnnnn-nn-PIH-Checklist.pdf	11

Figure 1-8
Plan-in-Hand Design Plans Submittal Package Example

1-105.08 PLANS, SPECIFICATIONS AND ESTIMATE FIELD REVIEW FILENET SUBMITTAL PACKAGE

Plans, Specifications, and Estimate (PS&E) Field Review plans shall include all items listed in the Roadway Design Checklist for PS&E including, if applicable, bridge and retaining walls plans, ITS, signal and lighting plans, and natural stream design plans. These plans shall be uploaded to FileNet by the respective Divisions for use by the Designer to include in the submittal packet. Refer to PDN 4RD1 and 4PM2.

For the PS&E Field Review submittal, the complete project package shall be added to FileNet. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-9, PS&E Field Review Submittal Package List.* See *Figure 1-9, PS&E Field Review Submittal Package Example.* The naming convention for the submittal package shall be ***nnnnnn-nn*-PS&EFieldReview.pdf**.

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be **nnnnnn-nn-PS&EFieldReview.zip.**

A PS&E Field Review Estimate shall also be submitted by the Project Manager as part of the PS&E Field Review Package. The naming convention for this estimate shall be **nnnnnn-nn-RoadwayPS&EEstimate.xlsm**. See Chapter 1-402.05 Submittal of the PS&E Estimate for Field Review for more information regarding the estimate submittal.

Portfolio Order #	Item Description	Naming Convention
0	Roadway Plans - All sheets as designated in the PS&E checklist	*nnnnnn-nn*-PS&EFieldReview-Roadway.pdf
1	Bridge, as applicable	*nnnnnn-nn*-PS&EFieldReview-Bridge.pdf
2	Geotechnical, as applicable	*nnnnnn-nn*-PS&EFieldReview-Geotech.pdf
3	ITS, as applicable	*nnnnnn-nn*-PS&EFieldReview-ITS.pdf
4	Lighting, as applicable	*nnnnnn-nn*-PS&EFieldReview-Lighting.pdf
5	Natural Stream Design, as applicable	*nnnnnn-nn*-PS&EFieldReview-NaturalStreamDesign.pdf
6	Retaining Wall and Noise Wall Details, as applicable	*nnnnnn-nn*-PS&EFieldReview-Walls.pdf
7	Signal, as applicable	*nnnnnn-nn*-PS&EFieldReview-Signal.pdf
8	Utility Plans, as applicable	*nnnnnn-nn*-Utility.pdf
9	Special Provision Order, as applicable	*nnnnnn-nn*-SpecialProvisionOrder.pdf
10	Signed TMP, as applicable	*nnnnnn-nn*-TMP*.pdf*
11	Project Notebook	*nnnnnn-nn*-PS&E-PN*.pdf*
12	Signed PS&E checklist	*nnnnnn-nn*-PS&E-Checklist.pdf

Table 1-9
PS&E Field Review Submittal Package List

Name	Order
nnnnnn-nn-PS&EFieldReview-Roadway.pdf	0
nnnnnn-nn-PS&EFieldReview-Bridge.pdf	1
nnnnnn-nn-PS&EFieldReview-Geotech.pdf	2
nnnnnn-nn-PS&EFieldReview-ITS.pdf	3
nnnnnn-nn-PS&EFieldReview-Lighting.pdf	4
nnnnnn-nn-PS&EFieldReview-NaturalStreamDesign.pdf	5
nnnnnn-nn-PSE&FieldReview-Walls.pdf	6
nnnnnn-nn-PS&EFieldReview-Signal.pdf	7
nnnnnn-nn-Utility.pdf	8
nnnnnn-nn-SpecialProvisionOrder.pdf	9
nnnnnn-nn-TMP.pdf	10
nnnnnn-nn-PS&E-PN.pdf	11
nnnnnn-nn-PS&E-Checklist.pdf	12

Figure 1-9
PS&E Field Review Submittal Package Example

1-105.09 FINAL ROADWAY PS&E FILENET SUBMITTAL PACKAGE

This submittal is only required if there are any modification to the plans from the previous submittal. If there are no modifications to the plans, only the Final PS&E Submittal Package ("Complete Package") is required during PDN Stage 4.

Final Roadway PS&E plans shall include all items listed in the Roadway Design Checklist. The following sealed plans shown in *Table 1-10, Sealed Plans and Divisions* shall be placed on FileNet by the TDOT Division managing those portions of the project:

Sealed Plans	TDOT Division
Structures (Bridge, retaining wall, and noise wall sheets)	Structural Design
Natural Stream Design	Preconstruction - Environmental
SWPPP	Preconstruction - Environmental
Signals	Traffic Design
Lighting	Traffic Design
Geotechnical	Geotechnical Engineering
Utility (Not sealed)	Preconstruction - Utilities

Table 1-10
Sealed Plans and Divisions

Resurfacing plans are not a traditional roadway project design. Their submittal will not require a checklist, as these do not apply to this project type.

For final Roadway PS&E submittal, the complete package submittal shall be added to FileNet. Refer to PDN 3RD1. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-11, Roadway PS&E Submittal Package List*. See *Figure 1-10, Roadway PS&E Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-PS&E-Roadway.pdf.**

As part of the submittal package, a zip file will also be added to FileNet. This folder will be in the form of a compressed zip folder. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the zip folder shall be **nnnnnn-nn-PS&E-Roadway.zip.**

A PS&E Letting Estimate shall also be submitted by the Project Manager as part of the Final Roadway PS&E Package. The naming convention for this estimate shall be **nnnnnn-nn-RoadwayLettingEstimate.xlsm**. See Chapter 1-402.05 Submittal of the PS&E Estimate for Letting Process for more information regarding the estimate submittal.

Portfolio Order #	Item Description	Naming Convention
0	Original sealed Title Sheet	*nnnnnn-nn*-FunctionalDesignTitleSheet.pdf
1	Signed Traffic Management Plan	*nnnnnn-nn*-TMP*.pdf*
2	Roadway Plans - All sheets as designated in the PS&E checklist	*nnnnnn-nn*-PS&E-RoadwayPlans.pdf
3	Grading Report	*nnnnnn-nn*-GradingReport.pdf
4	Special Provision Order	*nnnnnn-nn*-SpecialProvisionOrder.pdf
5	Project Notebook	*nnnnnn-nn*-PS&E-PN.pdf
6	Signed PS&E checklist	*nnnnnn-nn*-PS&E-Checklist.pdf

Table 1-11
Roadway PS&E Submittal Package List

Name	Order
nnnnnn-nn-FunctionalDesignTitleSheet.pdf	0
nnnnnn-nn-TMP.pdf	1
nnnnnn-nn-PS&E-Roadway.pdf	2
nnnnnn-nn-GradingReport.pdf	3
nnnnnn-nn-SpecialProvisionOrder.pdf	4
nnnnnn-nn-PS&E-PN.pdf	5
nnnnnn-nn-PS&E-Checklist.pdf	6

Figure 1-10
Roadway PS&E Submittal Package Example

1-105.10 FINAL PS&E DOCUMENTS "COMPLETE PACKAGE"

The Final PS&E Package or "Complete Package" shall be submitted for letting purposes. It shall be uploaded to FileNet prior to the turn-in date once all files listed below have been compiled. This zip file will contain all the digitally signed divisional plans combined into one master portfolio, all divisional plans combined into one flattened pdf, a .zip file of all divisional estimates, a .zip of design files, the special provision order sheet, final TMP, grading sheets, bridge reference drawings, utility provisions, reports (Geotech, asbestos, etc.), and pre-construction ride excel (rideability projects only). Each individual file is described below as it should be included in the submittal package. See 4RD1. The order structure and naming convention is shown in *Figure 1-14 Zipped "Complete Package" PS&E Example.* The naming convention for the submittal package shall be ***nnnnnn-nn*-FinalPS&EPackage.zip.**

For the Design Files submittal, the zipped folder of design files submittals shall be added to the zipped Final PS&E Submittal Package. This is in the form of a zipped folder with individual files added. This folder will contain the project's entire WorkSet folder, acquisition table excel file, quantities excel file, etc. The naming convention for the submittal package shall be ***nnnnnn-nn*-DesignFiles.zip**

For Final PS&E Estimates submittal, the zipped folder of estimate submittals shall be added to the Zipped Final PS&E Submittal Package. This is in the form of a zipped folder with individual files added. See Chapter 1-402.05 Submittal of the PS&E Estimate for Letting Process for more information regarding the estimate submittal. The order structure and naming convention is shown in *Figure 1-11, Zipped Estimates PS&E Submittal Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-Estimates.zip**

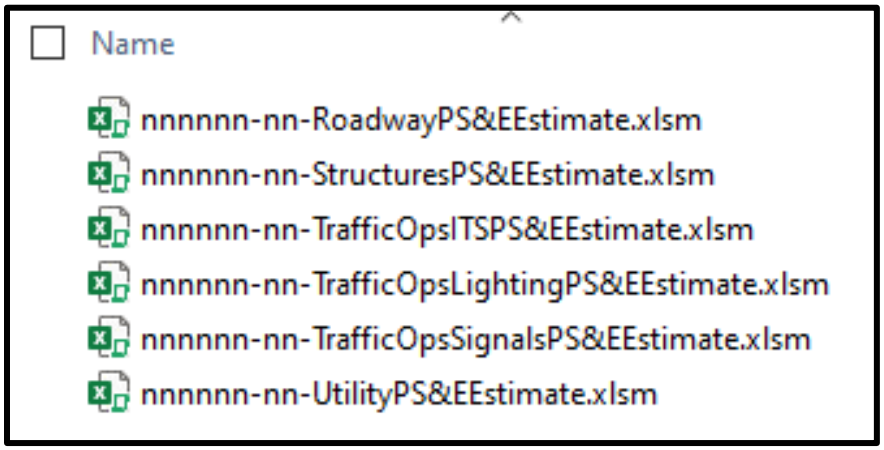


Figure 1-11

Zipped Estimates PS&E Submittal Example

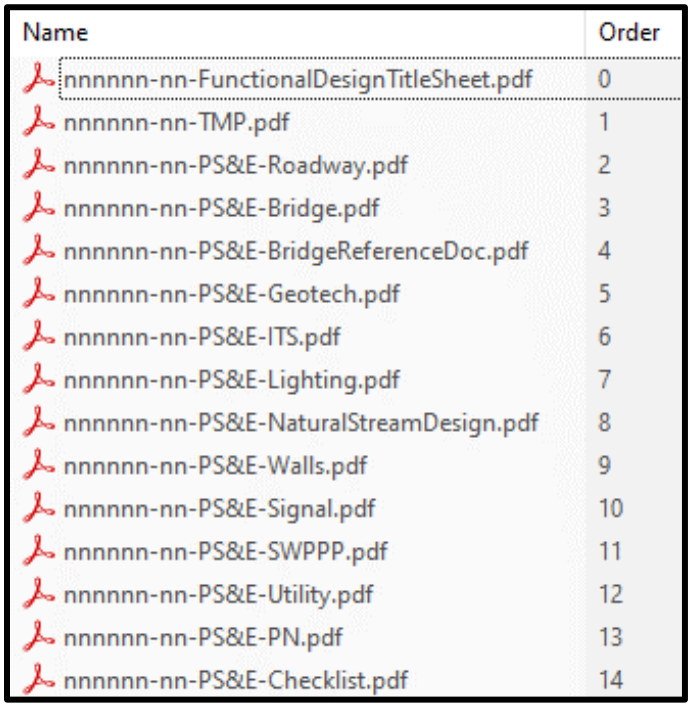
The Final PS&E plans shall include all items listed in the Roadway Design Checklist for PS&E document turn-in, including, if applicable, bridge and retaining wall plans; geotechnical plans; ITS, signal and lighting plans; natural stream design and SWPPP plans; and utility plans. These plans shall be uploaded to FileNet by the respective Divisions for use by the Design Lead to include in the submittal packet.

For Final PS&E Plans submittal, the plan files shall be added to the zipped Final PS&E Submittal Package. This is in the form of an Adobe Portfolio PDF with individual files added. The order structure and naming convention is shown in *Table 1-12, Final PS&E Plans Submittal Package List*. See *Figure 1-12, Final PS&E Plans Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-FinalPS&E.pdf.**

Portfolio Order #	Item Description	Naming Convention
0	Original sealed Functional Design Title Sheet	*nnnnnn-nn-FunctionalDesignTitleSheet.pdf*
1	Signed Traffic Management Plan	*nnnnnn-nn*-TMP*.pdf*
2	Complete sealed set of Roadway Plans as turned in for final PS&E	*nnnnnn-nn*-PS&E-Roadway.pdf
3	Bridge, as applicable	*nnnnnn-nn*-PS&E-Bridge.pdf
4	Bridge Reference Documents, as applicable	*nnnnnn-nn*-PS&E-BridgeReferenceDoc.pdf
5	Geotechnical, as applicable	*nnnnnn-nn*-PS&E-Geotech.pdf

6	ITS, as applicable	*nnnnnn-nn*-PS&E-ITS.pdf
7	Lighting, as applicable	*nnnnnn-nn*-PS&E-Lighting.pdf
8	Natural Stream Design, as applicable	*nnnnnn-nn*-PS&E-NaturalStreamDesign.pdf
9	Retaining Wall and Noise Wall Details, as applicable	*nnnnnn-nn*-PS&E-Walls.pdf
10	Signal, as applicable	*nnnnnn-nn*-PS&E-Signal.pdf
11	SWPPP, as applicable	*nnnnnn-nn*-PS&E-SWPPP.pdf
12	Utility Plans, as applicable	*nnnnnn-nn*-PS&E-Utility.pdf
13	Project Notebook	*nnnnnn-nn-PS&E-PN.pdf*
14	Signed PS&E Turn-in checklist	*nnnnnn-nn*-PS&E-Checklist.pdf

Table 1-12
Final PS&E Plans Submittal Package List



Name	Order
nnnnnn-nn-FunctionalDesignTitleSheet.pdf	0
nnnnnn-nn-TMP.pdf	1
nnnnnn-nn-PS&E-Roadway.pdf	2
nnnnnn-nn-PS&E-Bridge.pdf	3
nnnnnn-nn-PS&E-BridgeReferenceDoc.pdf	4
nnnnnn-nn-PS&E-Geotech.pdf	5
nnnnnn-nn-PS&E-ITS.pdf	6
nnnnnn-nn-PS&E-Lighting.pdf	7
nnnnnn-nn-PS&E-NaturalStreamDesign.pdf	8
nnnnnn-nn-PS&E-Walls.pdf	9
nnnnnn-nn-PS&E-Signal.pdf	10
nnnnnn-nn-PS&E-SWPPP.pdf	11
nnnnnn-nn-PS&E-Utility.pdf	12
nnnnnn-nn-PS&E-PN.pdf	13
nnnnnn-nn-PS&E-Checklist.pdf	14

Figure 1-12
Final PS&E Plans Submittal Package Example

For the flattened Final PS&E Plans document, create a flattened PDF with all divisional plans combined into one PDF. Follow this guide when Creating the Flattened Plan Set. The order structure and naming convention is shown in *Table 1-13,Flattened Plan Set List*. See *Figure 1-13, Flattened Plan Set Example*. The naming convention for the submittal document shall be ***nnnnnn-nn*-FinalPS&E-Flattened.pdf.**

Order #	Item Description	Naming Convention
1	Complete sealed set of Roadway Plans as turned in for final PS&E	*nnnnnn-nn*-PS&E-Roadway-Flattened.pdf
2	Bridge, as applicable	*nnnnnn-nn*-PS&E-Bridge-Flattened.pdf
3	Bridge Reference Documents, as applicable	*nnnnnn-nn*-PS&E-BridgeReferenceDoc-Flattened.pdf
4	Geotechnical, as applicable	*nnnnnn-nn*-PS&E-Geotech-Flattened.pdf
5	ITS, as applicable	*nnnnnn-nn*-PS&E-ITS-Flattened.pdf
6	Lighting, as applicable	*nnnnnn-nn*-PS&E-Lighting-Flattened.pdf
7	Natural Stream Design, as applicable	*nnnnnn-nn*-PS&E-NaturalStreamDesign-Flattened.pdf
8	Retaining Wall and Noise Wall Details, as applicable	*nnnnnn-nn*-PS&E-Walls-Flattened.pdf
9	Signal, as applicable	*nnnnnn-nn*-PS&E-Signal-Flattened.pdf
10	SWPPP, as applicable	*nnnnnn-nn*-PS&E-SWPPP-Flattened.pdf
11	Utility Plans, as applicable	*nnnnnn-nn*-PS&E-Utility-Flattened.pdf

Table 1-12
Flattened Plan Set List

Name	Order
nnnnnn-nn-PS&E-Roadway-Flattened.pdf	0
nnnnnn-nn-PS&E-Bridge-Flattened.pdf	1
nnnnnn-nn-PS&E-BridgeReferenceDoc-Flattened.pdf	2
nnnnnn-nn-PS&E-Geotech-Flattened.pdf	3
nnnnnn-nn-PS&E-ITS-Flattened.pdf	4
nnnnnn-nn-PS&E-Lighting-Flattened.pdf	5
nnnnnn-nn-PS&E-NaturalStreamDesign-Flattened.pdf	6
nnnnnn-nn-PS&E-Walls-Flattened.pdf	7
nnnnnn-nn-PS&E-Signal-Flattened.pdf	8
nnnnnn-nn-PS&E-SWPPP-Flattened.pdf	9
nnnnnn-nn-PS&E-Utility-Flattened.pdf	10

Figure 1-13
Flattened Plan Set Example

For Final PS&E Reports submittal, the zipped folder of all reports that are required for the project shall be added to the zipped Final PS&E Submittal Package. This is in the form of a zipped folder with individual files added. The reports that may be included shall be the Special provisions order, a grading report, the asbestos report, geotech report, etc. Addition reports may be added to this zip folder as needed. The naming convention for the submittal package shall be ***nnnnnn-nn*-Reports.zip**

For the Structures Bridge Reference document, see section 4ST1 in the PDN Manual. The naming convention for the submittal document shall be ***nnnnnn-nn*-StructuresBridgeReference.pdf.**

For Utility Specifications, see section 3UT3 in the PDN Manual. The naming convention for the submittal document shall be ***nnnnnn-nn*-UtilitySpecs.pdf.**

The Final PS&E Package shall include all items, if applicable, listed in the PS&E Roadway Design Checklist. For Final PS&E Package submittal, the complete package submittal shall be added to FileNet. This is in the form of a zipped folder with individual files added. The order structure and naming convention is shown in *Figure 1-14, Zipped "Complete Package" Final PS&E Submittal Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-FinalPS&EPackage.zip.**

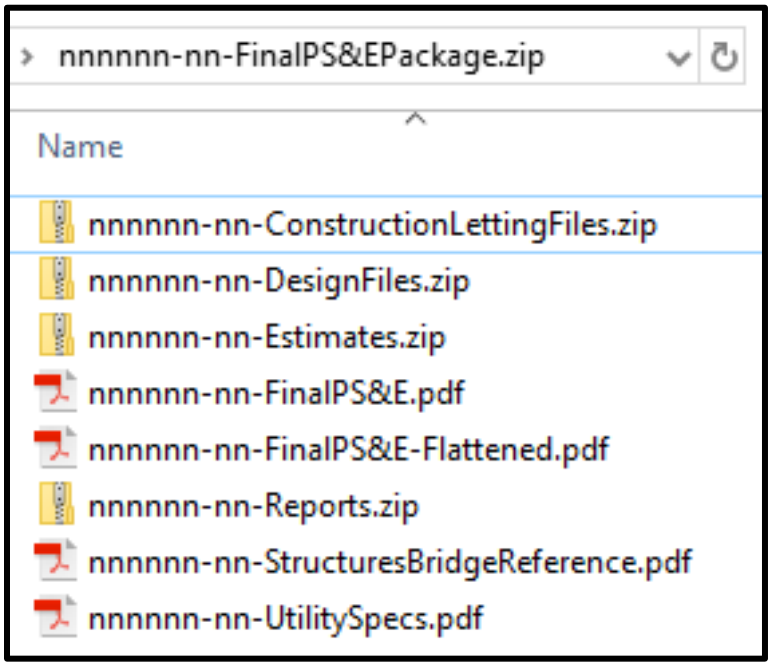


Figure 1-14
Zipped "Complete Package" Final PS&E Submittal Package Example

1-105.10.01 CONSTRUCTION LETTING ZIPPED FOLDER

The Construction Letting Zip Folder should include all files listed on table 1-16 and the file naming convention for Construction Letting Zip Folder shall be **nnnnnn-nn-Constructon LettingFiles.zip** to clearly designate they are the final file and intended to be posted on the website. The Construction Letting Zip Folder shall be included in the Final PS&E Submittal Package as shown in Figure 1-14.

Order #	Item Description	File Format	Remark
1	Estimate Quantities (all disciplines)		Shall be sent to tdot.construction.estimates@tn.gov
2	Compiled full set of plans (all disciplines and reference drawings as applicable)		Flattened 34" X 22" (should be all files listed under flattened plan set table 1-12)
3	Utility Spec		No portfolios

4	Environmental Permits	PDF	Or notice that No permit required
5	RR Agreement (SP 105C)	PDF	
6	ROW Availability (SP 107C)	PDF	
7	ITS Provisions (SP 725)	PDF	
8	Geotech Report	PDF	
9	Asbestos Report	PDF	
10	Grading Quantities	PDF	
11	Mainline & Side Road Cross-Sections and Terrain File	.DGN & .TIN	The files are extracted from the larger Design Files.zip file. The files must be placed in another zip folder before being included in the Construction Letting Files Zipped Folder. If your project is being designed in MicroStation, this package will contain electronic files of the mainline and side road cross sections (*.dgn and *.sht) and the Geopak digital terrain (*.tin) files. If your project is being designed in ORD, this package will contain electronic files of the mainline and side road cross sections and the terrain file (*.dgn).
12	Pre-rides (from regional Materials & Tests)	PDF	
13	Special Provision Order Sheet	X	

14	General Notes, Special Notes and/or Construction Notes as applicable	PDF	(i.e., miscellaneous safety contracts, maintenance contracts, salt bin contracts, etc.)
15	Bridge Inspection Reports as Applicable	PDF	

Table 1-16
Construction Letting Files Zipped Folder List

Any changes made to files listed above after Final Turn-in will require a letting revision to ensure that all changes to original plans/files are captured and posted for bidders. Revisions will be submitted to the locations listed above.

Files submitted after 4 pm CST the Tuesday before Advertisement will be processed by HQ Construction the week after advertisement as a letting addendum. Any deviations to this schedule must be approved by the Director of Construction or the Construction Contract Admin Manager.

After Advertisement, it is imperative that changes made to bid files and bid documents be processed and submitted to HQ Construction as completed and not held until just prior to the letting. All revisions (includes any HQ Construction requested changes due to Bidder RFI's) must be submitted by 4 pm CST the Wednesday before the Letting to allow processing and notification to all Bidders prior to bid opening. Any deviations to this schedule must be approved by the Director of Construction or the Construction Contract Admin Manager.

1-105.11 LETTING REVISION FILENET SUBMITTAL PACKAGE

Revisions made to plans between when the plans are initially submitted for construction letting and the day that projects are let to contract are called Letting Revisions. For Letting revision submittals, the complete package shall be resubmitted to FileNet with the updated information which includes the Letting Revision zip folder. The Letting Revision zip folder is in the form of an zipped folder with individual files added. The naming convention and description of the files are shown in *Table 1-13, Letting Revision Zipped Folder List*. See *Figure 1-15, Letting Revision Zipped Folder Example*. The naming convention for the Letting Revision zipped folder shall be ***nnnnnn-nn*-LettingRev-Emails-mm-dd-yy.zip.** This zipped folder is then added to the updated Complete Package zip folder.

Item Description	Naming Convention
Current Letting Revision Email	*nnnnnn-nn*-LettingRevisionEmail-mm-dd-yy.*pdf*

Previous Letting Revision Email **Folder**, if applicable (This folder contains individual pdfs of the revision emails dropped into this folder.)	Previous_Letting_Revision_Emails
Original Roadway PS&E Submittal Email	*nnnnnn-nn*-PS&E-RoadwaySubmittalEmail.pdf

Table 1-13
Letting Revision Zipped Folder List

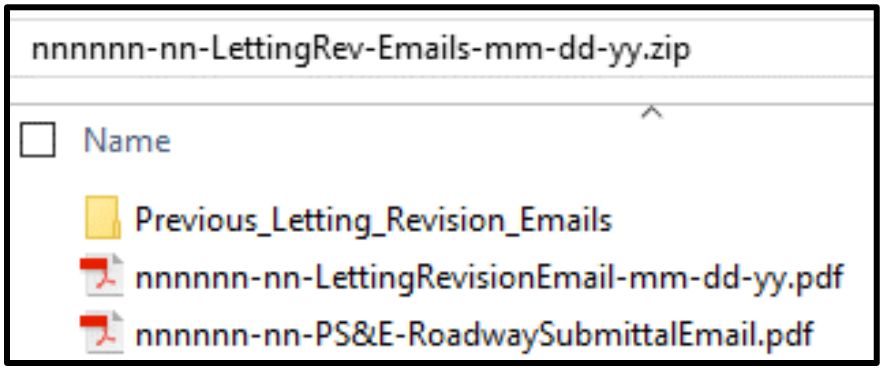


Figure 1-15
Letting Revision Zipped Folder Example

The Final PS&E Package – Letting Revision shall include all items, if applicable, listed in the PS&E Roadway Design Checklist. For Final PS&E Package – Letting Revision submittal, the complete package submittal shall be added to FileNet. This is in the form of a zipped folder with individual files added. The order structure and naming convention is shown in *Figure 1-16, Complete Package Letting Revision Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-FinalPS&EPackage-LettingRev-mm-dd-yy.zip.** Note that if a file within the Complete Package zip folder is not a part of the Letting Revision, the "-LettingRev-mm-dd-yy" tag does not have to be included in the file name. Only include that tag with items that are being updated with the Letting Revision.

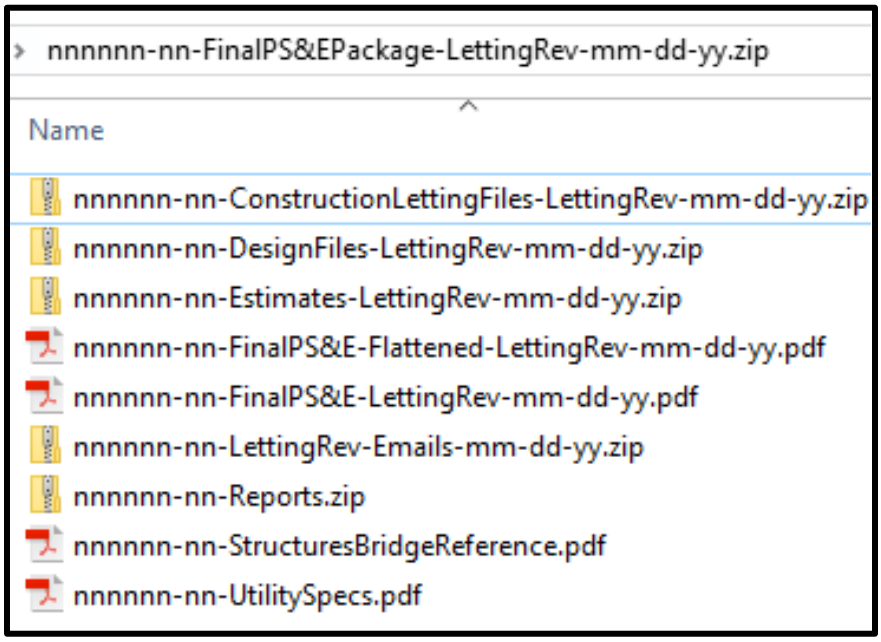


Figure 1-16

"Complete Package" Letting Revision Package Example

This Complete Package will be uploaded to FileNet and an email notification will be sent out using the Letting Revision Submittal Template. This email notification will include an attachment of the revised sheets and an Estimate Revision Request (ERR), if applicable.

1-105.12 PS&E REVISION FILENET SUBMITTAL PACKAGE

Revisions made to plans after the day that projects are let to contract are called PS&E Revisions. For PS&E revision submittals, the complete package shall be resubmitted to FileNet with the updated information along with the PS&E Revision zipped folder. The PS&E Revision zipped folder is in the form of a zipped folder with individual files added. The naming convention and description of the files are shown in *Table 1-14, PS&E Revision Zipped Folder List*. See *Figure 1-17, PS&E Revision Zipped Folder Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-PS&ERev-Emails-mm-dd-yy.zip**. This zipped folder is then added to the updated Complete Package zip folder.

Item Description	Naming Convention
Current PS&E Revision Email	*nnnnnn-nn-PS&E-RevisionEmail-mm-dd-yy.pdf*
Previous PS&E Revision Emails **Folder**, if applicable (This folder contains individual pdfs of the revision emails dropped into this folder.)	Previous_PS&E_Revision_Emails
Original Roadway PS&E Submittal Email	*nnnnnn-nn*-PS&E-RoadwaySubmittalEmail.pdf

Table 1-14
PS&E Revision Zipped Folder List

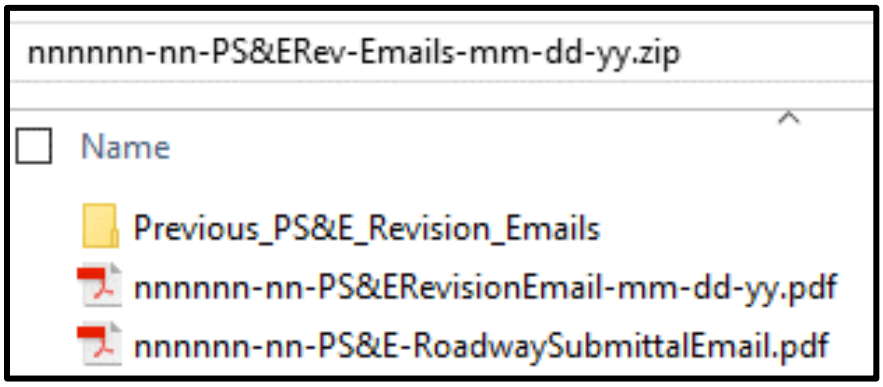


Figure 1-17
PS&E Revision Zipped Folder Example

The Final PS&E Package – PS&E Revision shall include all items, if applicable, listed in the PS&E Roadway Design Checklist. For Final PS&E Package – PS&E Revision submittal, the complete package submittal shall be added to FileNet. This is in the form of a zipped folder with individual files added. The order structure and naming convention is shown in *Figure 1-18, Complete Package PS&E Revision Package Example*. The naming convention for the submittal package shall be ***nnnnnn-nn*-FinalPS&EPackage-PS&ERev-mm-dd-yy.zip.** Note that if a file within the Complete Package zip folder is not a part of the PS&E Revision, the "-PS&ERev-mm-dd-yy" tag does not have to be included in the file name. Only include that tag with items that are being updated with the PS&E Revision.

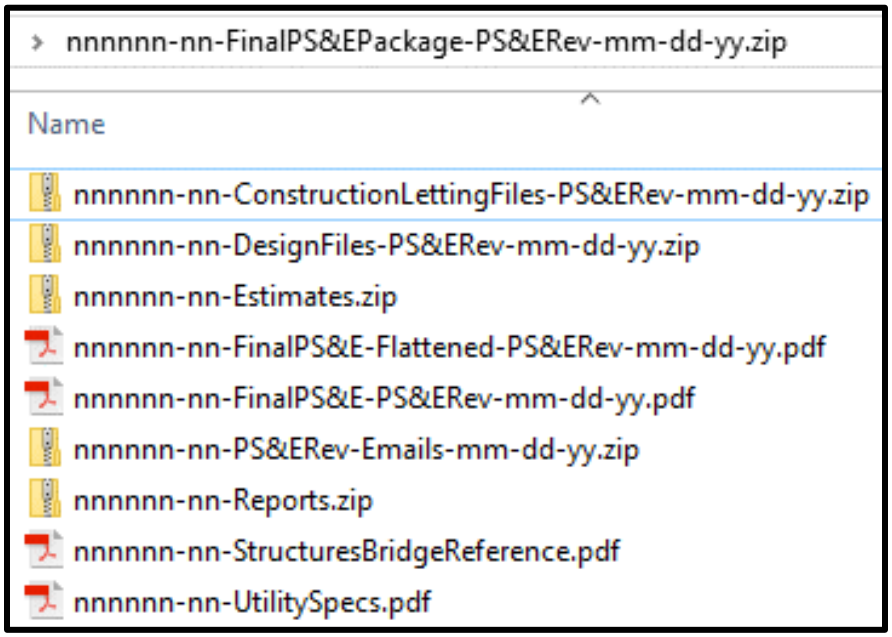


Figure 1-18
Complete Package PS&E Revision Package Example

This Complete Package will be uploaded to FileNet and an email notification will be sent out using the PS&E Revision Submittal Template. This email notification will include an attachment of the revised sheets.

1-106.00 FILENET PROPERTIES

When a file is added to FileNet there are several properties associated with the project. It is essential that each project have the properties filled in correctly for each deliverable and that the properties do not vary on the same project. If there is a change on the project, such as the project description, it is essential that the previously added properties for the project description be edited to reflect the change.

1-106.01 LATITUDE AND LONGITUDE

The project latitude and longitude are among the properties required when adding a project to FileNet. See *Figure 1-19, Latitude and Longitude in FileNet Properties.* The latitude and longitude shall be taken at the midpoint of the mainline of the project within the R.O.W. project limits. If a project is split into 2 or more construction projects where each construction project is given a new PIN, the midpoint shall be taken from each of the construction projects. These numbers shall be added in FileNet for all deliverables up through the Construction submittal and shall not change for the life of the project unless the R.O.W. limits change significantly. Personnel may use Google Earth or other similar software to locate latitude and longitude. Latitude and Longitude coordinates shall be accurate to four decimal places and shown in decimal degrees.

For guidance on converting State Plane coordinates to Latitude and Longitude, see State Plane Coordinates to LatLong.pdf. This file is located under the Documentation section of the Standard Design CADD Files and Documents web page.

Longitude:	-84.6745
Latitude:	35.1117

Figure 1-19
Latitude and Longitude in FileNet Properties

Note: The project latitude and longitude coordinates are also properties to be entered in the Estimated Quantities Excel file under the Project Data tab. *See Figure 1-20, Latitude and Longitude in Estimated Quantities Excel File.*

24	Longitude	-84.6745
25	Latitude	35.1117

Figure 1-20
Latitude and Longitude in Estimated Quantities Excel File

1-106.02 PROJECT CONTRACT NUMBER

The Technical Lead shall assign "00" for the contract number in the file properties when adding a file to FileNet before the contract number is available. The contract number for a project is known one month prior to the Letting date and can be found on the Construction Division Website under Bid Lettings tab. Select the appropriate year Bid Lettings, then select the Letting for the appropriate month within that year. The contract numbers can be found under the "Notice to Contractors" link. Once the contract number is known, the Technical Lead shall update the contract number for all plans and associated files on FileNet for that project. Normally, this project number will not change unless the project is pushed out a Letting.

1-107.00 REMOVAL OF PLANS FROM FILENET

Once a project has been let to contract and awarded, the following files can be removed from FileNet:

- Line and Grade Package plans (**PDF & Zip**)
- All Estimates (**XLSM**)
- Public Meeting Plans (**PDF & Zip**)
- Incidentals (**PDF**)
- Field review plans (**PDF & Zip**)
- Permit sketches (**PDF**)

- Draft Traffic Control Plans (**PDF**)
- TMP (**PDF**)
- NPDES (**PDF**)
- Constructability Review (**PDF & Zip**)
- Plan-in-Hand Plans (**PDF & Zip**)
- PS&E Plans - EXCEPT for the most current (**PDF & Zip**)
- R.O.W. Revisions - EXCEPT for the most current (**Zip Only**)
- Letting Revisions - EXCEPT for the most current (**PDF & Zip**)
- Construction Revisions - EXCEPT for the most current (**PDF & Zip**)
- Quality Assurance Quality Control Documents

The most current project folder, **all** Functional Design PDFs, the most current ROW revision ZIP file, and the most current PS&E PDF and ZIP file shall remain on FileNet.

Five years after receipt of Notice of Completion from the Regional Operations Engineer and it is confirmed the project is closed, the project folder and the final Functional Design Plans and PS&E PDF and ZIP files can be removed. To confirm that a project can be removed from FileNet, verify in PDN that the project status is closed and it has been five years since receiving the Notice of Completion.

If plans are needed after removal, please contact the Roadway Plans Sales Section of the Engineering Project Development Division to obtain a PDF of the final construction plans including all revisions.

1-108.00 PROJECT NOTEBOOK

As discussed in the Requirements for Model Centric Design, projects using ORD need to have an associated **Project Notebook** to document the life cycle from design to construction. If a project is using MicroStation, a Project Notebook is not required. The Project Notebook summarizes the design decisions throughout all project phases, including design criteria, design exceptions, engineering assumptions, ORD versioning, and other impactful design information. This document will be utilized to review design accuracy, 3D model sufficiency, and serve as a project's official documentation throughout the lifespan of the project. As a result of this document servicing multiple functional purposes, it is important for the project team to communicate criteria, applied design decisions, and modeling information. It is also important for the reviewer at each stage and each capacity to understand their role when referencing the Project Notebook to complete their respective review.

Much of the information to be filled out in the Project Notebook will be completed by members of Roadway Design. Information provided to Roadway Design from other disciplines should be clearly communicated if it is expected that Roadway Design is responsible for filling out the entire document.

The Project Notebook is a project deliverable that is expected with the required project submittals. **The Project Notebook is required for all ORD projects and is expected to grow**

with each phase to document more details and decisions made as the project progresses into a more complete design. It is not expected to be filled out completely until final PS&E Plans are submitted or unless agreed upon by the TDOT PM. It will also be used in conjunction with the newly created ORD 3D Model Checklist during reviews.

SECTION 2 – PLANS PRODUCTION

1-200.00 QUALITY ASSURANCE-QUALITY CONTROL

The goal of the TDOT's Engineering Production Support Quality Assurance-Quality Control Section is to perform an independent review of the plans by personnel not involved with the development and design of the plans. This check is not intended to design the roadway and drainage components of the project. Quality Assurance measures are created to ensure that roadway Designers produce a quality set of plans that are complete, consistent across the state, and comply with federal and state policies. Designers and Design Managers should check plans to ensure that plans are accurate, constructible, cost effective and safe by conducting in-house checks and holding field reviews with other divisions within TDOT. It is essential that all TDOT Divisions review the plans and provide comments. **If a division is absent, the Project Manager shall contact the division to request comments.** The following sections have been created to provide guidance for plans development.

1-201.00 ROADWAY DESIGN CHECKLISTS

Roadway Design Checklists are provided for each stage of plan preparation to reduce errors and plan revisions and to standardize the preparation, format, and content of plans. Checklists for each submittal have been created to serve as a guide to ensure certain items are included on each sheet of the plans. These checklists shall be used by all Designers, Consultants, and any personnel checking plans. The Line and Grade, Functional Design Plans, Plan-in-Hand, PS&E and Resurfacing checklists are available on the Roadway Design Guidelines webpage in the Reference Document area.

It is recommended that the Technical Leads download each deliverable checklist for the current phase of the project as opposed to downloading all checklists for each phase at once. This will ensure the current checklist is downloaded. Prior to submitting plans for a field review, the checklist shall be completed for that particular stage of plans development. The Design Lead shall compile checklists from Technical Leads and submit the completed and signed checklist when distributing the Field Review Notification by email for each stage.

The Design Lead shall also refer to Roadway Design activities listed in the (PDN) to ensure that each plan set contains deliverables from other divisions. PDN is available from the Project Management website.

Note: Resurfacing Plans are treated differently than other projects. Refer to Chapter 5-502.00, Resurfacing Projects, for information regarding Resurfacing projects.

1-202.00 PREPARATION OF PLAN SHEETS

The TDOT Survey and Roadway Design Computer–Aided Drafting and Design Standards shall be followed by all divisions of TDOT, by Consultants, and by anyone conducting surveys or producing plans for TDOT projects. This document, CADDV8.pdf, can be found at the Standard Design CADD Files and Documents webpage in the Documentation section. The purpose of the CADD document is to ensure consistency in ORD files, correct file exchanges between outside entities and the Department as well as within the division, and that printed and archived files contain all necessary components and have the same appearance. Some of the most important information found in the CADD document is the following:

- OpenRoads Designer (ORD)
  - File naming convention
  - File extensions
  - Seed files
  - Color table
  - Area patterning
  - Text Size and Fonts
  - Level filters including correct level name, line weight, line style, and color
  - *****Level structure according to sheet
  - Office Templates for letters, 2nd sheets, and tabulated quantities
  - Plan and Profile Sheet Production
  - Cross Section Sheet Production
- Survey
  - Project Filenames
  - Data exchange between Survey and Roadway Design/Design personnel
  - Aerial Survey Files

***** For each type of sheet (Present Layout, R.O.W. Details, Proposed Layout, Drainage Map, etc.), a Sheet Level Structure is set up in ORD to turn on and off levels pertaining to the sheet and reference files in the sheet. It is essential that each Technical Lead use the correct levels when placing data in design files that are referenced into the sheets so that the correct attributes are shown when plotting.

Note: Users shall **NOT** turn on levels that are not part of the Sheet Level Structure if requested to do so by another region or division. This negates the consistency of plans throughout the state.

1-202.01 SHEET BORDERS

Sheet borders are available in ORD with a level structure that ensures the correct area is printed and converted to PDF correctly for deliverables, printing, and archiving. Only TDOT approved sheet borders shall be used by all divisions within TDOT and all outside Consultants, utilities and others that are providing sheets to TDOT. To place a TDOT approved sheet border, refer to the ORD Fundamentals and Roadway Design I manuals on the ORD Training Material webpage for sheet creations.

To access the TDOT approved sheet borders in ORD, the user shall first download and run the TDOT configuration workspace zip file to the location that is shown in the download location path located on the ORD Resources webpage. Then, when opening an ORD file, set the WorkSpace to TDOT_Standards. *See Figure 1-21, TDOT_Standards WorkSpace.*

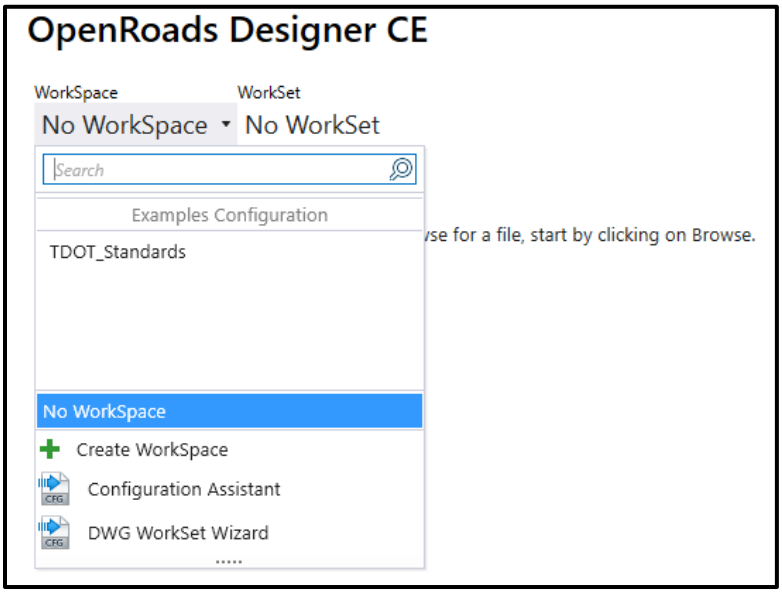


Figure 1-21
TDOT_Standards WorkSpace

Use the Place Named Boundary tool in ORD to begin inserting the correct borders for each type of sheet in the plan set. Here, you can select which type of sheet you want to place: Layout, Profile, or Cross Sections. Refer to the ORD Fundamentals and Roadway Design I manuals on the ORD Training Material webpage for creating and placing each type of sheet for a sheet series. Insert them with the appropriate scale set. See *Figures 1-22A, 1-22B and 1-22C for Sheet Type Creations*. Refer to Chapter 1-202.02 Sheet Scales for additional sheet scales options.

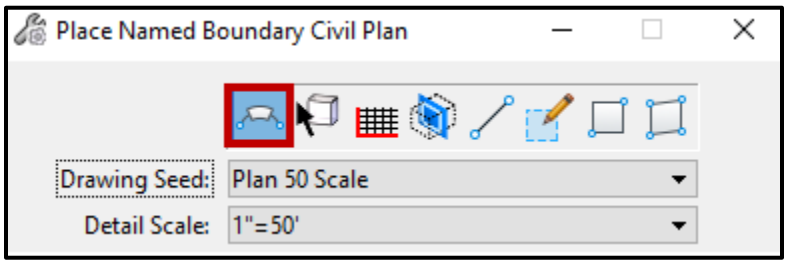


Figure 1-22A
Layout Sheet Creation

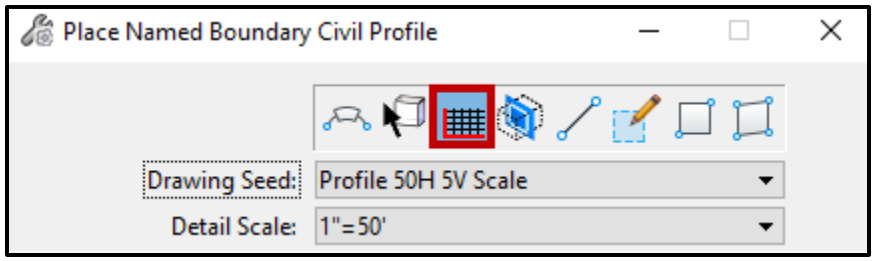


Figure 1-22B
Profile Sheet Creation

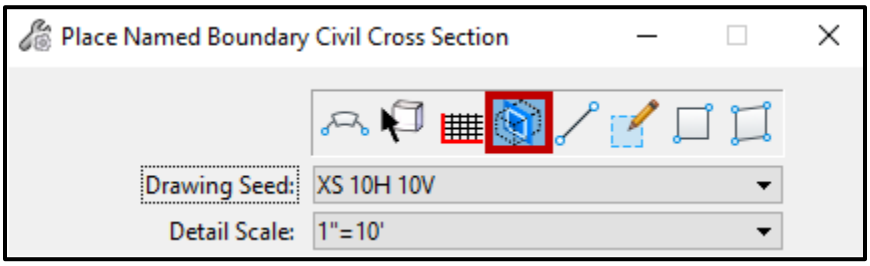


Figure 1-22C
Cross Sections Sheet Creation

1-202.02 SHEET SCALES

The sheet scale for all sheets is set by the seed file used to create that sheet.

- Seed2D or Seed3D yields an active scale of 1” = 50’. This is used for Present, R.O.W. Details, Proposed, Erosion Control, Traffic Control and other similar sheets.
- English General Notes, Special Notes, Estimated Quantities, and other similar sheets, and Index and Standard Drawings cells each yield an active scale of 1” = 1’.
- SeedXS yields an active scale of 1” = 10’.
- For title sheets see *Chapter 1-203.00 Development of Title Sheets.*
- Drainage Map and Property Map sheets should never use a scale smaller than 1” = 200’.

Some 2nd sheets like Ditch Details or Typical Section sheets are not drawn to scale but shall still use an approved sheet border with a 1” = 1’ active scale.

1-202.03 SHEET TITLE BLOCK

For each sheet, there is a corresponding approved sheet title that is placed in the sheet title block. The sheet title block is in the lower right-hand corner of the sheet for all sheets except the Title sheet and Cross-Section sheets. These sheet titles are found by updating the Element Template to the applicable sheet title name and then using the Place Active Cell tool to place the sheet title. Some sheet titles will have station ranges and a scale that shall be filled in. The ranges shall be the same for all views of the same sheet, i.e. Present, R.O.W. Details, Proposed, Profile, EPSC, and Traffic Control. Sheet titles shall correspond with the index for each phase.

Cross section sheets do not have sheet title blocks. However, procedures shall be followed as outlined in the ORD Roadway Design 1 Manual for making and labeling cross section sheets. The name of the road shall appear in the lower right-hand corner as well as the beginning and ending station ranges for the sheet. The road name shall match the road name as it is defined on the present layout and typical section sheets. See *Figure 1-23, Cross-Section Sheet Example* for an example of the information shown on a cross-section sheet.

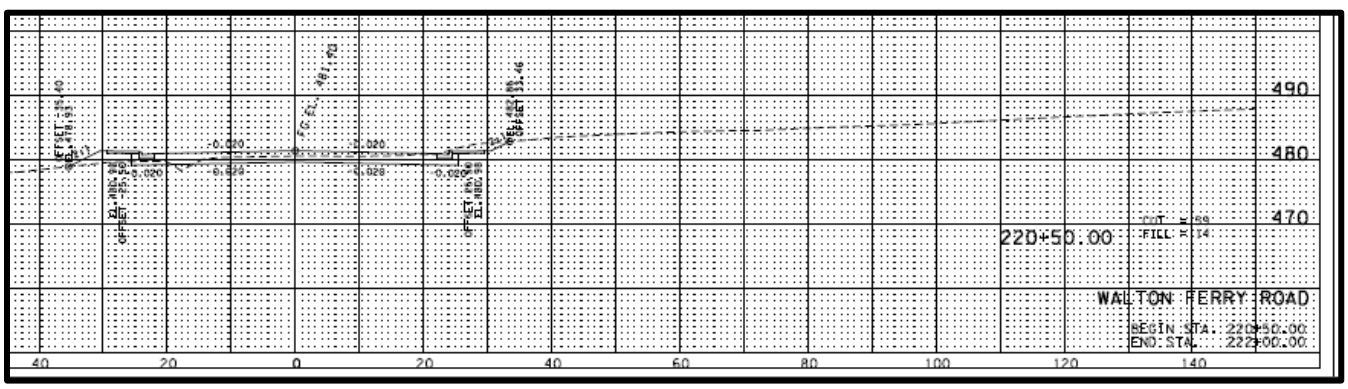


Figure 1-23
Cross-Section Sheet Example

1-202.04 ENGINEER’S SEAL BLOCK ON SHEETS

A square block outline for the engineer’s seal is part of the sheet border which ensures each seal is placed at the correct size and location for all sheets. The square block outline is above the sheet border on plan sheets as shown in *Figure 1-24, Sheet Title Block, Engineer’s Seal, and Coordinate Value* and above the Chief Engineer’s and Commissioner’s signatures on title sheets as shown in *Figure 1-27, Title Sheet Cell.* The seal will be left blank with the exception of sealing the title sheet and sealing appropriate sheets for submittal.

1-202.05 COORDINATE NOTATIONS ON SHEETS

Notation for the coordinate adjustment factors shall be on all roadway sheets except the title, index and standard drawings, project commitments, 2nd sheets (Estimated quantities, typical sections, details, notes, etc.), profiles, and cross sections sheets. This notation will be part of the sheet and the factor will need to be filled in. The coordinate adjustment factor is shown between the engineer's seal block and sheet title block. The notation shall read:

"Coordinates are NAD/83 (1995), are datum adjusted by the factor of 1.000XXX" and tied to the TGRN. All elevations are referenced to the NAVD 1988."

The "1995" refers to the year of the adjustment of coordinate values in Tennessee and 1.000XXX refers to the actual datum adjustment factor used for the project. These values are listed in the CADD survey file.

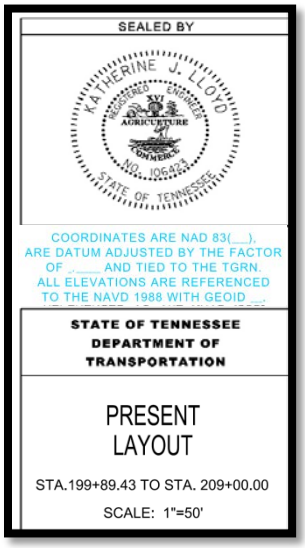


Figure 1-24
Sheet Title Block, Engineer's Seal, and Coordinate Value

1-202.06 PLAN PHASE STAMPS

For information requests (such as Initial Studies request, field reviews, etc.) and deliverables, a plan phase stamp identifying the appropriate stage of development shall be located on the right side above the engineer's seal block on the title sheet only. Plans for public hearings shall have plan phase stamps on every sheet except cross section sheets. A stamp is not required for Final Construction Plans at Turn-In. See *Figure 1-25, Plan Phase Stamps Examples.*

Stamps shall match the name of the FileNet deliverable as shown below:

Phase Stamp Name	Comments
LINE AND GRADE PACKAGE	1RD1
CAUTION – PRELIMINARY PLANS SUBJECT TO CHANGE	Use for design hearing or plans other than field review plans sent outside the Department
FUNCTIONAL DESIGN FIELD REVIEW	2PM5, 2RD1
FUNCTIONAL DESIGN FIELD REVIEW (UTILITIES ONLY)	No R.O.W. acquisition is required 2PM5, 2RD1
INFO ONLY	To be used on Estimated Quantities and Traffic Control sheets for information purposes only at Functional Design Field Review
FUNCTIONAL DESIGN PLANS	2RD1
FUNCTIONAL DESIGN PLANS (UTILITIES ONLY)	No R.O.W. acquisition is required 2RD1
PLAN-IN-HAND FIELD REVIEW	3PM2
PLAN-IN-HAND PLANS	3PM2
CONSTRUCTABILITY REVIEW	3PM2
PS&E FIELD REVIEW	4PM2
PS&E PLANS	4PM2, 4RD1
FINAL CONSTRUCTION PLANS – (INFO ONLY)	4RD1

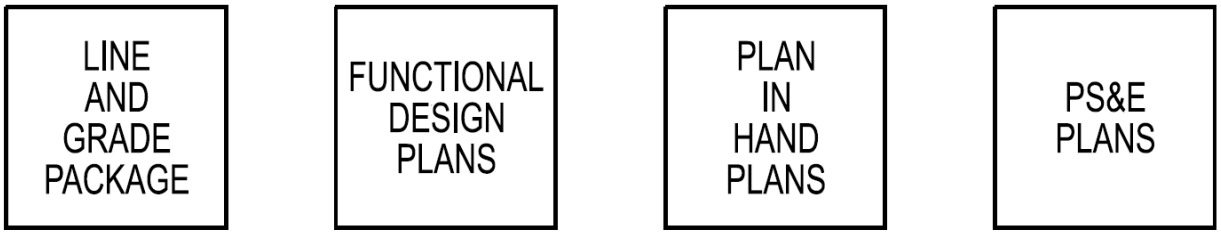


Figure 1-25
Plan Phase Stamps Examples

Guidance for placing stamps on PDF files can be found in the document Adding the Plan Phase Stamp Watermark to the PDF Plan Set.pdf located on the Standard Design CADD Files and Documents webpage.

Plan Phase stamps may be added to ORD DGN files as cells. These cells are found by selecting the applicable Element Template for the desired Plan Phase Stamp and then using the Place Active Cell tool to place the phase stamp on the plan sheet. See *Figure 1-26, Plan Phase Stamps ORD in Element Template*.

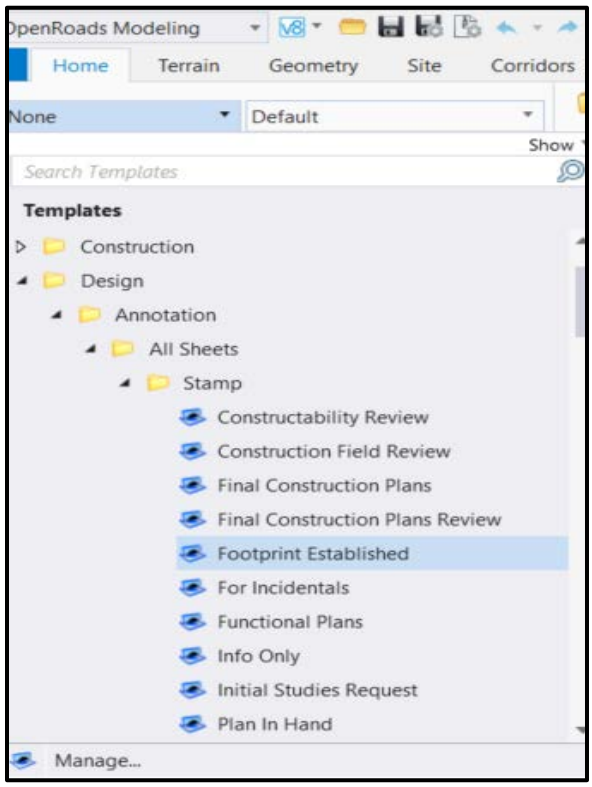


Figure 1-26
Plan Phase Stamps in ORD Element Template

1-203.00 DEVELOPMENT OF TITLE SHEETS

To ensure that all title sheets consistently have the same information, an all-inclusive title sheet has been created with embedded cells that are needed for all phases of the title sheet. For instructions on developing title sheets, users should follow Exercise 11.3 in the Fundamentals of ORD Manual that can be found on the ORD Training Material webpage.

Within ORD, a title sheet seed file is available that contains all necessary items for the development of Line and Grade, Functional Design, Plan-in Hand, and PS&E title sheets. If additional elements are needed for creation of the sheet, cells are available in ORD as Element Templates. The title sheet is created with fillable texts that can be modified but will maintain the correct text style and weight.

To access the TDOT specific element templates in ORD, the TDOT WorkSpace must be used when opening a file in ORD. See Chapter 1-202.01, Sheet Borders for additional information.

Line and Grade title sheets are developed and used for several initial studies requests such as Hydraulic Grade Approval, Environmental Boundaries and Technical Studies, Geotechnical Studies, Signals and Lighting analysis, Pavement Design Request, and Incidentals (Title Searches). The Functional Design, Plan-in-Hand, and PS&E title sheets have some

changes from the Line and Grade sheet; however, most components of the sheet are the same. Any that are different will be defined within the Functional, Plan-in-Hand, and PS&E Title Sheet Sections. *Figure 1-27, Title Sheet Cell* enumerates various sections of a title sheet cell.

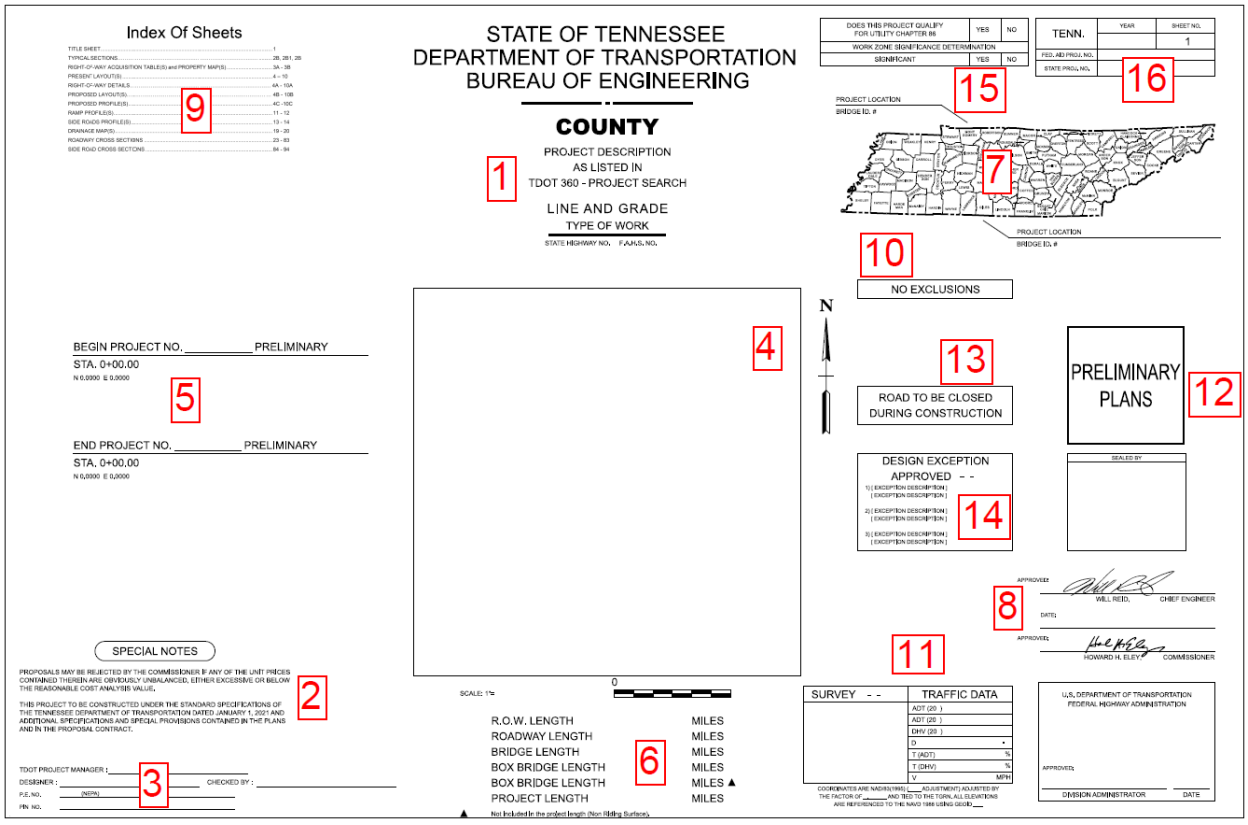


Figure 1-27
Title Sheet Cell

1	Project Description
2	Special Notes
3	Project, Designer, and Manager Identification
4	Map, Map Scale, and North Arrow
5	Project Limits
6	Project Lengths
7	Project Location and Bridge ID Number
8	Chief Engineer Signature, Commissioner Signature and Engineer's Seal Block

9	Preliminary Index of Sheets
10	Exclusions or No Exclusions
11	Traffic Data and Survey Data
12	Plan Phase Stamps
13	Road Closed During Construction
14	Design Exception Approval Dates
15	Chapter 86 Eligibility for Utilities and Work Zone Significance Determination
16	Identification Block

1-203.01 PROJECT DESCRIPTION

Project descriptions on the title sheet shall match descriptions as they are shown in TDOT 360 – Project Search application:

- County(s)
- State route number (if a State route), U.S. route number (if a U.S. route), or Local road name with Project Limits (from and to)
- Type of project
- Type of work
- State Highway number (if applicable)
- US Route number (if applicable)

The type of work being done shall be listed in the project description on the title sheet. The type of work shall correspond with what is shown in TDOT 360-Project Search application (Example: Bridge replacement, Widening, Resurfacing, etc.) For those that need further explanation on the type of work, additional information can be added (Example: Widening including pave, drain, bridge, lighting, signals).

Typical project descriptions for different roadway types are shown in *Figures 1-28* through *1-30.*

Figure 1-28
Interstate Project Description Example

DAVIDSON COUNTY

S.R. 11 (NOLENSVILLE PIKE)
FROM NORTH OF MILL CREEK
TO NEAR S.R. 254 (OLD HICKORY BLVD.)

FUNCTIONAL DESIGN
(WIDENING, PAVE, DRAINAGE, SIGNALS, LIGHTING)

STATE HIGHWAY NO. 11 F.A.H.S. NO. 31A/41A

Figure 1-29
State Route Project Description Example

HAMILTON COUNTY

PELICAN DRIVE INTERSECTION
AT JERSEY PIKE L.M. 1.09
IN CHATTANOOGA

FUNCTIONAL DESIGN
(INTERSECTION IMPROVEMENT - TURN LANES)

STATE HIGHWAY NO. N/A F.A.H.S. NO. N/A

Figure 1-30
Local Road Project Description Example

1-203.02 SPECIAL NOTES

The Special Notes shown on the lower left hand corner of the project title sheet shall always be checked with current Roadway Design Guidelines and Instructional Bulletins to ensure that there is no change. It could be that the note changes between Line and Grade, Functional Design, Plan-in-Hand, and PS&E stages; thus, not allowing the Designer to copy and revise an existing title sheet but requiring a new title sheet. The current special note shall read as follows:

SPECIAL NOTES

PROPOSALS MAY BE REJECTED BY THE COMMISSIONER IF ANY OF THE UNIT PRICES CONTAINED THEREIN ARE OBVIOUSLY UNBALANCED, EITHER EXCESSIVE OR BELOW THE REASONABLE COST ANALYSIS VALUE.

THIS PROJECT TO BE CONSTRUCTED UNDER THE STANDARD SPECIFICATIONS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION DATED JANUARY 1, 2021 AND ADDITIONAL SPECIFICATIONS AND SPECIAL PROVISIONS CONTAINED IN THE PLANS AND IN THE PROPOSAL CONTRACT.

Figure 1-31
Title Sheet Special Notes

1-203.03 PROJECT, DESIGNER, AND MANAGER IDENTIFICATION

On the lower left-hand corner of the title sheet, there are fillable options for the names of those involved in the project and for project information. For a TDOT-designed project, the TDOT Project Manager, Designer, and Checker shall be entered. For a Consultant-designed project, the appropriate TDOT Project Manager Title shall be added along with the Consultant firm, Designer, and Checker. The Preliminary Engineering NEPA (PE-N) number should be shown in the P.E. NO. field for plan submittals prior to R.O.W. or for Utilities Only. The Project Identification Number (PIN) shall also be entered.

TDOT PROJECT MANAGER: DAVID D. LAYHEW, P.E.
DESIGNER : JORDAN DEL SARDO, P.E. CHECKED BY : WESLEY APPLE, P.E.
P.E. NO. 12007-0220-94 (NEPA)
PIN NO. 123456.00

Figure 1-32A
TDOT Designed Project

TDOT PROJECT MANAGER: DAVID D. LAYHEW, P.E.
DESIGNED BY: ABC COMPANY
DESIGNER : JANE DOE CHECKED BY : JOHN DOE
P.E. NO. 12007-0220-94 (NEPA)
PIN NO. 123456.00

Figure 1-32B
Consultant Designed Project

1-203.04 MAP, MAP SCALE, AND NORTH ARROW

A location map for the project showing the route to be improved, local roads, streams, railroads and towns shall be placed on the title sheet. Routes to major cities shall be labeled. See *Figure 1-27, Title Sheet Cell*.

The map scale shall be 1" = 2640' (1/2 mile) scale for projects less than 2 miles and 1" = 5280' (1 mile) scale for projects over 2 miles. The map scale shall be placed below the map. The North arrow shall be shown beside the map. See *Figure 1-33, Map, Map Scale, North Arrow, and Project Limits Example.*

1-203.05 PROJECT LIMITS

The begin/end project limits shall be noted with federal and/or state project number, corresponding project phase (Prelim., R.O.W. or Const.), stations, and northing and easting coordinates labeled to 4 decimal places. If the project has both federal and state project number, then both federal and state projects numbers will be included in the begin/end project limits labels. On Interstate plans, both Interstate log miles (based on Interstate mileposts) and stations will be required when designating the beginning and ending points on all projects. See *Figure 1-33, Map, Map Scale, North Arrow, and Project Limits Example* for an interstate example. Preliminary stations represent the begin/end R.O.W. limits. If no R.O.W. is acquired, then use the Begin/End construction limits.

On state highway plans, such as resurfacing projects, when using log miles to designate the beginning and ending points on projects, county log miles (mile posts) are to be used. The correct log miles as shown in the Project Online description shall be referenced.

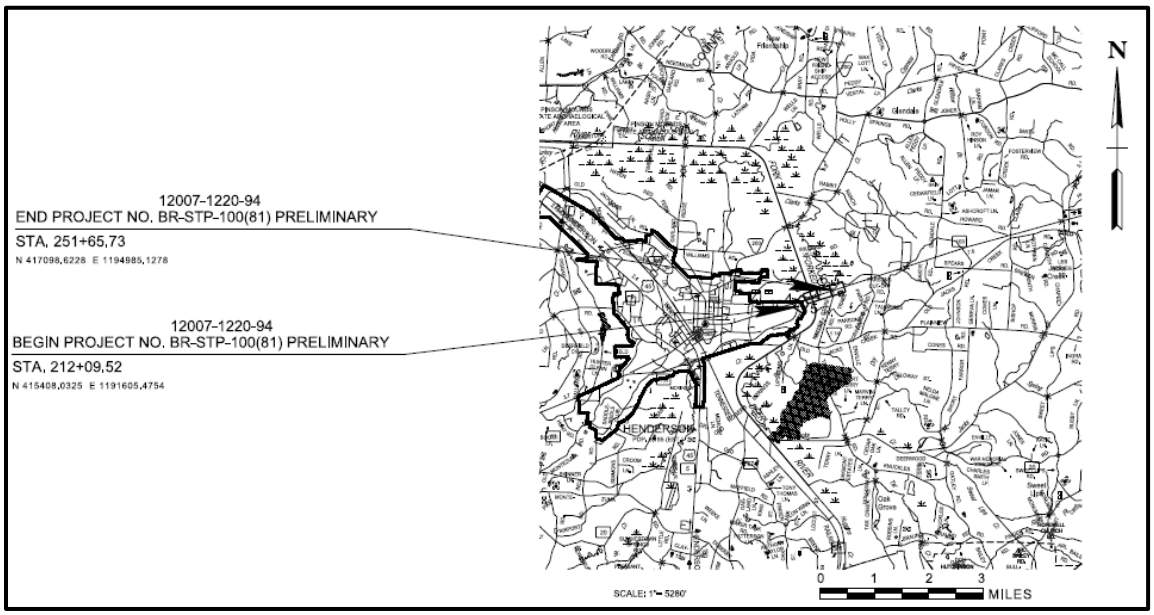


Figure 1-33
Map, Map Scale, North Arrow, and Project Limits Example

A rectangle representing each sheet border in the present layout series and its corresponding sheet number shall be placed along the mainline alignment within the title sheet map as shown in *Figure 1-34, Sheet Borders and Numbering on Map Example*.

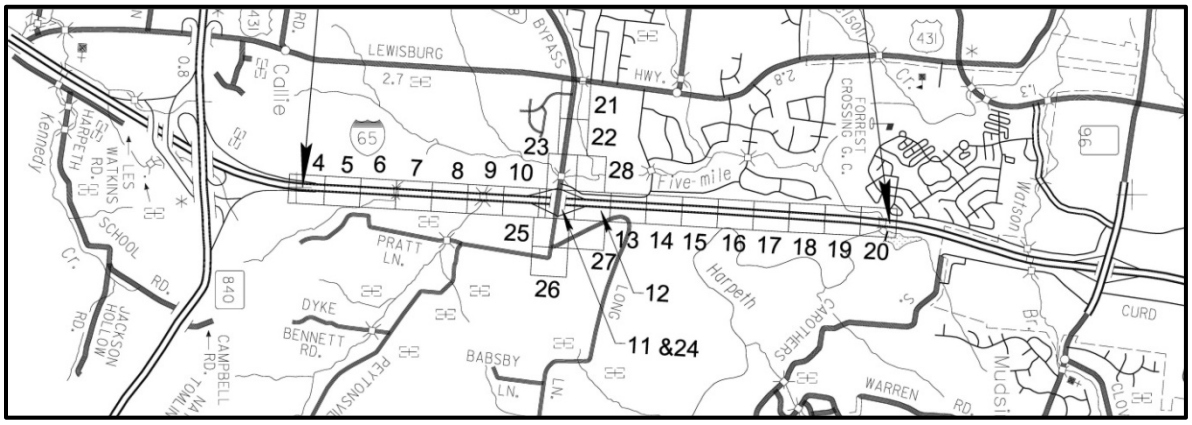


Figure 1-34
Sheet Borders and Numbering on Map Example

1-203.06 PROJECT LENGTHS

For all plan phases, the R.O.W. Length, Roadway Length, Bridge Length, Box Bridge Length, and Project Length shall be shown below the map and shall be noted to the 1000th of a mile and shown as X.XXX. These lengths shall be truncated at the third decimal. The R.O.W. Length is the length along the centerline between the beginning and ending R.O.W. flags. If the project is a Utilities Only project with no R.O.W. acquisition, use 0.000 as the R.O.W. length. The project length is the sum of the lengths for Roadway, Bridge, and Box Bridge and does not include the R.O.W. length. The project length shall be changed to include structure lengths (bridge and/or box bridge) if applicable. If box bridges serve as a riding surface for vehicles, that length shall be added together in the same manner as roadway and regular bridge length for a total project length. If the box bridge does not serve as a riding surface, the box bridge length will not be added in with the others, and a footnote to the Box Bridge Length shall be added below the Project Length to say “Not Included in the Project Length”. *See Figure 1-35, Project Length.* If information is unknown for early submittals, such as Initial Studies Request, leave the lengths blank.

R.O.W. LENGTH	__.__ MILES
ROADWAY LENGTH	__.__ MILES
BRIDGE LENGTH	__.__ MILES
BOX BRIDGE LENGTH	__.__ MILES
BOX BRIDGE LENGTH	__.__ MILES ▲
PROJECT LENGTH	__.__ MILES

▲ Not included in the project length (Non Riding Surface)

Figure 1-35
Project Length

1-203.07 PROJECT LOCATION AND BRIDGE ID NUMBER

The Project Location shall be identified for the county(s) on the state map located in the upper right corner of the title sheet cell.

The Bridge I.D. number(s), if applicable, for all existing bridges within the project limits (either on the mainline, side road or overpassing the project) shall be added under the Project Location as shown in *Figure 1-36, Project Location and Bridge I.D. Number*. Two options are shown in Figure 1-36 for single or multiple bridges. The Federal Bridge I.D. numbers can be found in the Concept Report, queried on state routes, interstates and many major local roads in ETRIMS, and found in TDOT 360 - Project Search application. If a project has a bridge and the bridge I.D. number cannot be found in any of these locations, the Designer shall request the information from the Regional Survey Office.

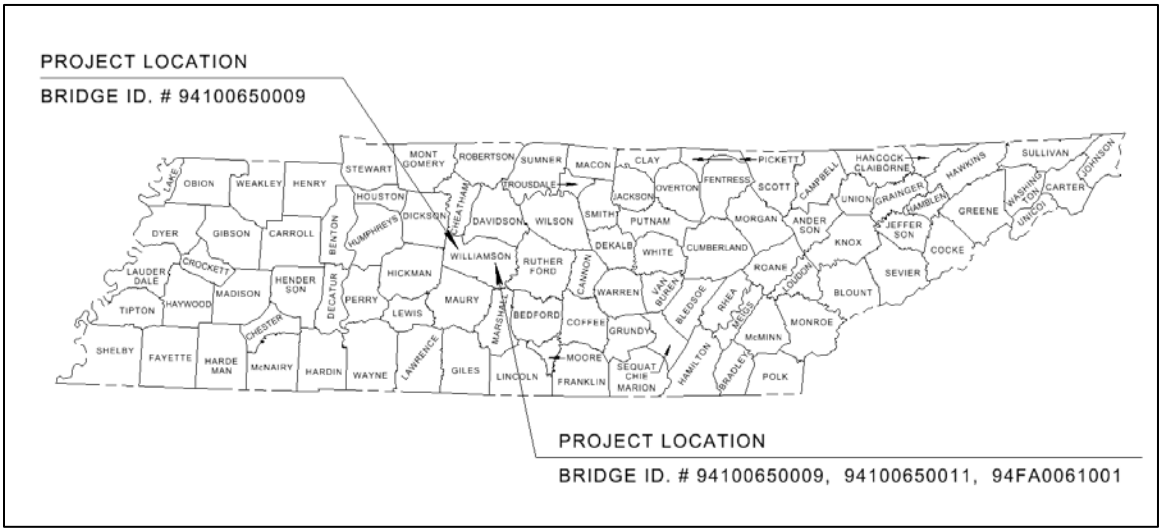


Figure 1-36
Project Location and Bridge I.D. Number

1-203.08 CHIEF ENGINEER AND COMMISSIONER SIGNATURES AND ENGINEER'S SEAL BLOCK

The current Chief Engineer and Commissioner signatures can be added to the title sheet by utilizing the scanned images available as ORD cells. Select the correct element template (Design >> Annotation >> Title Sheet >> Project Length) in the Attributes tab and then place the active cell. See *Figure 1-37, Chief Engineer and Commissioner Signatures.* A square block for the professional engineer's seal is located above the signature block. The engineer's seal is not added at the Line and Grade phase of plans development.

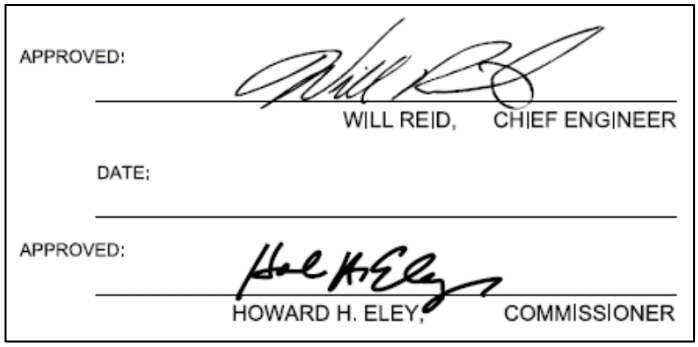


Figure 1-37
Chief Engineer and Commissioner Signatures

1-203.09 EXCLUSIONS OR NO EXCLUSIONS

If there are no portions of the roadway that are excluded from the proposed project, this shall be noted on the title sheet as "NO EXCLUSIONS" as shown in *Figure 1-38, No Exclusions*.

NO EXCLUSIONS

Figure 1-38
No Exclusions

If there is a portion of the roadway within the limits of the project that will not be improved or resurfaced, the following cell shall be placed on the title sheet and appropriate station ranges and lengths between the ranges shall be filled in as shown in *Figure 1-39, Exclusion Block.*

EXCLUSIONS	
STATION TO STATION	LENGTH (FT.)
-	.
-	.
-	.
TOTAL=	.

Figure 1-39
Exclusion Block

1-203.10 TRAFFIC DATA AND SURVEY DATA BLOCK

The cell for the Traffic Data Block is shown in *Figure 1-40, Traffic Data and Survey Data Block*. The first line shows Average Daily Traffic (ADT) data for the current year. The second and third lines show ADT data and Design Hourly Volume (DHV) data for the design year, which is 20 years from the current year. The other entries are Directional Volume (D), Truck ADT's, Truck DHV, and Design Speed (V). Information for this block can be found in the original Concept Report.

The traffic data block shall be updated at specific times throughout the project. See *Chapter 4-200.00, Traffic Report Request,* for information on obtaining updated traffic data.

The date of the original survey and the date of each survey update shall be listed beside the traffic data block on the current title sheet. Format shall be MM-DD-YY as shown in *Figure 1-40, Traffic Data and Survey Data Block*. For information on updating the survey, see *Chapter 1-305.00, Updating Surveys*.

The geoid model shall be listed on each title sheet as shown in *Figure 1-40, Traffic Data and Survey Data Block*. The geoid model and datum adjustment factor is found in the CADD survey file. The following note shall be added to all title sheets: "COORDINATES ARE NAD 83(INSERT YEAR), ARE DATUM ADJUSTED BY THE FACTOR OF X.XXXXXX AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988 WITH GEOID (INSERT MODEL)".

SURVEY 02-26-12	TRAFFIC DATA	
04-29-13 UPDATED	ADT (2018)	68160
06-09-14 UPDATED	ADT (2038)	104750
02-28-16 UPDATED	DHV (2038)	9666
09-27-17 UPDATED	D	65 - 35
	T (ADT)	17 %
	T (DHV)	11 %
	V	70 MPH

COORDINATES ARE NAD 83(1995), ARE DATUM ADJUSTED BY THE FACTOR OF 1.000084 AND TIED TO THE TGRN. ALL ELEVATIONS ARE REFERENCED TO THE NAVD 1988 WITH GEOID 12B.

Figure 1-40
Traffic Data and Survey Data Block

1-203.11 PLAN PHASE STAMPS

See *Chapter 1-202.06, Plan Phase Stamps*, for more details on the appropriate plan phase stamp to use. For placement of the phase stamp, see *Figure 1-27, Title Sheet Cell*.

1-203.12 ROAD CLOSED DURING CONSTRUCTION

For some projects, the road may be closed during construction. Usually, this is noted in the Concept Report by a letter from the local governments agreeing that the road shall be closed during construction. The Concept Report should also indicate whether the local government or TDOT is responsible for signing the detour route. If the road is going to be closed during construction, this should be noted on the Line and Grade, Functional Design, Plan-in-Hand, and PS&E title sheet as shown in *Figure 1-41, Road Closed During Construction*.

ROAD TO BE CLOSED
DURING CONSTRUCTION

Figure 1-41
Road Closed During Construction

1-203.13 DESIGN EXCEPTION APPROVAL DATES

Approved design exceptions shall be noted with approval date above the Traffic Data Block on the title sheet as shown in *Figure 1-42, Design Exception Block Examples*. For additional guidance regarding design exception request, please see *Chapter 2-105.00, Design Exception Requests*.

DESIGN EXCEPTION
APPROVED 06-21-18

1) [OUTSIDE SHLD. WIDTH 4']
[STA. 400+05 TO STA. 425+50]

2) [CREST VERTICAL CURVE]
[STA. 450+00]

3) [EXCEPTION DESCRIPTION]
[EXCEPTION DESCRIPTION]

Figure 1-42
Design Exception Block Examples

1-203.14 CHAPTER 86 ELIGIBILITY FOR UTILITIES

Departmental Policy for Utility Relocations from Public Highway Rights-of-Way Under TCA §54-5-804, Number 340-07 applies to highway construction projects administered by TDOT that require the relocation of utility facilities located on public highway rights-of-way. A project will qualify for utility relocation reimbursement or for inclusion in the Department's highway construction contract if the utility meets the following conditions:

- Grade and Drainage projects with R.O.W. acquisition; and
- Bridge Replacement projects on the State highway system.

Non-qualifying projects are not considered as qualified for inclusion in Chapter 86, even if the utility is an Eligible Utility, in the following types of projects:

- Local Interstate Connectors (LIC)
- Resurfacing projects (State or Federal-aid funded)
- State Industrial Access (SIA) highways
- Minor intersection improvement projects with no R.O.W. acquired
- Bridge repair projects
- Safety funded projects
- Maintenance projects
- Signal installation projects
- Minor projects that have limited project funding available
- BRZE off-system bridges

- Any project that does not allow at least nine (9) months to process the project for Chapter 86 between the scheduled letting date for the construction contract and the date on which the project plans are sent to the utility as provided in TCA § 54-5-854.

The Project Manager/Design Lead shall discuss the project with appropriate Regional Utility Manager to verify if the project is eligible for Chapter 86 funds and shall mark the appropriate check box on the title sheet as shown in *Figure 1-43, Chapter 86 Eligibility for Utilities*.

DOES THIS PROJECT QUALIFY FOR UTILITY CHAPTER 86	YES _	NO _

Figure 1-43
Chapter 86 Eligibility for Utilities

1-203.15 WORK ZONE SIGNIFICANCE DETERMINATION

It is Departmental policy to plan, design, construct, maintain, and operate safe and efficient work zones. Consideration and management of work zone impacts begin at project inception, continue through all phases of design and construction, and are reflected through the Work Zone Safety and Mobility Process that address all aspects of work zone safety and mobility. A Significant Project is one that, alone or in combination with other concurrent projects nearby, is anticipated to cause sustained work zone impacts that are greater than what is considered tolerable. See the Work Zone Safety & Mobility Manual for guidance on significance determination and additional information. For information regarding the functional classification for your project, see the Functional Classification maps.

The Technical Lead shall mark the appropriate check box to indicate the project's significance determination. This should also be included on Resurfacing title sheets. *See Figure 1-44, Work Zone Determination.*

WORK ZONE SIGNIFICANCE DETERMINATION		
SIGNIFICANT	YES	NO

Figure 1-44
Work Zone Determination

1-204.00 FUNCTIONAL DESIGN TITLE SHEET

To modify the Line and Grade Title sheet to a Functional Design title sheet, the Line and Grade levels can be turned off and Functional Design levels turned on as described in the Title Sheet Preset Filters Tutorial document located on the Standard Design CADD Files and Documents webpage in the Documentation section. See *Chapter 1-203.00, Development of Title*

Sheets. The Project Identification Number shall change from PE-N to PE-D. The Preliminary Engineering Design (PE-D) number shall be shown in the lower left-hand corner of the title sheet for Functional Design plan submittals, Utilities Only submittals, and for any subsequent plan submittals. The type of preliminary engineering number shall be specified on the title sheet adjacent to the P.E. project number and shown in parentheses as "Design". See *Figure 1-45A, PE-N Project Number* and *Figure 1-45B, PE-D Project Number*.

NOTE: The type of work shall be verified to reflect any changes in scope of project.

TDOT PROJECT MANAGER: DAVID D. LAYHEW, P.E.
DESIGNER : JORDAN DEL SARDO, P.E. CHECKED BY : WESLEY APPLE, P.E.
P.E. NO. 12007-0220-94 (NEPA)
PIN NO. 123456.00

Figure 1-45A
PE-N Project Number

TDOT PROJECT MANAGER: DAVID D. LAYHEW, P.E.
DESIGNER : JORDAN DEL SARDO, P.E. CHECKED BY : WESLEY APPLE, P.E.
P.E. NO. 12007-1220-94 (DESIGN)
PIN NO. 123456.00

Figure 1-45B
PE-D Project Number

The type of project will change from the Line and Grade Stage to Functional in the project description when the correct Functional levels are active. *See Figure 1-46, Project Description – Type of Project Change.* The project limits will change the type of project from Prelim. to R.O.W. when the Functional levels are active. See *Figure 1-47, Project Limits – Type of Project and State Federal Aid Number Change.* The state federal aid number shall be changed in the begin/end project limits labels to correspond with the R.O.W. funding phase. *See Chapter 1-203.05, Project Limits*. Additional sheets shall be added to the index. *See Chapter 1-204.01, Functional Design Index of Sheets*.

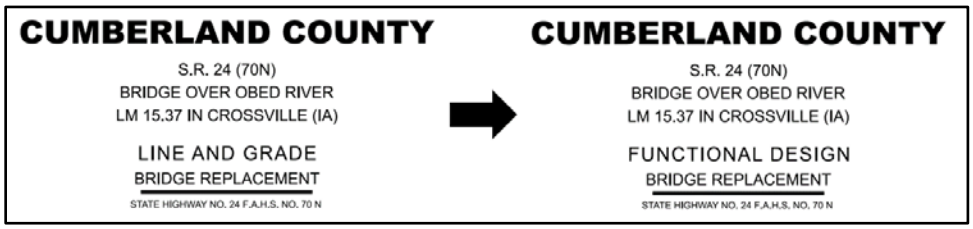


Figure 1-46
Project Description -Type of Project Change

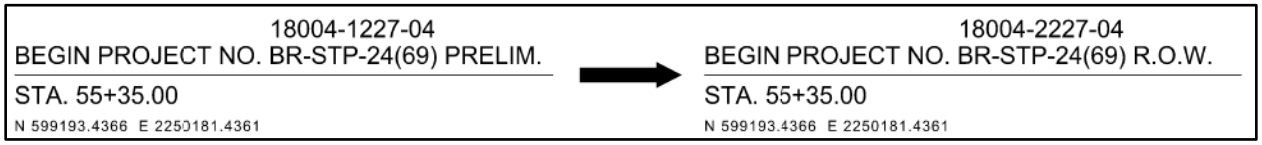


Figure 1-47
Project Limits - Type of Project and State Federal Aid Number Change

If a project is submitted for "Utilities Only", it shall be marked on the title sheet with a project phase stamp. See *Figure 1-48, Functional Design Plans (Utilities Only) Phase Stamp.*

Figure 1-48
Functional Design Plans (Utilities Only) Phase Stamp

1-204.01 FUNCTIONAL DESIGN INDEX OF SHEETS

The Index of Sheets is shown on the Functional Design title sheet in the upper left-hand corner. *Figure 1-49, Functional Design Index of Sheets Example* is an example functional design index containing the names of all sheets that could be part of the Functional Design plan set. The order and types of sheets shown shall be used by all Technical Leads. Technical Lead should refer to the Functional Design checklist, Functional Design Index Word document, and blue instructional text in the ORD title sheet seed file for additional information regarding sheet numbering. There could be sheets that are not used depending on the scope of the project. The number of sheets in a series may vary depending on the size of the project. Any sheets not used shall be removed from the list, but the order of the remaining sheets shall be maintained as shown. With the removal or addition of sheets, some sheets will have to be renumbered; however, there are sheets that shall always be represented by certain numbers. Sheet 3 shall always be the R.O.W. notes, Utility notes, and Utility Owners. Sheet 3A shall always show the R.O.W. Acquisition Table. Sheet 4 shall always be the first present layout sheet. There shall not be a combined Present Layout/R.O.W. Detail sheet, and plans shall always have a R.O.W. acquisition table. These sheets shall be separate sheets for legibility reasons and to reduce the amount of time the Designer spends moving text to make it legible. The only exception shall be if a project is turned in for "Utilities Only." In this situation, the Designer shall determine if the plans are too cluttered to have a combined Present Layout/R.O.W. Detail sheet.

As plans progress, there will be additional sheets added for the Plan-in-Hand phase that were not in the Functional Design submittal. **When plans are turned in for Plan-in-Hand, the original Functional Design sheet numbers shall remain as they were when turned in for Functional Design and shall not be altered to match Plan-in-Hand sheet numbers.**

Other Divisions that are developing their own sheets to add to the plan set should follow the naming convention shown in *Figure 1-49, Functional Design Index of Sheets Example*. The first sheet of their series, *-1, should contain an index for the rest of the sheets in that series.

FUNCTIONAL DESIGN PLANS INDEX OF SHEETS

TITLE SHEET	1
PROJECT COMMITMENTS	1B
TYPICAL SECTIONS AND PAVEMENT SCHEDULE	2B, 2B1, 2B2
ENVIRONMENTAL NOTES	2E, 2E1
RIGHT-OF-WAY NOTES, UTILITY NOTES, AND UTILITY OWNERS	3
RIGHT-OF-WAY ACQUISITION TABLE AND PROPERTY MAPS (S)	3A - 3B
PRESENT LAYOUT(S)	4 - 10
RIGHT-OF-WAY DETAILS	4A - 10A
PROPOSED LAYOUT(S)	4B - 10B
PROPOSED PROFILE(S)	4C -10C
RAMP PROFILE(S)	11 - 12
① SIDE ROADS PROFILE(S)	13 - 14
PRIVATE DRIVE, BUSINESS, AND FIELD ENTRANCE PROFILE(S)	15 - 18
DRAINAGE MAP(S)	19 - 20
CULVERT SECTION(S)	21 - 22
EROSION PREVENTION AND SEDIMENT CONTROL PLANS	23, 24, 25 – 27Z
ROADWAY CROSS SECTIONS	29 –81
SIDE ROAD CROSS SECTIONS	82 – 92
BRIDGE PLANS	B-1
ITS PLANS	ITS-1
LIGHTING PLANS	L-1
NATURAL STREAM DESIGN PLANS	NS-1
RETAINING WALL PLANS	R-1
SIGNAL PLANS	SIG-1

Figure 1-49
Functional Design Index of Sheets Example

The sheet numbers for Line and Grade shall not be changed to match the Functional sheet numbers but will remain on line 1 of the sheet identification block. The Functional Design phase, project year, project number, and sheet number shall be entered in line 2 of the identification block. The PROJECT NO. field should contain the federal project number. If no federal number is available, then the state project number shall be used. See *Figure 1-50, Functional Design Project Identification Block.*

TYPE	YEAR	PROJECT NO.	SHEET NO.
L&G	2024	BR-STP-24(69)	8
FUNC.	2025	BR-STP-24(69)	8

Figure 1-50
Functional Design Project Identification Block

1-204.02 SEALING THE FUNCTIONAL DESIGN TITLE SHEET

When a plan set is submitted for Functional Design R.O.W. Appraisals or for Utilities Only, only the Functional Design title sheet shall be sealed by the appropriate TDOT staff or the Consultant. The remainder of the sheets in the Functional Design plans shall not be sealed. TDOT approved sealing mechanisms shall be used to seal the title sheet. The seal block outline on the title sheet is located above the Chief Engineer's and Commissioner's signatures as shown in *Figure 1-51, Engineer's Seal on Functional Design Title Sheet.*

When turning in a plan set for PS&E, the original Functional Design title sheet shall be included in the submittal. It is recommended that when sealing the plans for Functional Design, or Utilities Only, an individual title sheet be sealed for future inclusion in PS&E Roadway plans submittal. The individual Functional Design title sheet shall be named ***nnnnnn-nn-*****FunctionalDesignTitleSheet.pdf**.

The Department is utilizing Adobe Certified Document Services (CDS) for PDF documents. Vendors supplying the CDS certificates can be found on Adobe's website at www.adobe.com/security/partners_cds.html. Any of the companies listed can be used to purchase a token. A certification is to be specific to a single professional engineer utilizing the desktop-based document certification process and may not be done on a companywide basis. The professional engineer shall not allow anyone else to use the certification on his/her behalf.

Refer to the document Digital Signature Certification Workflow located on the Standard Design CADD Files and Documents webpage for information in applying a digital signature to a plan set.

Figure 1-51
Engineer's Seal on Functional Design Title Sheet

1-205.00 PLAN-IN-HAND TITLE SHEET

To modify the Functional title sheet to a Plan-in-Hand title sheet, the Functional levels can be turned off and Plan-in-Hand levels turned on as described in the Title Sheet Preset Filters Tutorial document located on the Standard Design CADD Files and Documents webpage in the Documentation section. See *Chapter 1-203.00, Development of Title Sheets*. Also, the type of project will change from Functional to Plan-in-Hand in the project description when the correct Plan-in-Hand levels are active. *See Figure 1-52, Project Description-Type of Project Change.* The project limits will change the type of project from R.O.W. to Const. when the Plan-in-Hand levels are active. See *Figure 1-53, Project Limits - Type of Project and State Federal Aid Number Change.* The state federal aid number shall be changed in the begin/end project limits labels to correspond with the Construction funding phase. *See Chapter 1-203.05, Project Limits*. Additional sheets shall be added to the index. *See Chapter 1-205.01 Plan-in-Hand Index of Sheets.*

NOTE: The type of work shall be verified to reflect any changes in scope of project.

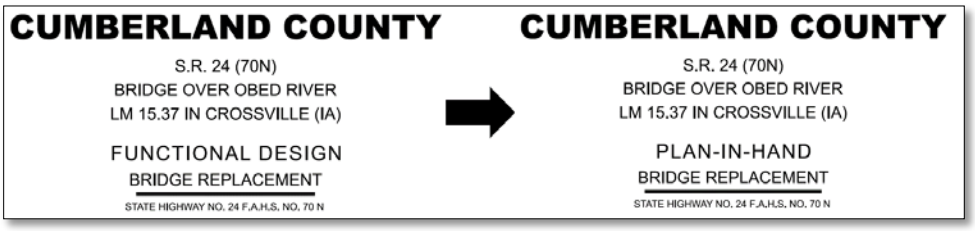


Figure 1-52
Project Description-Type of Project Change

Figure 1-53
Project Limits - Type of Project and State Federal Aid Number Change

1-205.01 PLAN-IN-HAND INDEX OF SHEETS

The Index of Sheets for Plan-in-Hand plans is not shown on the title sheet as it is in the Line and Grade and Functional Design plans. Designers shall place a note in the upper left corner of the title sheet which says, “See Sht. 1A for Index”. The index is combined with the Roadway Standard Drawings and immediately follows the Plan-in-Hand title sheet in the plans. *Figure 1-54, Plan-in-Hand Index of Sheets Example* shows an example Plan-In-Hand Index containing the names of all sheets that could be part of the Plan-in-Hand plan set. The Plan-in-Hand index lists all the sheets submitted in the Functional Design plans plus additional sheets in the 2nd sheets series as well as other sheets such as traffic control. Technical Leads should refer to the Plan-in-Hand checklist, Plan-in-Hand Index Word document, and blue instructional text in the ORD title sheet seed file for additional information regarding sheet numbering. As with the Line and Grade and Functional Design index, the order and types of sheets shown shall be followed by all Technical Leads. There could be sheets that are not used depending on the scope of the project. The number of sheets in a series could vary depending on the size of the project. Any sheets not used shall be removed from the list but the order of the remaining sheets shall be maintained as shown. With the removal or addition of sheets, some sheets may have different numbers than were shown in the Functional design plans; however, there are sheets that shall always be represented by certain numbers. Sheet 3 shall always be the R.O.W. notes, Utility notes, and Utility Owners. Sheet 3A shall always show the R.O.W. Acquisition Table. Sheet 4 shall always be the first present layout sheet.

Other Divisions that are developing their own sheets to add to the plan set should follow the naming convention shown in *Figure 1-54, Plan-in-Hand Index of Sheets Example*. The first sheet of their series, *-1, should contain an index for the rest of the sheets in that series.

PLAN-IN-HAND INDEX OF SHEETS

TITLE SHEET	1
ROADWAY INDEX AND STANDARD ROADWAY DRAWINGS	1A
STANDARD ROADAY DRAWINGS	1A1, 1A2
STANDARD STRUCTURE AND TRAFFIC OPERATIONS DRAWINGS	1A3
PROJECT COMMITMENTS	1B
ESTIMATED ROADWAY QUANTITIES	2, 2-1, 2-2
ESTIMATED BOX BRIDGE QUANTITIES	2A, 2A1
TYPICAL SECTIONS AND PAVEMENT SCHEDULE.	2B, 2B1, 2B2
GENERAL NOTES	2C, 2C1
SPECIAL NOTES	2D, 2D1
ENVIRONMENTAL NOTES	2E, 2E1
TABULATED QUANTITIES	2F, 2F1, 2F2
DETAIL SHEETS	2G, 2G1, 2G2
RIGHT-OF-WAY NOTES, UTILITY NOTES, AND UTILITY OWNERS	3
RIGHT-OF-WAY ACQUISITION TABLE AND PROPERTY MAPS(S)	3A - 3B
PRESENT LAYOUT(S)	4 - 10
RIGHT-OF-WAY DETAILS	4A - 10A
PROPOSED LAYOUT(S)	4B - 10B
PROPOSED PROFILE(S)	4C -10C
RAMP PROFILE(S)	11 - 12
① SIDE ROADS PROFILE(S)	13 - 14
PRIVATE DRIVE, BUSINESS, AND FIELD ENTRANCE PROFILE(S)	15 - 18
DRAINAGE MAP(S)	19 - 20
CULVERT SECTION(S)	21 - 22
EROSION PREVENTION AND SEDIMENT CONTROL PLANS	23, 24, 25 – 27Z
ENVIRONMENTAL MITIGATION PLANS	28, 28A, 28B
SIGNING AND PAVEMENT MARKING PLAN(S)	29 – 35
SIGN SCHEDULE SHEET(S)	36 – 39
MISCELLANEOUS SIGNING DETAILS	40 – 40Z
ROADWAY CROSS SECTIONS	41 –95
SIDE ROAD CROSS SECTIONS	96 – 106
TRAFFIC CONTROL PLANS	T1 – T50Z
BRIDGE PLANS	B-1
GEOTECHNICAL PLANS	G-1
ITS PLANS	ITS-1
LIGHTING PLANS	L-1
NATURAL STREAM DESIGN PLANS	NS-1
RETAINING WALL PLANS	R-1
SIGNAL PLANS	SIG-1
STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PLANS	S-1
UTILITY PLANS	U1–1

Footnotes:
① Haul Road profiles follow Side Road profiles in the sheet numbering sequence.

Figure 1-54
Plan-in-Hand Index of Sheets Example

The sheet numbers for Line and Grade and Functional shall not be changed to match the Plan-in-Hand sheet numbers but will remain on lines 1 and 2 of the sheet identification block. The Plan-in-Hand phase, project year, project number, and sheet number shall be entered in line 3 of the identification block. The PROJECT NO. field should contain the federal project number. If

no federal number is available, then the state project number shall be used. See *Figure 1-55, Plan-in-Hand Project Identification Block*.

TYPE	YEAR	PROJECT NO.	SHEET NO.
L&G	2024	BR-STP-24(69)	8
FUNC.	2025	BR-STP-24(69)	8
PIH	2026	BR-STP-24(69)	10

Figure 1-55
Plan-In-Hand Project Identification Block

1-206.00 PS&E TITLE SHEET

To modify the Plan-in-Hand title sheet to a PS&E title sheet, the Plan-in-Hand levels can be turned off and PS&E levels turned on as described in the Title Sheet Preset Filters Tutorial document located on the Standard Design CADD Files and Documents webpage in the Documentation section. See *Chapter 1-203.00, Development of Title Sheets*. Also, the type of project will change from Plan-in-Hand to PS&E in the project description when the correct PS&E levels are active. *See Figure 1-56, Project Description-Type of Project Change.* The project limits will stay Const. when the PS&E levels are active. See *Figure 1-57 Project Limits - Type of Project and State Federal Aid Number Change.* The state federal aid number shall be changed in the begin/end project limits labels to correspond with the Construction funding phase. *See Chapter 1-203.05, Project Limits.* Additional sheets shall be added to the index. *See Chapter 1-205.01 Plan-in-Hand Index of Sheets.*

NOTE: The type of work shall be verified to reflect any changes in scope of project.

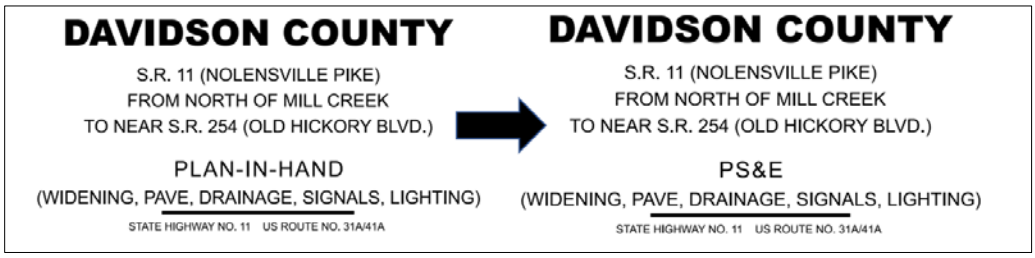


Figure 1-56
Project Description-Type of Project Change

18004-3227-04
BEGIN PROJECT NO. BR-STP-24(69) CONST.
STA. 55+35.00
N 599193.4366 E 2250181.4361

Figure 1-57
Project Limits - Type of Project and State Federal Aid Number Change

1-206.01 PS&E INDEX OF SHEETS

The Index of Sheets for PS&E plans is not shown on the title sheet as it is in the Line and Grade and Functional Design plans. Designers shall place a note in the upper left corner of the title sheet which says, “See Sht. 1A for Index”. The index is combined with the Roadway Standard Drawings and immediately follows the PS&E title sheet in the plans. *Figure 1-58, PS&E Index of Sheets Example* shows an example PS&E Index containing the names of all sheets that could be part of the PS&E plan set. The PS&E index lists all the sheets submitted in the PIH Design plans. Technical Leads should refer to the PS&E checklist, PS&E Index Word document, and blue instructional text in the ORD title sheet seed file for additional information regarding sheet numbering. As with the Line and Grade, Functional, and Plan-in-Hand index, the order and types of sheets shown shall be followed by all Technical Leads. There could be sheets that are not used depending on the scope of the project. The number of sheets in a series could vary depending on the size of the project. Any sheets not used shall be removed from the list but the order of the remaining sheets shall be maintained as shown. With the removal or addition of sheets, some sheets may have different numbers than were shown in the Functional design plans; however, there are sheets that shall always be represented by certain numbers. Sheet 3 shall always be the R.O.W. notes, Utility notes, and Utility Owners. Sheet 3A shall always show the R.O.W. Acquisition Table. Sheet 4 shall always be the first present layout sheet.

Other Divisions that are developing their own sheets to add to the plan set should follow the naming convention shown in *Figure 1-58, PS&E Index of Sheets Example*. The first sheet of their series, *-1, should contain an index for the rest of the sheets in that series.

PS&E INDEX OF SHEETS

SIGNATURE SHEETS	ROADWAY-SIGN1
TITLE SHEET	1
ROADWAY INDEX AND STANDARD ROADWAY DRAWINGS	1A
STANDARD ROADAY DRAWINGS	1A1, 1A2
STANDARD STRUCTURE AND TRAFFIC OPERATIONS DRAWINGS	1A3
PROJECT COMMITMENTS	1B
ESTIMATED ROADWAY QUANTITIES	2, 2-1, 2-2
ESTIMATED BOX BRIDGE QUANTITIES	2A, 2A1
TYPICAL SECTIONS AND PAVEMENT SCHEDULE.	2B, 2B1, 2B2
GENERAL NOTES	2C, 2C1
SPECIAL NOTES	2D, 2D1
ENVIRONMENTAL NOTES	2E, 2E1
TABULATED QUANTITIES	2F, 2F1, 2F2
DETAIL SHEETS	2G, 2G1, 2G2
RIGHT-OF-WAY NOTES, UTILITY NOTES, AND UTILITY OWNERS	3
RIGHT-OF-WAY ACQUISITION TABLE AND PROPERTY MAPS(S)	3A - 3B
PRESENT LAYOUT(S)	4 - 10
RIGHT-OF-WAY DETAILS	4A - 10A
PROPOSED LAYOUT(S)	4B - 10B
PROPOSED PROFILE(S)	4C -10C
RAMP PROFILE(S)	11 - 12
① SIDE ROADS PROFILE(S)	13 - 14
PRIVATE DRIVE, BUSINESS, AND FIELD ENTRANCE PROFILE(S)	15 - 18
DRAINAGE MAP(S)	19 - 20
CULVERT SECTION(S)	21 - 22
EROSION PREVENTION AND SEDIMENT CONTROL PLANS	23, 24, 25 – 27Z
ENVIRONMENTAL MITIGATION PLANS	28, 28A, 28B
SIGNING AND PAVEMENT MARKING PLAN(S)	29 – 35
SIGN SCHEDULE SHEET(S)	36 – 39
MISCELLANEOUS SIGNING DETAILS	40 – 40Z
ROADWAY CROSS SECTIONS	41 –95
SIDE ROAD CROSS SECTIONS	96 – 106
TRAFFIC CONTROL PLANS	T1 – T50Z
BRIDGE PLANS	B-1
GEOTECHNICAL PLANS	G-1
ITS PLANS	ITS-1
LIGHTING PLANS	L-1
NATURAL STREAM DESIGN PLANS	NS-1
RETAINING WALL PLANS	R-1
SIGNAL PLANS	SIG-1
STORM WATER POLLUTION PREVENTION PLAN (SWPPP) PLANS	S-1
UTILITY PLANS	U1–1

Footnotes:
① Haul Road profiles follow Side Road profiles in the sheet numbering sequence.

Figure 1-58
PS&E Index of Sheets Example

The sheet numbers for Line and Grade, Functional and Plan-in-Hand shall not be changed to match the PS&E sheet numbers but will remain on line 1, 2, and 3, respectfully, of the sheet identification block. The PS&E phase, project year, project number, and sheet number shall be entered in line 4 of the identification block. The PROJECT NO. field should contain the federal project number. If no federal number is available, then the state project number shall be used. See *Figure 1-59, PS&E Project Identification Block*.

TYPE	YEAR	PROJECT NO.	SHEET NO.
L&G	2024	BR-STP-24(69)	8
FUNC.	2025	BR-STP-24(69)	8
PIH	2026	BR-STP-24(69)	10
PS&E	2026	BR-STP-24(69)	10

Figure 1-59
PS&E Project Identification Block

1-206.02 SEALING PS&E PLANS

TDOT Divisions are responsible to complete, seal, and submit their respective sheets for the plan sets. Each submittal will contain its own index and estimated quantities.

Digital Signature Certification is the standard practice for signing and sealing TDOT plan sets. All PS&E sheets shall be signed and sealed using the digital process and manual signed and sealed sheets will not be accepted. A Signature sheet will be created for each set of PS&E Plans with an index of sheets listed below each responsible Engineer's information. This Signature sheet will be the only sheet to be digitally signed and sealed by the professional Engineer. The Signature sheet allows multiple Engineers to sign and seal one plan sheet. All remaining plan sheets will be watermarked with the Engineer's signature and date located in the box outlined for the placement of the engineer seal but will not be digitally signed. See *Figure 1-60, Signature Sheet Example.* The final combined set will follow the standard file naming convention *nnnnnn-nn-PS&E.pdf* where "*nnnnnn-nn*" represents the project identification number.

Sealing of Construction revisions will be completed using the same Signature process as the original PS&E Roadway submittal. A new Signature sheet will be created for the revised sheets and inserted directly following the original Signature sheet.

The Department is utilizing Adobe Certified Document Services (CDS) for PDF documents. Vendors supplying the CDS certificates can be found on Adobe's website at www.adobe.com/security/partners_cds.html. Any of the companies listed can be used to purchase a token. A certification is to be specific to a single professional engineer utilizing the desktop-based document certification process and may not be done on a companywide basis. The professional engineer shall not allow anyone else to use the certification on his behalf.

Refer to the document Digital Signature Certification Workflow located on the Standard Design CADD Files and Documents webpage for information in applying a digital signature to a plan set. For projects designed by TDOT Design Leads, most signature sheets will only have a signature of the engineer sealing the roadway plans in the first column. *Figure 1-60, Signature*

Sheet Example, shows an example of a signature sheet that would be common for consultant designed plans with multiple engineer signatures.

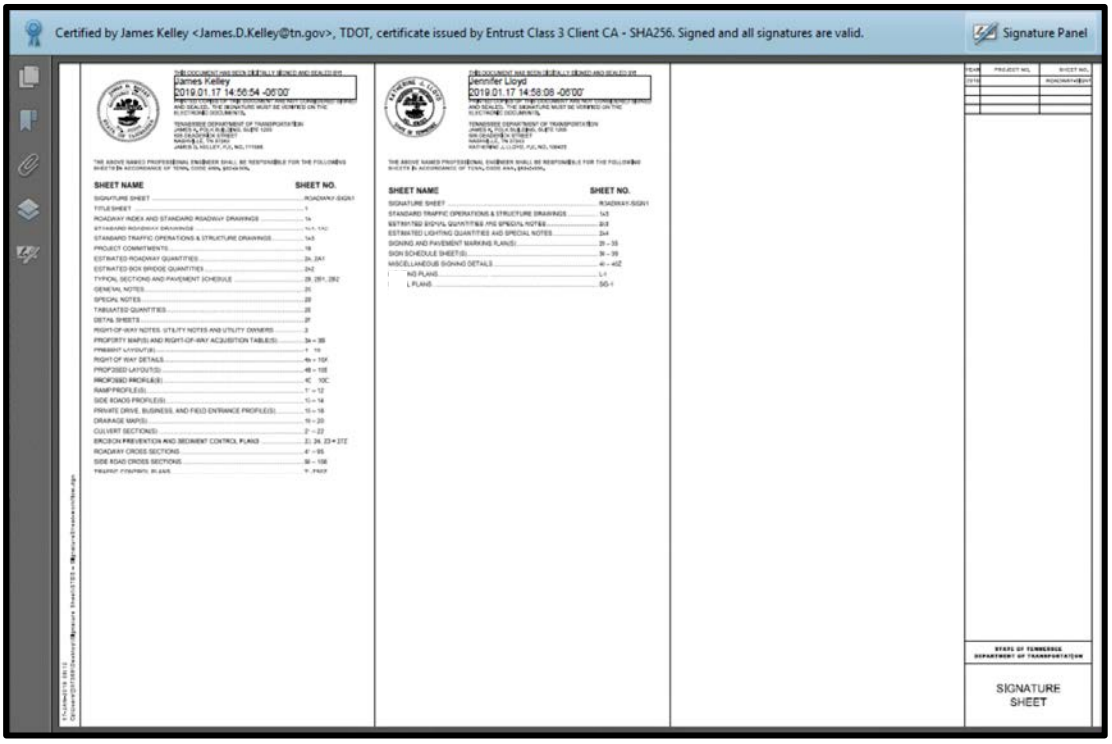


Figure 1-60
Signature Sheet Example

1-207.00 RESURFACING TITLE SHEET

The Project Length shown on the title sheet is different for a resurfacing project title sheet. The length should be shown to a hundredth of a mile. See *Figure 1-61, Resurfacing Project Length on Title Sheet.* Also, see TDOT Roadway Design Guidelines *Chapter 5-502 Resurfacing Projects,* for more information on resurfacing projects.

PROJECT LENGTH	XX.XX MILES
TOTAL LANE MILES RESURFACED	XX.XX MILES

Figure 1-61
Resurfacing Project Length on Title Sheet

The Project Limits for a resurfacing project and a resurfacing and safety project are shown in *Figure 1-62, Begin and End Project Flags on Title Sheet Resurfacing Project* and *Figure 1-63, Begin and End Project Flags on Title Sheet Resurfacing and Safety Project*. When the cost of the safety upgrades are greater than $10,000, the items for the safety improvements shall be

funded separately from the other resurfacing plan items. The project type will then be labeled as Resurface and Safety. If safety funding is already set up for the project and it is determined that the $10,000 minimum for safety funds cannot be met, the Designer should contact the Program Development and Administrative Division so that the safety funding source can be removed from the project.

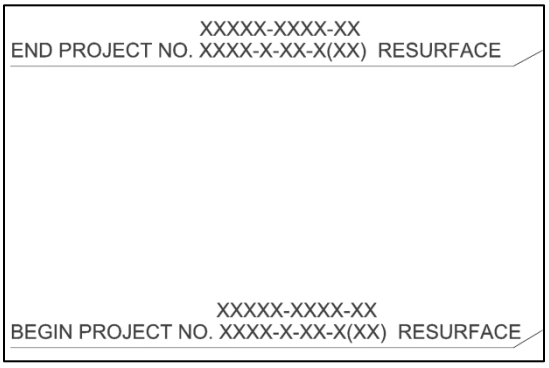


Figure 1-62
Begin and End Project Flags on Title Sheet Resurfacing Project

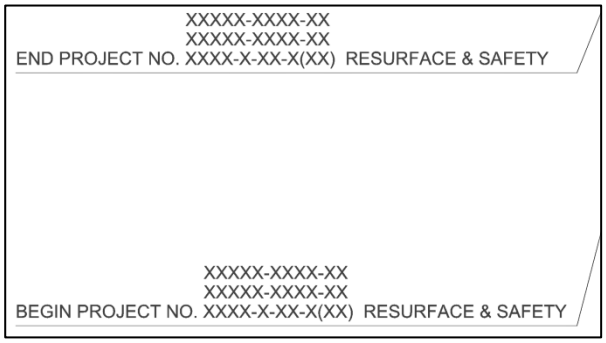


Figure 1-63
Begin and End Project Flags on Title Sheet Resurfacing and Safety Project

1-207.01 RESURFACING PROJECTS WITH BRIDGE REPAIR PLANS

On resurfacing projects that include bridge repairs, the Designer shall add the resurfacing project number and the bridge repair project number to the project number block on the top right corner of on the title sheet and all bridge repair sheets. The bridge repair type shall be listed as “BRIDGE”.

SECTION 3 – SURVEY INFORMATION

1-300.00 SURVEY REQUIREMENTS

Surveyors shall comply with the TDOT Roadway Design Survey Manual and the TDOT Survey & Roadway Design CADD Standards Manual when submitting the original files to Design Managers. These manuals are located on the Roadway Design Survey Standards webpage.

1-301.00 COORDINATE VALUES

Survey procedures require that all surveys shall be tied to the State Plane Coordinate System using the Tennessee Geodetic Reference Network (TGRN). All surveyed coordinate values will be based on the North American Datum 1983 (NAD/83) (1995 adjustment) coordinates and appropriate notes indicating such shall appear on the topography plot.

All design computations shall be based on these adjusted coordinate values. This will ensure that all computed points on the project have coordinate values tied to the State Plane System. Assumed coordinates will not be used.

Coordinate values for all P.I.s of horizontal curves shall be computed to four decimal places and shall be shown in the curve data on present layout sheets. Coordinate values for all begin/end project limits labels shall be computed to four decimal places. Coordinate values for all other points, such as the intersection of the mainline centerline and a side road centerline, shall be shown to two decimal places.

A notation near the title block in lower right hand corner for each sheet shall read, “Coordinates are NAD/83 (enter year), are datum adjusted by the factor of X.XXXXX and tied to the TGRN. All elevations are referenced to the NAVD 1988 with GEOID (enter model). The note will appear on all sheets except 2nd sheets, profile sheets and cross sections sheets regardless of whether coordinate points are shown. The “year” value refers to the year of the adjustment of coordinate values in Tennessee; X.XXXXX refers to the actual datum adjustment factor used for the project; and “model” refers to the GEOID model used. These values are listed in the CADD survey file. See *Chapter 1-203.10, Traffic Data and Survey Data Block* for guidance on placement of the coordinates note on the title sheet.

1-302.00 TVA TRANSMISSION LINES

Tennessee Valley Authority (TVA) requests that TDOT-provided Global Positioning System (GPS) coordinates for intersection points be labeled on present and proposed plan sheets where TVA transmission lines and roadway centerlines intersect. This will assist them in determining the precise location of TVA facilities in relationship to our proposed alignment.

1-303.00 DISTANCES, BEARINGS, AND CONTROL POINTS

In order to provide consistency and maintain accuracy, the following criteria are to be adopted for all roadway plans:

- Distances shown on the plans shall be no more accurate than the nearest 0.01 foot (35 ft., 35.0 ft., and 35.00 ft., are acceptable: 35.001 ft. is not acceptable), with the exception of the begin/end project limits labels where 0.001 is acceptable.
- Bearings shown on the plans shall be no more accurate than 1 (one) second (for example N 35 00’ 01” E is acceptable; N 35 00’ 01.1” E is not acceptable).
- GPS control points shall be shown to an accuracy of 0.0001 foot.

1-304.00 TRACT NUMBERS ON PLANS

On all design projects, tract, and/or parcel numbers assigned during the survey process **shall not** be deleted or altered unless directed by the HQ or Regional R.O.W. Office. Tract numbers are assigned during the survey process and have the same parcel number in the ORD Survey files. The parcel information contained in the ORD Survey files are used in survey and plan preparation and R.O.W. processes. There shall not be any duplicate tract numbers on any one project.

No tract shall be deleted after the plans have been printed for a design public hearing. For tracts where no acquisition is required, the Technical Lead shall place a single line through all the information for all such tracts in the R.O.W. Acquisition Table in the plans. The Technical Lead shall also place a line through all the no-acquisition tract numbers and owner names on the Property Maps sheets, Present Layout sheets, R.O.W. Details sheets, and on any other plan sheets where these tract numbers and owner names may appear. This will ensure that all tract information is retained in the ORD Survey file and not deleted nor altered. The tract information is then recoverable and can be used by other sections as the information is passed to the R.O.W. and Operations Divisions or returned to the Survey Office for updating.

1-305.00 UPDATING SURVEYS

It is the Technical Lead responsibility to thoroughly review the survey information. Requests for updates normally take place following the **Line and Grade Field Review** and the **Functional Design Plans Field Review**, if necessary. Every effort shall be made to make sure all additional information required is requested at these times which will reduce the number of times survey crews are sent out on the same project.

After a request is made for Environmental Boundaries and wetlands are identified by the Environmental Division or Environmental Tech Offices, the Technical Lead or Design Lead shall request additional survey information if the Environmental Boundary document does not provide updated survey information obtained during the identification process.

Additional survey requests shall be made by email sent to the appropriate Geodetics office and shall be created using the template file *Additional Survey Request Form*.xltx located under the Request subtab of the main Roadway Design Form & Letter tab on the Roadway Design Documents – PDN webpage.

When requesting additional information, requested information will be shown either in electronic format or on a marked set of prints. Also, it may be necessary to include ORD information. This is covered in the CADD Standards document (CADDV8.pdf) located on the Standard Design and Survey CADD Files and Documents webpage.

If a survey is updated, the updated survey date(s) shall be added to the title sheet of the current phase of the project beside the traffic block as shown in *Figure 1-40, Traffic Data and Survey Data Block.*

SECTION 4 – ESTIMATES

1-400.00 ESTIMATED ROADWAY QUANTITIES

For each project, Designers shall create and maintain an estimate file of all roadway quantities for project cost estimation. The project estimates may contain any combination of the following types of quantities: roadway, bridge, box bridge, utility, R.O.W. relocation, signal, and/or lighting. The estimated roadway quantity sheet included in the project plans may contain quantities provided by other TDOT Divisions. An item number should only be used once per project. All Divisions shall coordinate to determine if an item number is listed in multiple estimated quantity files.

Estimates can be used to help predict costs of future projects of similar scope. The estimated roadway quantities Excel file is part of various project deliverables, including finalized Line and Grade, Functional design plans, Plan-in-Hand Field Review, and final PS&E plans distribution.

The Bid Analysis and Estimating Office provides a dollar figure to each listed item based on historical data to determine a total cost that TDOT estimates it will need to complete the project. The projected cost estimate is used by the Project Development and Administration Division for budget updates throughout the life cycle of the project. The Program Development and Administration Division authorizes funding for each stage of the project and compiles the list of projects that are budgeted in the State Transportation Improvement Program (STIP). It is essential that Designers create a complete, accurate and updated estimate when changes occur to ensure that projected costs are within the funding allocated in the STIP.

Contractors also use the estimated roadway items to calculate a total dollar amount that it would cost them to build the job and use this amount to bid on the project. TDOT's and the contractors' estimates are compared during the Letting phase to ensure that the bids are not obviously unbalanced, too high, or too low compared to TDOT's cost estimate. Bid proposals may be rejected by the Commissioner if they are excessive or below the reasonable cost analysis value.

Lump Sum (LS) quantities shall be 1 (one) unless the estimated roadway quantities file includes multiple projects, and the same item number is in each project. Fractional Lump Sum (LS) quantities for the same item number must add up to equal one or the program that the Estimating Office uses will force it to one. Lump Sums for the same item number when multiple projects are in the proposal shall not be rounded to 1 (one) each. Instead, the total quantity for a Lump Sum item for all the projects in a single proposal shall total 1 (one). Lump Sums shall not add up to more than 1 (one) when the same item number is listed for multiple projects in the same estimated quantities file. An example would be Traffic Control for two projects let together with each quantity equal to 0.5.

For item numbers with units of measure of EACH, the quantity shall not be a fraction. Some quantities can be decimals such as pavement markings when unit of measure is L.M. (linear mile) if the quantity is low, or between 1 and 5.5, since rounding up or down creates a percent change greater than 10%. Square yards and tons shall always be whole numbers.

The quantity for all item numbers shall not be rounded if rounding (either up or down) results in a change of 10% or more in the total quantity. For example, if 1.5 is rounded to 2.0, then the change is 0.5/1.5 = 0.333 or 33.3%. If 1.75 is rounded to 2.0, then the percent change is 0.25/1.75 = 0.1428 or 14.3%. These examples shall not be rounded but shall remain 1.5 and 1.75, respectively. However, if the quantity is calculated to be 1.85, then the percent change if rounding up to 2.0 would be 0.15/1.85 = 0.081 or 8.1%. In this case, it is acceptable to round up to 2.0 (two) for this item.

1-401.00 CREATING THE LINE AND GRADE ROADWAY QUANTITIES ESTIMATE

The first estimate prepared by the Technical Lead for a project is the Line and Grade estimate. This estimate is a living document and shall be updated as the project develops.

Each estimate file contains quantities associated with each item of work that is needed to build the project. Each item has an official item number, description, unit of cost, and associated quantity. These items are listed in the **items.dat** file and only these approved items shall be used in plans. The uses for many items in the **items.dat** file are described in detail in TDOT's Standard Specifications For Road and Bridge Construction, *(See Part 1, Section 109, Measurement and Payment, and all Sections in Part 2).*

To download the complete list of approved roadway items in the items.dat file and/or to run a quick search for an item either by item number or description keyword, go to the Roadway Item Lists webpage.

If a new Roadway Design item number is needed, the Design Lead should contact the Engineering Production Support Division at TDOT.EngineeringProductionSupport@tn.gov. For any new Traffic Design related item number is needed, see Table 1-15, Traffic Design Emails. These divisions will determine if an item number will be assigned or included in another item. If a new item number is needed specific to a project, they will contact the HQ Construction Office to get the new number.

ITS	TDOT.TrafficDesign.ITS@tn.gov
Signals	TDOT.TrafficDesign.Signals@tn.gov
Lighting	TDOT.TrafficDesign.Lighting@tn.gov
Signs and Pavement Markings	TDOT.TrafficDesign.SignsandMarking@tn.gov
Work Zone	TDOT.TrafficDesign.WZ@tn.gov
Traffic Modeling Needs	TDOT.TrafficDesign.TrafficModeling@tn.gov

Table 1-15
Traffic Design Division Emails

The estimated roadway quantities sheet in project plans is created from an Excel file that works in conjunction with the items.dat file. The template for the estimated roadway quantities Excel file can be downloaded from the Roadway Design Documents webpage. *See Figure 1-64, Estimated Roadway Quantities Project Data* and *Figure 1-65, Estimated Roadway Quantities Block 1 Sheet* for examples of some of the tabs in the estimated roadway quantities Excel file.

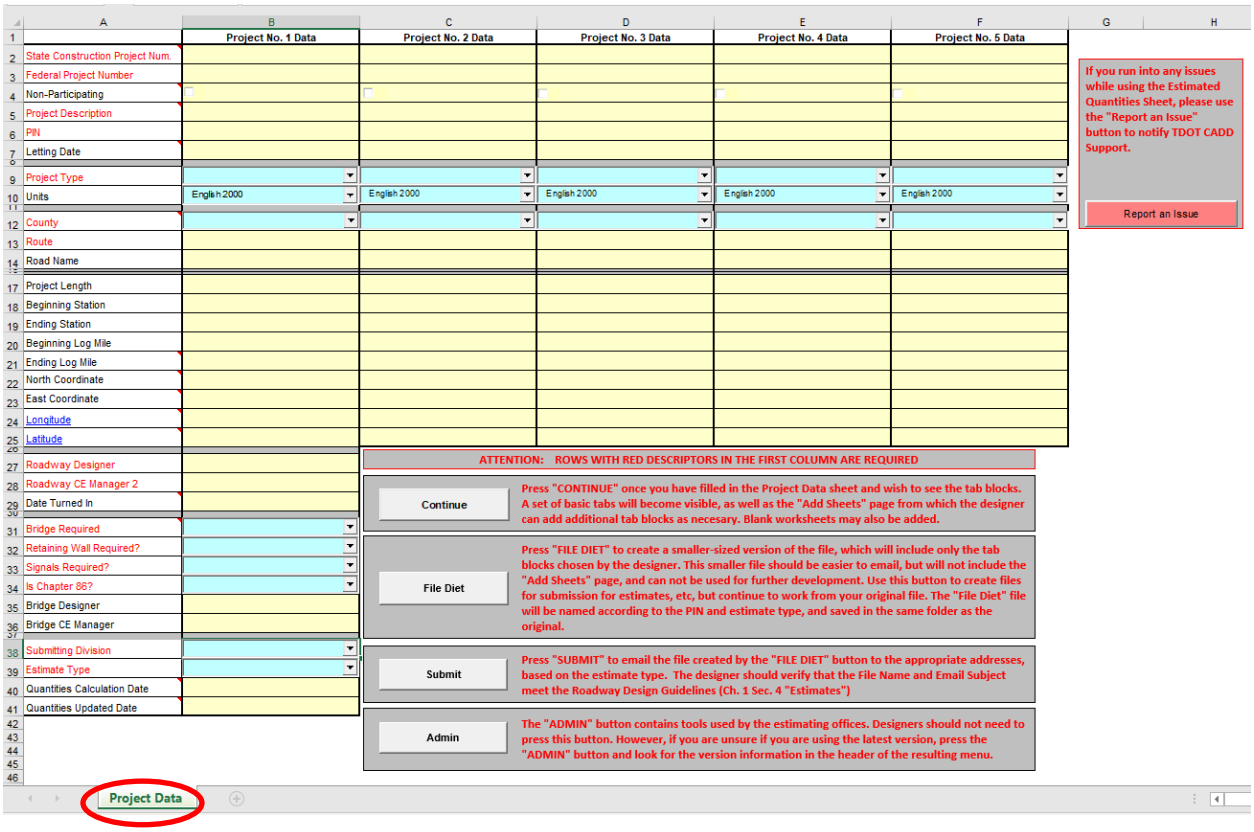


Figure 1-64
Estimated Roadway Quantities Project Data

Project Data Sheet Tab

- **ALL** Information shall be filled in. The Excel template requires Technical Leads to complete the Project Data fields for at least one project before proceeding to the estimated quantities tab sheets. Once all data is entered, Technical Leads should select the Continue button.
- The Excel template will accommodate projects with up to five State Project Numbers.
- Non-participating items are listed by column as designated on the Project Data tab.
- The North and East Coordinates shall coincide with the location of the Latitude and Longitude as defined in *Chapter 1-106.01, Latitude and Longitude*.
- Dates should be updated as needed for the entries in Letting Date, Date Turned In, and Quantities Updated Date with each submittal.

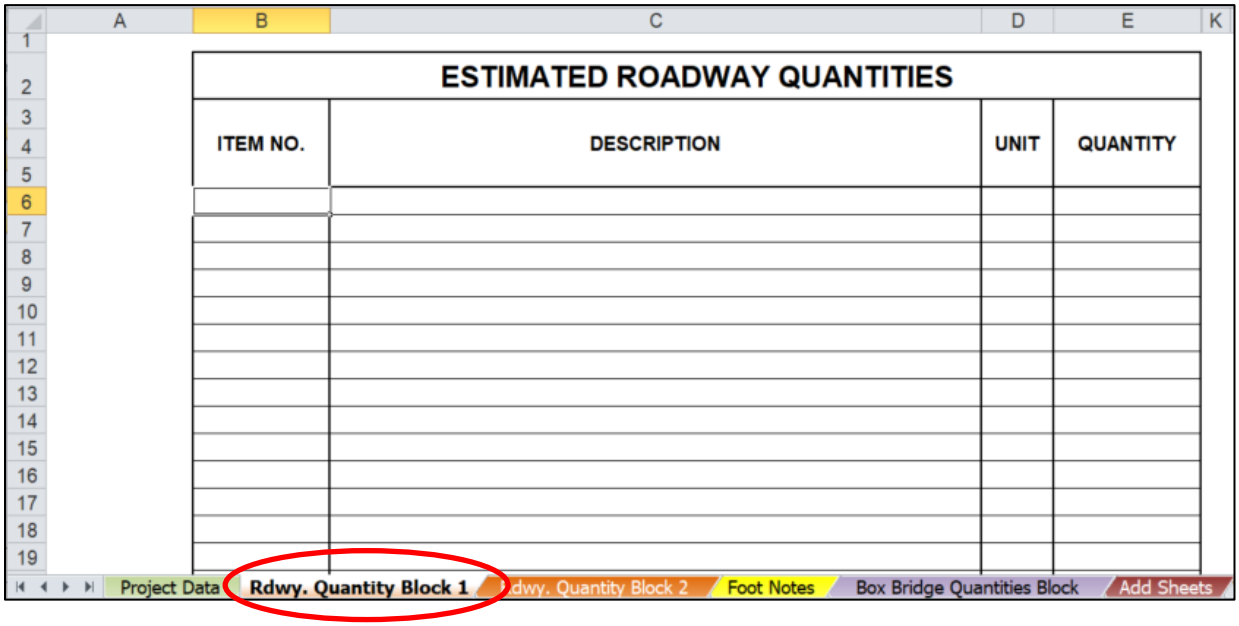
- If bridges, retaining walls, or other structures designed by the Structures Division are proposed, the Technical Lead shall include the Bridge Technical Lead and Design Lead on the project data portion of the estimate file.
- The File Diet button may be used to create an email-friendly copy of the spreadsheet which contains only the tables used by the Technical Lead. The resulting file is much smaller but should not be used for further development since all unused tables are deleted, and therefore it is not possible to add additional tables.
- The Submit button may be used to send the email-friendly copy created by the File Diet button to the appropriate mailing list, as determined by the Estimate Type.
- The Admin button is for use by the HQ Construction Estimates section and the Bid Analysis & Estimating Office. This button starts a workflow that allows for the data to be exported meeting their software's entry requirements.
- 

Figure 1-65
Estimated Roadway Quantities Block 1 Sheet

Rdwy. Quantity Block 1 Sheet

- All tab blocks are built into the Excel template. To add tab blocks sheets, select the "Add Sheets" tab. Sheets are organized by group. Select group first, then select the specific sheet, then click "Select" this will add the selected sheet. To delete, select "Delete Sheets", and select the desired sheet from the list.
- If additional copies of a sheet are needed, simply select the sheet again. Blank worksheets may be added by selecting "Blank Worksheet" from the "Add Sheets" menu. Additional footnotes sheets may be added by selecting "Footnotes". A notes section is provided in the upper right corner of additional footnotes sheets, so the Technical Lead may keep track of which sheets the footnotes refer to.

- Quantities from the added tab blocks can be linked into the main roadway quantity sheets. (Example: Catch Basins and Manholes, Guardrail, Pavement, Removal of Buildings and Obstructions, Traffic Control, etc.).
- Sheets shall not be renamed.
- If more than one PIN is associated with the project, the Technical Lead should use the buttons to the right to select the appropriate number of quantity columns (one per PIN). All items shall be listed in numerical order. There is a 'sort' button to help with this task.
- Quantities cannot contain commas.
- Quantities shall be rounded up to the nearest whole number with the exceptions of those as shown in Chapter 8 Item Numbers of the guidelines.
- Contractors are paid by the quantities that are ordered and used on the project. If there is an item number in question that may not be used on the project, it shall be added to the estimate. It is better to have it shown on the estimate and not used by the contractor than needed after Letting as a change order. These items shall be discussed at the Plan-in-Hand Field Review and footnoted "Requested by _____Division."
- Projected quantities for erosion control and traffic control shall be included in the Line and Grade estimate even though traffic control sheets are not included in the Line and Grade submittal or Functional design plans. Quantities from similar projects can be used to help estimate these quantities.
- If open-ended and/or lump sum item numbers are used, the Technical Lead shall fill in the descriptions in the estimate data file. Without completing these item descriptions, there is no way the estimator in the Bid Analysis & Estimating Office can complete the cost estimate.
- Box-Bridge items shall be listed on a sheet separate from the roadway items. Use the sheet labeled Box Bridge Quantities sheet.
- Alternate roadway items shall be listed after all other roadway items. The alternates will be designated in column C as Alternate AA1, Alternate AA2, Alternate AA3, Alternate AB1, Alternate AB2, and so on. AA1 would alternate with AA2 and AA3. AB1 would alternate with AB2, etc.
- No prices shall be entered in the estimate.

1-402.00 SUBMITTAL OF ESTIMATES

As previously noted in *Chapter 1-400.00, Estimated Roadway Quantities*, the Program Development and Administration Division authorizes funding for each stage of the project and compiles the list of projects that are budgeted in the STIP. It is essential that Technical Leads create a complete and accurate estimate and updates the estimate when changes occur to ensure that projected costs are within the funding allocated within the STIP. The Project Manager of the team will submit each estimate. The following sections will explain how often an estimate should be updated and submitted for use in budgeting.

SUBMITTAL OF THE LINE AND GRADE ESTIMATE

To Finalize Line and Grade Plans, the Project Manager responsible for the project shall place the Excel quantity file ***nnnnnn-nn-LineandGradeEstimate.xlsm*** on FileNet and send an email notification to the Program Development and Scheduling Office at TDOT.PDSO@tn.gov. The estimate shall be submitted after the Line and Grade Field Review is held and the estimate is updated accordingly.

The subject line shall read:

Region X, County Name, Route Name, PIN nnnnnn-nn, Line and Grade Estimate Submittal

Each Designer shall ensure the following is addressed in the Line and Grade estimate:

- If bridges, retaining walls, or other structures designed by the Structures Division are proposed, the Technical Lead shall indicate structures are required within the body of the email. This information is necessary to ensure that the structures are included in the preliminary estimate.
- The Technical Lead shall send the preliminary construction Excel quantities estimate data via email to the Design Lead/Project Manager responsible for the project. Design Leads and Technical Leads shall keep a copy of the estimate file in the project folder and keep the email message that shows the date the estimate was emailed.

If an estimate is submitted during the Context and Scoping stage, for plans associated with a public hearing, or from a request by the Program Development and Administrative Division, an updated estimate shall be submitted if a time lapse of one year has occurred since the previous estimate was submitted. If there is a time lapse of over one year between the Line and Grade field review submittal and the projected request date for R.O.W. funding, an updated Line and Grade estimate shall be completed and placed on FileNet with the name ***nnnnnn-nn-Lineand GradeEstimate.xlsm****.* The name shall not include a revision date for the file placed on FileNet. The original estimate placed on FileNet shall be removed. The Project Manager shall email the Program Development and Scheduling Office at TDOT.PDSO@tn.gov. If there are items that will be used on the project, but the quantities are unknown, this shall be mentioned in the body of the email. The email shall also state that the estimate is being submitted because it has been a year since the last submittal. **If there are NO CHANGES in the estimate from the previous submittal, it shall be stated in the body of the email that there are NO CHANGES from the previous estimate that was submitted on DD/MM/YYYY** but shall still be placed on FileNet and the other removed**.** All updated estimates shall be kept in the project folder. For the project folder, a date shall be part of the naming convention so that the development of the estimate can be easily compared.

1-402.02 SUBMITTAL OF FUNCTIONAL DESIGN PLANS ESTIMATE FOR R.O.W. OR UTILITIES ONLY FUNDING

As plans develop in the Functional Design stage, additional items shall be added to the Line and Grade estimate and renamed to the Functional Design plans estimate ***nnnnnn-nn-FunctionalDesignPlansEstimate.xlsm***. This is a replacement for what was originally called the preliminary estimate. This is **not** a substitution for the Form 44 ROW estimate which will continue to be submitted by the R.O.W. personnel. PDN 2PM5 Hold Functional Design Plans Field review Meeting shall include updating the estimate from comments received at the Field Review. The Functional Design estimate shall be part of the request for R.O.W. or Utilities Only funding. If there are retaining walls on the project, please refer to *Chapter 2-900.07 Retaining Walls Quantities* for guidance on including retaining wall quantities in the Functional Design estimate for Functional Design plans. If there are landscaping quantities on the project, refer to *Chapter 5-504.00, Landscaping Plans*.

After Functional Design Plans submittal, if there is a time lapse of over one year between Functional Design Plans submittal and the distribution of the Plan-in-Hand Field Review notice, an updated Functional Design estimate shall be completed and placed on FileNet with the name ***nnnnnn-nn-FunctionalDesignPlansEstimate.xlsm****.* The name shall not include a revision date for the file placed on FileNet. The previous estimate placed on FileNet shall be removed. The Project Manager shall email TDOT.Preliminary.Estimates@tn.gov with a carbon copy (Cc) to TDOT.PDSO@tn.gov that ***nnnnnn-nn-FunctionalDesignPlansEstimate.xlsm*** was placed on FileNet. The email shall state that the estimate is being submitted because it has been a year since the last submittal. **If there are NO CHANGES in the estimate from the previous submittal, it shall be stated in the email that there are NO CHANGES from the previous estimate that was submitted on DD/MM/YYYY,** but shall still be placed on FileNet and the other removed**.** All updated estimates shall be kept in the project folder. For the project folder, a date shall be part of the naming convention so that the development of the estimate can be easily compared.

If there are significant changes, additions, or revisions to the Functional Design plans that affect the estimate, a revised estimate shall be completed and placed on FileNet with the name ***nnnnnn-nn-FunctionalDesignPlansEstimate.xlsm****.* The name shall not include a revision date for the file placed on FileNet. The previous estimate placed on FileNet shall be removed. The Project Manager shall email TDOT.Preliminary.Estimates@tn.gov with a carbon copy (Cc) to TDOT.PDSO@tn.gov. The email shall state that the estimate is being submitted because of significant changes, additions, or revisions to the Functional Design plans. All updated estimates shall be kept in the project folder. For the project folder, a date shall be part of the naming convention so that the development of the estimate can be easily compared.

1-402.03 RESUBMITTALS OF ESTIMATES DUE TO AN INSTRUCTIONAL BULLETIN OR ROADWAY DESIGN GUIDELINES CHANGE

As stated in previous sections, the Technical Lead shall update the estimate but the Project Manager will be the one that submits the estimate yearly and/or when significant changes have occurred. For projects that are not funded for construction but have been submitted Functional Design Plans the Technical Lead shall take time to update the estimate according to changes in Instructional Bulletins/Design Guidelines. For the same situation, the Consultant is allowed one week per calendar year to review the Instructional Bulletins/ Design Guidelines and update any estimates that correspond to those changes.

1-402.04 SUBMITTAL OF PLAN-IN-HAND ESTIMATE FOR FIELD REVIEW

When plans are developed and ready for Plan-in-Hand Field Review distribution, the estimate shall be complete with any previous missing items and descriptions filled in. If a Constructability Review was held, all changes to the quantities as a result of the review shall be reflected in the Plan-in-Hand Field Review quantity estimate. **The Project Manager or Design Lead shall request necessary information needed to complete the estimate sheet at least two weeks prior to the date set to print for outside distribution.** Requests for large projects should be made even earlier to ensure that the estimate is complete and that sheets from the estimates are correct in the Plan-in-Hand Field Review plan set. Plans sheets and items shall be requested from Geotechnical, Traffic Operations, Structures, and Utilities personnel as needed. All Divisions submitting estimates shall coordinate with other Divisions to verify no duplicate item numbers are submitted.

The Project Manager shall email the Plan-in-Hand Field Review quantity estimate with the name ***nnnnnn-nn-RoadwayPIHFieldReviewEstimate.xlsm*** to TDOT.Preliminary.Estimates@tn.gov with a carbon copy (Cc) to TDOT.PDSO@tn.gov on the same day the Plan-in-Hand Field Review Notice is sent out. If the project has sheet submittals from other functional groups, the Excel file for those quantities shall be obtained and emailed simultaneously with the estimated roadway quantities Excel estimate as attachments. *(See below for further instruction)*

The following must be completed **BEFORE** the estimate is emailed with the Plan-in-Hand Field Review Notice:

- The Technical Lead shall ensure that the totals on the estimate reflect all tabulation blocks shown in the plans.
- If there are Traffic Operations quantities (ITS, Signals, and/or Lighting), the Project Manager or Design Lead over the project shall request the appropriate Excel files containing these quantities:
  - ***nnnnn-nn-TrafficOpsITSPIHFieldReviewEstimate.xlsm***
  - ***nnnnnn-nnTrafficOpsSignalsPIHFieldReviewEstimate.xlsm***
  - ***nnnnnn-nn-TrafficOpsLightingPIHFieldReviewEstimate.xlsm***

These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.

- If there are structures (bridges) in the plans, the Project Manager over the project shall contact TDOT Structures Division personnel to request the Excel file ***nnnnnn-nn-StructuresPIHFieldReviewEstimate.xlsm*** containing these quantities. These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.
- If there are retaining walls in the plans, the Project Manager over the project shall contact Structures (TDOT.StructuresRW@tn.gov) to request the Excel file: ***nnnnnn-nn-StructuresPIHFieldReviewEstimate.xlsm***. If there are both structures and retaining walls, coordination shall occur between Structures personnel to combine these quantities into one file and to submit the file to the Project Manager or Design Lead that requested the information. These items will NOT be added to the estimated roadway quantities Excel file, but will be included as a separate file within the same email as an attachment.
- If there are utilities in the plans, the Project Manager over the project shall contact TDOT Regional Pre-Construction Utility Office to request the Excel file ***nnnnnn-nn-UtilityPIHFieldReviewEstimate.xlsm*** containing these quantities. These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.
- The Project Manager shall contact the R.O.W. office to check to see if there will be R.O.W. Removal Items for buildings and obstructions. The item numbers shall be furnished by the regional R.O.W. office and should be a lump sum item and footnoted. See *Chapter 9-205.00, Demolition* for additional information.

The estimate shall be thoroughly checked at the Plan-in-Hand Field Review to ensure that there are no missing quantities or adjustments that must be made to existing quantities. Close attention should be paid to the grade differences and the construction of structures to ensure if items are needed for temporary shoring. If there are significant changes and additions to quantity items due to comments at the Plan-in-Hand Field Review, a revised estimate for the applicable division shall be completed using the following naming conventions and emailed by the Project Manager to TDOT.Preliminary.Estimates@tn.gov with a carbon copy (Cc) to TDOT.PDSO@tn.gov.

- ***nnnnnn-nn*-RoadwayPIHFieldReviewEstimate.xlsm**
- ***nnnnnn-nn*-TrafficOpsITSPIHFieldReviewEstimate.xlsm**
- ***nnnnnn-nn*-TrafficOpsSignalsPIHFieldReviewEstimate.xlsm**
- ***nnnnnn-nn*-TrafficOpsLightingPIHFieldReviewEstimate.xlsm**
- ***nnnnnn-nn*-StructuresPIHFieldReviewEstimate.xlsm**
- ***nnnnnn-nn*-UtilityPIHFieldReviewEstimate.xlsm**

The email shall state that **the estimate(s) is being re-submitted because of significant changes and/or additions resulting from the Plan-in-Hand Field Review**. All updated estimates shall be kept in the project folder. For the project folder, a date shall be part of the naming convention so that the development of the estimate can be easily compared. It is not necessary to place the estimate on FileNet.

1-402.05 SUBMITTAL OF PS&E ESTIMATE FOR FIELD REVIEW

When plans are developed and ready for PS&E Field Review distribution, the estimate shall be complete with any previous missing items and descriptions filled in. If a Constructability Review was held, all changes to the quantities as a result of the review shall be reflected in the PS&E Field Review quantity estimate. **The Project Manager shall request necessary information needed to complete the estimate sheet at least two weeks prior to the date set to print for outside distribution.** Requests for large projects should be made even earlier to ensure that the estimate is complete and that sheets from the estimates are correct in the PS&E Field Review plan set. Plans sheets and items shall be requested from Geotechnical, Traffic Operations, Structures, and Utilities personnel as needed. All Divisions submitting estimates shall coordinate with other Divisions to verify no duplicate item numbers are submitted.

The Project Manager shall email the PS&E Field Review quantity estimate ***nnnnnn-nn-RoadwayPS&EEstimate.xlsm*** to TDOT.Preliminary.Estimates@tn.gov with a carbon copy (Cc) to TDOT.PDSO@tn.gov on the same day the PS&E Field Review Notice is sent out. If the project has sheet submittals from other functional groups, the Excel file for those quantities shall be obtained and emailed simultaneously with the estimated roadway quantities Excel estimate as attachments. *(See below for further instruction)*

The following must be completed **BEFORE** the estimate is emailed with the PS&E Field Review Notice:

- The Technical Lead shall ensure that the totals on the estimate reflect all tabulation blocks shown in the plans.
- If there are Traffic Operations quantities (ITS, Signals, and/or Lighting), the Project Manager over the project shall request the appropriate Excel files containing these quantities:
  - ***nnnnn-nn-TrafficOpsITSPS&EEstimate.xlsm***
  - ***nnnnnn-nnTrafficOpsSignalsPS&EEstimate.xlsm***
  - ***nnnnnn-nn-TrafficOpsLightingPS&EEstimate.xlsm***

  These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.
- If there are structures (bridges) in the plans, the Project Manager over the project shall contact TDOT Structures Division personnel to request the Excel file ***nnnnnn-nn-StructuresPS&EEstimate.xlsm*** containing these quantities. These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.

- If there are retaining walls in the plans, the Project Manager over the project shall contact Structures (TDOT.StructuresRW@tn.gov) to request the Excel file: ***nnnnnn-nn-StructuresPS&EEstimate.xlsm***. If there are both structures and retaining walls, coordination shall occur between Structures personnel to combine these quantities into one file and to submit the file to the Project Manager or Design Lead that requested the information. These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.
- If there are utilities in the plans, the Project Manager over the project shall contact TDOT Regional Pre-Construction Utility Office to request the Excel file ***nnnnnn-nn-UtilityPS&EEstimate.xlsm*** containing these quantities. These items will NOT be added to the estimated roadway quantities Excel file but will be included as a separate file within the same email as an attachment.
- The Project Manager shall contact the R.O.W. office to check to see if there will be R.O.W. Removal Items for buildings and obstructions. The item numbers shall be furnished by the regional R.O.W. office and should be a lump sum item and footnoted. See *Chapter 9-205.00, Demolition* for additional information.

The estimate shall be thoroughly checked at the PS&E Field Review to ensure that there are no missing quantities or adjustments that must be made to existing quantities. Close attention should be paid to the grade differences and the construction of structures to ensure if items are needed for temporary shoring. If there are significant changes and additions to quantity items due to comments at the PS&E Field Review, a revised estimate for the applicable division shall be completed using the following naming conventions and emailed by the Project Manager to TDOT.Preliminary.Estimates@tn.gov with a carbon copy (Cc) to TDOT.PDSO@tn.gov.

- ***nnnnnn-nn*-RoadwayPS&EEstimate.xlsm**
- ***nnnnnn-nn*-TrafficOpsITSPS&EEstimate.xlsm**
- ***nnnnnn-nn*-TrafficOpsSignalsPS&EEstimate.xlsm**
- ***nnnnnn-nn*-TrafficOpsLightingPS&EEstimate.xlsm**
- ***nnnnnn-nn*-StructuresPS&EEstimate.xlsm**
- ***nnnnnn-nn*-UtilityPS&EEstimate.xlsm**

The email shall state that **the estimate(s) is being re-submitted because of significant changes and/or additions resulting from the PS&E Field Review**. All updated estimates shall be kept in the project folder. For the project folder, a date shall be part of the naming convention so that the development of the estimate can be easily compared. It is not necessary to place the estimate on FileNet.

1-402.06 SUBMITTAL OF PS&E ESTIMATE FOR LETTING PROCESS

When the final PS&E plans are turned in for the Letting process for PDN 4PM2 the submittal will include a final construction estimate. **All Divisions submitting estimates shall**

coordinate with other Divisions to verify no duplicate item numbers are submitted. The Project Manager shall attach the construction Excel estimate ***nnnnnn-nn-RoadwayLettingEstimate.xlsm*** to the email containing the PS&E Submittal for Letting. The Project Manager will upload the Excel estimate file to FileNet. The previous estimate placed on FileNet shall be removed. The Project Manager shall email the PS&E Submittal Letter, Grading Report, and Letting Estimate to the addresses shown on the Distribution List.

The body of the email shall include that the construction plan set and estimated roadway quantities Excel file have been uploaded to FileNet.

A copy of the email shall be placed in the project folder to document the submittal of the construction estimate.

1-402.07 REVISION OF PS&E ESTIMATE FOR LETTING PROCESS

If there is a need to change, add, and/or delete quantities after Final Turn-in for the Letting process but prior to the letting of the project, a revision shall be made to the PS&E Excel estimate by the appropriate Project Manager. It shall become part of the project record and placed in the project folder. The file also needs to be updated in the Final PS&E Submittal Package ("Complete Package"). See Chapter 1-105.11 for more information regarding Letting Revisions. The revised estimate folder name shall be:

- ***nnnnnn-nn-Estimates-LettingRev-mm-dd-yy.zip***,

The Project Manager shall also create an estimate revision request using the Excel template file *Estimate Revision Request*. In the PS&E plan set, each revised quantity shall be shown on the estimated roadway quantities sheet tabulation block, included in the revision note on affected sheets, and reflected in any associated tabulation blocks and/or footnotes. For additional information on the Estimate revision process see *Chapter 7-303.00, Letting Revisions*. The Project Manager shall email the **"Estimate Revision Request"** form and revised plan sheets as an attachment to the addresses shown in the Distribution List.

Note: Once a project has been Let to contract and an estimate change is requested, an Estimate Revision Request form is not required as part of the Construction Revision. Neither HQ Construction Division nor the Bid Analysis & Estimating Office will alter the estimate in the system after the job has been awarded and has a contract number.

1-403.00 FOOTNOTES FOR ROADWAY ESTIMATED QUANTITY SHEET

For the Constructability Review (if applicable), PS&E Field Review, and final PS&E plans, footnotes shall be added in the estimated roadway quantities Excel file and shown on the estimated roadway quantities sheet in the plans. Footnotes are sometimes needed for items to provide clarity, to define when substitutions can be made, and to define maintenance schedules

or cycles. Footnotes for quantities should be in numerical order and placed in column A. Footnotes listed in tabulated quantities shall also be shown in the Estimated Quantities Sheet. Additional information for required footnotes can be found in the Roadway Design Guidelines Chapters 5, 6 and 7.

1. When an item is used in multiple locations for various reasons, footnotes shall be used to define what the use and quantity is for each item within the total. For example, Item Number 303-10.01, Mineral Aggregate (Size 57) with a total of 181 TONS may have the following footnote:

   INCLUDES 5 TONS FOR USE WITH SEDIMENT FILTER BAG, 9 TONS FOR CULVERT PROTECTION TYPE 1, AND 167 TONS FOR HAUL ROADS.

2. Where lump sum (LS) quantities are used, the description shall be filled in and a breakdown of the items included in the lump sum shall be footnoted. For example, Item Number 730-40.02, Temporary Traffic Signal System, LS, with a quantity of 1 may have a footnote similar to the following:

   INCLUDES ALL ITEMS NECESSARY TO KEEP EXISTING SIGNAL AT SR 248 AND I-65 SB OFF RAMP OPERATIONAL DURING ALL PHASES OF CONSTRUCTION. CONTRACTOR TO COORDINATE WITH CITY ENGINEER PRIOR TO ANY ADJUSTMENTS. CONTRACTOR SHALL OBTAIN THE APPROVAL FROM CITY ON MANNER OF MAINTAINING EQUIPMENT THROUGH CONSTRUCTION PHASING. VEHICLE DETECTION MUST BE MAINTAINED THROUGHOUT CONSTRUCTION (VIDEO OR OTHER MEANS ACCEPTABLE). MAY USE CONTRACTOR OWNED EQUIPMENT TO SUPPLEMENT EXISTING EQUIPMENT IF NEEDED. CONTRACTOR SHALL MAINTAIN ALL EQUIPMENT DURING CONSTRUCTION, THROUGH A MINIMUM OF 2 PHASES OF CONSTRUCTION. ITEM INCLUDES MAINTENANCE OF EXISTING POLES OR PROVIDING ALTERNATE TEMPORARY SIGNAL SUPPORT POLES. SEE TDOT STANDARD DRAWING T-SG-11 FOR ADDITIONAL DETAILS.

3. For items such as erosion control that might have to be replaced during the life cycle of the project, the following footnote below shall be used:

   SEE SUBSECTION 209.07 OF THE STANDARD SPECIFICATIONS FOR MAINTENANCE REPLACEMENT.

1-404.00 ESTIMATE CONFIDENTIALITY

The Project Team is hereby instructed to follow the TDOT guidelines regarding the handling of the construction cost estimates and unit bid prices as listed below.

1. Construction Cost Estimates: All Technical Leads are hereby instructed to keep the construction cost estimate confidential. These cost estimates shall never be made

public and may only be revealed to the proper officials of TDOT. Should an inquiry be made by a person other than a TDOT official, refer the inquirer to the Project Manager or Design Lead. Secure the cost estimates at all times so that no unauthorized person may have access to them.

2. Unit Bid Prices: After a project is let for construction, but prior to awarding it, all Technical Leads are hereby instructed not to divulge any unit prices bid on a project to anyone. When a project bid is rejected and not awarded, the unit prices are never to be made public. Any inquiry made in regard to bid prices shall be referred to the Project Manager or Design Lead for proper handling.

1-405.00 FINANCIAL PLANS

Federal law requires a financial plan to be completed for projects estimated to cost over $100 million. If a project exceeds $500 million, then the financial plan shall be submitted to Federal Highway Administration for review. Once the Environmental Document is completed and the $100 million cost threshold is met, the TDOT Federal Affairs Liaison will develop the initial document template. The financial plan must be updated annually by the Project Development Director. If it is determined later in the design development process that the cost estimate will exceed $100 million, the Project Development Director should contact the TDOT Federal Affairs Liaison and the Community Relations Office. The TDOT Federal Affairs Liaison will provide the Regional Project Management Director with the project specific financial plan template. An example of a completed document can be found on the Design Guidelines webpage.

SECTION 5 – VALUE ENGINEERING

1-500.00 VALUE ENGINEERING

Value Engineering is a systematic independent multidisciplinary team review process which utilizes project functional analysis to develop recommendations that:

- Optimize the value and quality of the project.
- Provide the needed functions, considering community and environmental commitments, safety, reliability, efficiency, and overall life-cycle cost.
- Reduce the time to develop and deliver the project.

1-501.00 VALUE ENGINEERING OFFICE RESPONSIBILITIES

TDOT has established a VE Program in accordance with 23 CFR Part 627. TDOT shall designate a VE Program Coordinator, hereinafter referred to as the "Coordinator", to promote and advance VE program activities. The program is administered by the Engineering Production Support Division's VE Office. The responsibilities of the VE Office include the following:

- Monitor Project Schedule and coordinate with TDOT's Project Management Division to identify projects that meet the project selection criteria.
- Ensure that VE analyses are conducted on all applicable projects.
- Coordinate all VE training requirements.
- Provide a list of current and potential VE projects on a quarterly basis to the FHWA.
- Provide an annual report to FHWA summarizing the results of the VE analyses.
- Coordinate with HQ Construction Office to fulfill any Program Performance Data requested by FHWA.

1-502.00 VALUE ENGINEERING PROJECT SELECTION POLICY

A VE analysis shall be conducted as early as practicable on all applicable projects developed by TDOT and Local Agencies that utilize federal-aid highway funding.

Applicable projects requiring VE analysis include the following:

a) Projects that are located on the National Highway System (NHS), utilize federal-aid highway funding, and have an estimated total project cost greater than or equal to $50 million.
b) Bridge projects that are located on the NHS, utilize federal-aid highway funding, and have an estimated total project cost greater than or equal to $40 million.

c) Any major project (as defined in 23 U.S.C. 106(h)) that is located on or off of the NHS and utilizes Federal-aid highway funding in any contract or phase comprising the major project.

d) Any project for which a VE analysis has not been conducted and a change is made to the project's scope or design between the final design and the construction Letting that results in an increase in the project's total cost such that it meets the thresholds identified in bullets a), b), or c) above.

e) Any other project which utilizes federal-aid highway program funding that FHWA determines to be appropriate. Design Build Projects do not require a VE analysis, but Construction Manager/General Contractor (CM/GC) projects do require a VE analysis if it meets the thresholds identified in bullets a), b), or c) above.

The total project cost is defined as the estimated costs of all work to be conducted on a project including the Context/Scoping, Functional, Plan-in-Hand, and PS&E stages. A bridge project is defined as any project whose primary purpose is to construct, reconstruct, rehabilitate, resurface, or restore a bridge. For projects split into smaller sections for development, the termini used in the environmental document shall control and be used for determining threshold requirements.

TDOT and Local Agencies may elect, on a case by case basis, to conduct a VE analysis on other complex projects if there is a potential to realize benefits from the analysis. Design Managers and Division Heads are encouraged to notify the Coordinator of any projects that they think have the potential to benefit from a VE analysis.

1-503.00 VALUE ENGINEERING ANALYSIS PROCEDURES

1-503.01 IDENTIFYING AND SCHEDULING VALUE ENGINEERING ANALYSIS

The Coordinator shall determine when the VE analysis will take place. The VE analysis shall be conducted as early as practicable during the project development. In most cases, the VE analysis shall be scheduled prior to the Functional Review.

When a project has been identified as a candidate for VE analysis, the Coordinator shall notify the Project Manager. The Project Manager shall then notify the Coordinator of any changes made to the project scope during the project development.

1-503.02 ASSEMBLING THE VALUE ENGINEERING ANALYSIS TEAM

The Coordinator shall select a multidisciplinary team composed of individuals who are not directly involved in the project’s planning or design. The team shall include members from key

project disciplines such as Roadway, Structures, Environmental, Geotechnical, Construction, Hydraulics, Materials and Test, Traffic Operations, Traffic Design, Strategic Transportation Investments, and Quality Assurance/Quality Control (QA/QC).

The Coordinator will select the team leader and they will work together during the planning and scheduling of the VE analysis. The team leader will guide the team during the project analysis and the Coordinator shall oversee the team's progress to ensure that the VE analysis process, as defined in 23 CFR Part 627.3, is followed.

1-503.03 VALUE ENGINEERING JOB PLAN

The VE team analysis shall follow the VE Job Plan, which consists of seven phases as defined in 23 CFR Part 627.3(f). Prior to the beginning of the VE team analysis, the Coordinator will scale the level of analysis conducted and effort expended for each phase to meet the needs of each individual project and convey this plan of analysis to the team leader.

Analyze Project Functions:

1. Information Phase: Review project information, including commitments and constraints, and identify and define the current project conditions and overall analysis goals.

2. Function Analysis Phase: Analyze the project information to understand the required functions of the project and define each required function using a two-word active verb/ measurable noun technique.

Generate Alternatives:

3. Creative Phase: Generate ideas to identify other ways to accomplish the required functions which improve the project's performance, enhance its quality, and/or lower its costs.
4. Evaluation Phase: Evaluate advantages and disadvantages for each design alternative, including life-cycle costs, and the need for additional environmental studies. Select feasible ideas for development.

Act on Recommendations:

5. Development Phase: Develop each selected alternative, including environmental, technical and cost supporting data, into fully supported recommendations
6. Presentation Phase: Present the VE recommendations to TDOT management and/or the Project Manager
7. Resolution Phase: The Coordinator will evaluate, document, and ensure implementation of all approved VE recommendations.

1-503.04 PRESENTATION OF RECOMMENDATIONS

The Coordinator and team leader will work together to create a VE Recommendations Report which includes analysis and cost information for each recommendation. The total estimated VE cost saving for all recommendations will determine how the recommendations are presented.

- For savings totaling $1 million or less, the VE Recommendations Report will be presented to the Project Manager, Regional Project Management Director, and Project Management Director for their evaluation and response.

- For savings totaling more than $1 million, a team member presentation of all recommendations will be made to TDOT management. The VE Recommendation Report will be available for all presentation attendees. A copy of the VE Recommendations Report shall be given to the Project Manager for their evaluation and response prior to the presentation.

The Coordinator will request a written response to each recommendation from the Project Manager. This written response shall explain whether or not the recommendation is found feasible to implement. The team presentation to TDOT Management shall also include any discussions and/or decisions made during the presentation.

1-504.00 VALUE ENGINEERING WORKBOOKS

After the response to all VE recommendations has been received from TDOT Management, the Coordinator shall assemble the VE Workbook. This Workbook shall include all Job Plan forms and all correspondence with TDOT Management. The Coordinator shall distribute the completed VE Workbook to the Project Manager and forward the VE workbook to the FHWA office. A copy shall be retained by the VE Office for at least 3 (three) years after the final acceptance of PS&E plans.

1-505.00 IMPLEMENTATIONS OF APPROVED RECOMMENDATIONS

The coordinator shall oversee the implementation of all accepted VE recommendations. The Project Manager shall be responsible for incorporating all accepted VE recommendations into the project prior to finalizing the PS&E plans. If the Project Manager determines that any accepted VE recommendation is no longer acceptable, he/she shall notify the coordinator and provide, in writing, the reason(s) for the changes. These changes shall be evaluated to determine if any additional action can be taken to modify the recommendation. The coordinator shall review the final PS&E plans to ensure all accepted VE recommendations have been implemented.